



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

Pilbara

groundwater allocation plan

Statement of response

Department of Water

October 2013

Pilbara groundwater allocation plan

Statement of response

Looking after all our water needs

Department of Water

October 2013

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Pilbara surface water allocation plan - Statement of response

This statement provides the Department of Water's response to the comments, issues and questions raised in submissions to the *Pilbara groundwater allocation plan: for public comment* (DoW 2012b).

The public comment period

The *Pilbara groundwater allocation plan: for public comment* was open for a 12 week public comment period from 31 October 2012 to 18 January 2013.

During the public comment period the Department of Water (department) sent over 130 letters to stakeholders to notify them that the plan was open for public comment.

An invitation to comment and receive copies of the plan was advertised during the comment period on 7 November 2012, 5 December 2012 and 9 January 2013 in the following publications:

- *The West Australian*
- *Pilbara News*
- *Port Hedland North West Telegraph*.

We invited stakeholders to a briefing on the plan. Two briefings were held, one in Perth (20 November 2012) and one in Karratha (26 November 2012). More than 50 stakeholders in total attended. We also met individually with some stakeholders who couldn't attend these briefings.

Completing the plan

Following the public comment period, we have worked closely with our stakeholders to complete the *Pilbara groundwater allocation plan* (DoW 2013). We considered all the comments, issues and questions raised in the submissions and at subsequent stakeholder meetings to complete the plan.

Submissions received

During the comment period we received 20 formal submissions from a range of interest groups (Table 1). We considered all the comments, issues and questions raised in submissions in finalising the *Pilbara groundwater allocation plan* (DoW 2013). Our responses to these are provided in this statement.

Table 1 Respondents to the plan for public comment

| Respondents | Interest group | Number of responses |
|--|----------------------------|---------------------|
| Mundabullangana Station | Agriculture and irrigation | 1 |
| Yindjibarndi Aboriginal Corporation | Indigenous | 1 |
| API Management Pty Ltd Atlas Iron Limited BHP Billiton Chamber of Minerals and Energy MWH Australia Pty Ltd Rio Tinto WorleyParsons | Mining industry | 7 |
| Department of Agriculture and Food Department of Mines and Petroleum Department of State Development Department of Environment and Conservation Pilbara Development Commission | Other State Government | 5 |
| Water Corporation | Public water supply | 1 |
| CSIRO ERM Asia Pacific Groundwater Consulting Services UWA Law School (2) | Other | 5 |
| Total | | 20 |

Comments received and the department's responses

The following tables summarise the main issues and questions raised in the public submissions and the department's responses. The comments are grouped according to the water allocation issue they relate to.

Table 2 General comments and questions received on the plan

| Comment | Department of Water response |
|---|--|
| <p>Support for the plan</p> <p>Sixteen respondents showed their support for the plan. Although, one respondent also showed concern for the sustainability and risks of management on the ecosystem and water use of the Millstream aquifer for cultural and community purposes.</p> <p>Comments included the below:</p> <ul style="list-style-type: none"> The work it is based on is very sound. It is a well-considered plan. It is comprehensive, clearly summarising a lot of information. It is timely and useful in ensuring | <p>The department values the input and support for the plan provided by stakeholders and the community and we thank them for their submissions.</p> <p>We will work to ensure stakeholder engagement continues in the Pilbara to help manage water for private and public users.</p> <p>For specific comments on Millstream, see Table 10 below.</p> |

| Comment | Department of Water response |
|--|------------------------------|
| <p>appropriate regulation and allocation of water in the Pilbara.</p> <ul style="list-style-type: none"> • Allocation plans provide greater certainty to water users and improve social and environmental outcomes. • It provides a good level of strategic guidance and direction on water resource management and regulation. • It clarifies and directs government and proponents for managing water abstraction and associated risks to groundwater, groundwater-dependant ecology, cultural values and other water users. • It is a good start to creating a plan for the entire Pilbara region. • It recognises the rapid growth in the region and the importance of clarity in water allocation and management in this context. • The plan and supporting documents clearly set out how the department will regulate and manage the Pilbara groundwater resources for the next seven years. | |

Scope of the plan

Four respondents commented on the scope of the plan, with one supporting the different approach to managing water for ports and coastal towns versus the inland areas which are very different hydrogeologically and support primarily mining. Other comments are below:

- | | |
|---|---|
| <p>i. It is not clear why the nine 'target' aquifers are separated from 'non-target aquifers'.</p> | <p>i. The target resources are existing or potentially important sources for public water supply due to their proximity to coastal towns and ports where the greatest current and future water demand is focused. These aquifers were also reviewed through the Water for the Future program. Non-target resources are the remaining resources and are mainly fractured rock resources in mining areas.</p> |
| <p>ii. The department should explore the potential for water allocation planning to extend beyond the nine target aquifers.</p> | <p>ii. Statewide policy and the licensing approach in the plan are sufficient for the regional resources such as fractured rock aquifers, which are best managed through licences. Allocation limits for other resources will be reviewed as required during the life of the plan.</p> |
| <p>iii. The title is misleading as it appears to focus on potable water supply for coastal cities.</p> | <p>iii. The plan describes the management approach for all resources in the plan area. The plan includes more detail on the target aquifers (for coastal cities potable and</p> |

| Comment | Department of Water response |
|--|---|
| <p>iv. Groundwater allocation for other potable and non-potable uses (e.g. mining, pastoral, domestic) isn't significantly addressed and should be.</p> <p>v. In Section 1.2, the plan area description should also include Carnarvon in the groundwater areas listed.</p> <p>vi. While the West Canning Basin is a potential source for Pilbara cities, it is not part of the Pilbara groundwater allocation area.</p> <p>vii. The plan lacks description of key fractured rock aquifers, important to this region.</p> | <p>industrial supplies) but the plan also includes the department's licensing approach for other areas. This is appropriate given the difference in management requirements and complexity in how water is taken and distributed.</p> <p>iv. Together, the general licensing approach in the plan and statewide policy will be used to guide licensing for different uses across the region.</p> <p>v. Section 1.2 on the plan area refers to proclaimed groundwater areas. The part of the Carnarvon aquifer in the plan area is within the Pilbara groundwater area.</p> <p>vi. Although the West Canning Basin is mainly in the Canning-Kimberley groundwater area (proclaimed area) it is within the Pilbara and has an important link to Pilbara water supply.</p> <p>vii. Technical information on the types of aquifers found in the region is included in supporting documents rather than the plan itself. The <i>Pilbara Coast Study</i> and the <i>Central Pilbara Groundwater Study</i> are sub-regional hydrogeological references used to inform the development of the plan that provide this sort of information. These are referenced in the final plan (Section 1.3).</p> |

Questions

- | | |
|--|--|
| <p>1. The main finding in the summary is the allocation limits of the nine target aquifers and nine numbers to manage groundwater over a 200 000 km² area seems ambitious. Could these key aquifers be subdivided for management purposes?</p> | <p>1. The nine target resources are individual resources, rather than a subdivision of the entire plan area. Only these allocation limits were included in the summary as there are too many allocation limits for other resources to include in a summary. All other allocation limits are included in Table 3 of the plan.</p> |
| <p>2. What defines a target aquifer? Are they especially sensitive, highly allocated, essential for public water supplies or something else? The Ashburton – Lower Bungaroo Valley aquifer is for public water supply and is larger than some of the target aquifers, but isn't identified as a target resource.</p> | <p>2. In the glossary of the plan, we have said that a target resource is a water resource in the <i>Pilbara groundwater allocation plan</i> that is being targeted or focused on for water supply and management, due to its importance and proximity to coastal centres where water demand is high. The Lower Bungaroo Valley aquifer was not identified as a potential water supply source during the allocation plan investigations and assessment. At that stage it was a prospective mineral resource. We have since identified it as a potential public water supply option; however, this is subject to further investigation and negotiation with</p> |

| Comment | Department of Water response |
|---|---|
| | the current licensee who owns the infrastructure. |
| Boundaries | |
| <p>Three respondents suggested changes to or queried the boundaries in the plan (also see West Canning Basin, Table 12):</p> | |
| <ul style="list-style-type: none"> i. The subarea boundaries are poorly aligned with water resources and perhaps they should be better aligned now before they become embedded. The allocation limit tables could also be improved if subareas were more aligned with resources. ii. Large subareas could be subdivided if volumetric limits are the main management tool and then lower limits can be set around key groundwater-dependent ecosystems to encourage extraction to be concentrated further away. | <ul style="list-style-type: none"> i. The subarea boundaries of the Pilbara groundwater area are aligned with locality boundaries and are only administrative. The main management boundary is the resource boundary which is based on the extent of the resource. Where the subarea boundary affects management, we will amend it (for example we amended it near the De Grey aquifer for this plan). ii. Allocation limits are set for the resource, which is the aquifer within the subarea. Further subdivision of the resource is not required. Specific management around abstraction and management of risks to groundwater-dependent ecosystems is managed through licence conditions and assessed using in the licensing approach in the plan. |
| Question | |
| <p>The Lower De Grey is split between two subareas and if an adjustment was possible to include all current bores in the Ashburton, why not include the entire aquifer into one subarea?</p> | <p>The De Grey remains separated into two parts because each part currently has different management needs. The public water supply bore field on the De Grey is located within the Ashburton subarea and this part of the aquifer has been relatively thoroughly investigated. Upstream, in the East Pilbara subarea, the aquifer has no licensed abstraction, has not been investigated as thoroughly and was not covered in the aquifer's numerical groundwater model used to set the allocation limit.</p> |
| Term of the plan | |
| <p>One respondent commented:</p> <ul style="list-style-type: none"> • The life of the plan should be stated in the Summary. • The plan states the department will consider whether to replace the plan in 2020 but most allocation and regional plans have a defined life on which the planning is based. | <p>Allocation plans generally have a life of seven years. We will review the plan at this time, but if there is no need to replace it, then we will keep it in place. We have now included the plan timeframe in the summary.</p> |

| Comment | Department of Water response |
|--|--|
| Suggested edits | |
| Most respondents suggested general edits to the plan, including the following: | |
| i. It may be useful to indicate how groundwater resources have been managed prior to this plan. | i. Groundwater resources were previously managed through licensing, with the plan clarifying the process and making it transparent. We have included a sentence reflecting this in the purpose of the plan. |
| ii. State when the region was proclaimed requiring that water licences be sought, when allocation limits were first imposed on key resources etc (Millstream has a long history of management that could provide important context). | ii. The plan states when the region was proclaimed in Section 1.2 on plan area (Pilbara groundwater area in 1965 and Canning-Kimberley groundwater area in 1997). The supporting groundwater allocation limit reports say when allocation limits were introduced and are available on the department's website. |
| iii. Figure 2 should list all nine target aquifers (not eight) and include all of the non-target aquifers, especially identifying those with allocation limits. | iii. We agree and have amended Figure 2 and separated the non-target resources into its own map (Figure 3). |
| iv. The numerous supporting documents and the Regional Plan are not adequately identified or referenced for readers. | iv. All of the supporting documents are referenced in the relevant sections and in the back of the plan, which is appropriate for a management document. |
| v. The figures and maps could be amended to provide more geographical and location references and more clearly show the boundaries and link to Table 3. | v. We have amended the maps to be clearer by including rivers to provide more geographical context and moving the supply schemes to the aquifer map to show which aquifer is used in which scheme. However, note that the West Canning Basin is not part of the Port Hedland scheme yet, so it is not connected. |
| vi. The general licensing approach provides a good summary but it should be presented as a separate, generic document. | vi. We disagree. We have included the general licensing approach to clarify our process and position for the Pilbara, which was a request from stakeholders and assists the licensing process. |
| vii. The plan could be enhanced with a more detailed outline of the key water users, in particular those affected by regulatory processes including licensing. | vii. The groups we consulted with were the main water users as listed in Section 1.5 of the plan. All self-supply water users except those with exemptions (e.g. for stock and domestic) require licences and are affected by the regulatory process. See Section 4. |
| viii. The regulation and licensing of petroleum and geothermal energy activities including potential water requirements should be more explicitly included. | viii. We have amended the plan to be more inclusive of a broader range of industry types. Regulation and licensing of these industries will occur through our normal licensing processes and be informed by the plan and statewide policies. |
| ix. Sections 4.1 'Other legislation' and 4.3 'Water licensing' should note the <i>Petroleum</i> | ix. The plan has been amended to include reference to the additional suggested legislation. |

| Comment | Department of Water response |
|---|---|
| <p><i>and Geothermal Energy Resources Act 1967 and Petroleum Pipelines Act 1969</i> and their related regulations to ensure assessment and approval processes are considered in the development of licensing policies for target aquifers discussed in Section 5.</p> <p>x. Appendix B assessment of groundwater-dependent ecosystems lists databases that recognise values of 'elevated conservation significance'. However, applicants or proponents should also consider their proposed activities in relation to conservation significant flora and fauna values as defined in OEPA Guidance Statements 51 and 56. Assessments should also consider conservation significance at local as well as regional scale.</p> | <p>x. We agree and have amended the plan to include reference to the EPA guidance statements and assessment at the local scale in Appendix B.</p> |

Question

The units (kL) are small for such large resources and make the level of precision seem unrealistically high – could they be rounded to ML?

In the summary and in the text we refer to megalitres (ML) or gigalitres (GL) for this reason. However, we have kept kilolitres (kL) in the main allocation limit tables because it is the unit used for licensed entitlement volumes.

Table 3 Comments on consultation

| Comment | Department of Water response |
|--|--|
| <p>Consultation for the plan</p> <p>Thirteen respondents acknowledged their involvement in consultation, supported the department's consultation approach and/or appreciated the opportunity to comment on the plan.</p> | <p>We are pleased to hear that stakeholders are satisfied with our consultation approach for the <i>Pilbara groundwater allocation plan</i> and have valued their input. We will work to ensure stakeholder engagement continues in the Pilbara to help manage water for private and public users.</p> |
| <p>Ongoing and future consultation</p> <p>Five respondents commented on ongoing and/or future consultation and involvement, with most being committed to working with the department on water management issues. Other comments are below (also see Millstream comments in Table 10):</p> <ul style="list-style-type: none"> • Ongoing consultation is critical during the plan period, including reviews and evaluations, to ensure that the plan remains dynamic and responsive to changing circumstances. • It is essential that a coordinated and facilitative approach is adopted to water | <p>The department is committed to working with stakeholders to provide responsible, adaptive and transparent management of water resources. We will evaluate the plan annually and publish an evaluation statement at least every three years. We will consult on the status of the plan as required based on the outcomes of our evaluations.</p> |

| Comment | Department of Water response |
|---|------------------------------|
| supply and allocation planning, managing surplus mine dewater and developing a cumulative impact management framework as it affects multiple agencies and will ensure the value and broader community benefit from resources is maximised. The department's role in resolving and enabling these issues is pivotal as it is the regulator with the best scientific understanding and is responsible for allocating water and making key management decisions. | |

Table 4 *Comments and questions on water allocation*

| Comment | Department of Water response |
|---|--|
| Allocation limits | |
| Six respondents commented on allocation limits and decisions, with one supporting the review and confirmation of water availability for the coastal areas. Other comments: | |
| i. Object to increasing the Yule allocation limit because wells are drying up and salt levels have increased. | i. We recognise the risk of saline intrusion for all the alluvial aquifers. For Yule (and others) we will require the licensee to complete salinity monitoring and discuss the proposed approach with other, affected water users. We consider that the risk of increasing salinity is manageable under the monitoring and management framework in the plan. |
| ii. Disagree with reducing abstraction from Yule under different recharge regimes and that the sustainable limit is the full 10.5 GL. | ii. We have included a variable regime for take from Yule to address the risk to the aquifer (water quality) and dependent values that we predict will occur given the unreliable nature of recharge to this aquifer. We will consider the full increase from 8.5 to 10.5 GL subject to provision of information to support the licence assessment and approvals in addition to those required under the <i>RIWI Act</i> . |
| iii. Although the 15 GL/yr allocation limit for Millstream is an upper limit, conditional on the Harding Dam not being in use, it is becoming more common due to the low and highly variable rainfall in the Pilbara. | iii. The recent use of water from Millstream (15 years to 2010/11) has averaged just over 4 GL/yr and has therefore been below the long term reliable allocation. Our data does not show that rainfall within the catchments of these two resources has declined in recent history. |
| iv. Allocation limits should be considered for fractured rock aquifers, given the interaction between unconsolidated and fractured-rock aquifers and overall basin water balances. | iv. We disagree, for the reasons stated in the plan. Fractured rock aquifers will be managed through licensing and any connection to other aquifers will be considered when assessing licence applications. |

| Comment | Department of Water response |
|--|--|
| <p>Questions</p> <p>The first strategy (page 13) says ‘License to allocation limits for the target aquifers’ but there are only allocation limits for some non-target aquifers, so are they included in another strategy?</p> | <p>Where allocation limits are set, we will grant licence entitlements up to the allocation limit (strategy 1). Where they are not set, we will apply the licensing policies across the region (strategy 3).</p> |
| <p>Allocation limit methodology</p> <p>Five respondents commented on the method used to set allocation limits, with one respondent supporting the risk based approach for coastal shallow alluvial systems.</p> <p>Another comment was that the risk based approach description (page 22) requires more detail since it forms the basis for determining allocations.</p> <p>See also Yule and De Grey comments (Table 9).</p> | <p>The risk-based approach was used for three of the smaller alluvial aquifers – Cane, Turner and the lower Fortescue – as shown in Section 3 of the plan. We have amended the plan to provide more reference to the supporting documents that explain the risk based method and how it has been used.</p> |
| <p>Questions</p> <ol style="list-style-type: none"> 1. When describing how allocation limits were set, demand for the resource is mentioned first. Does this mean the department is allowing development and monitoring of the aquifers before releasing more water? Given the lack of long-term data on aquifer performance, this is a sensible approach. 2. Does ‘30 per cent of estimated annual recharge and throughflow’ mean 30% of the sum of these components, or 30% of recharge plus all throughflow? | <ol style="list-style-type: none"> 1. To set allocation limits we consider demand to inform the level of management that may be required if a higher risk allocation limit is set. We primarily consider the variable climate (including the likelihood of long periods between recharge events), the water regime needed to maintain groundwater-dependent ecosystems and boundaries (such as seawater interface) to resource productivity. While we used the best available information, in some cases the information may be limited and further investigation is required to confirm water availability. In some situations, subject to assessment of the risks, we will allow development to proceed with an adaptive management approach implemented to manage any risks. 2. For the risk-based method, either recharge or throughflow is used depending on the information available, not a combination. The risk-based approach is used where there is low demand and limited information. |
| <p>Water use and availability</p> <p>Three respondents commented on water use and availability:</p> <ol style="list-style-type: none"> i. It is unclear which of the two Ashburton-Carnarvon-Birdrong aquifers is the fully allocated resource. | <ol style="list-style-type: none"> i. The confined Carnarvon-Birdrong aquifer is fully allocated. We have made this clearer in the plan. The allocation limit for the confined Carnarvon-Birdrong aquifer is |

| Comment | Department of Water response |
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| | currently equal to the volume required (and licensed). More water could be made available from this aquifer (and the allocation limit increased) if investigations demonstrate it is available. |
| ii. Poor rainfall years have shown how vulnerable the Yule aquifer is and it is over the limit now. | ii. For the Yule aquifer we have defined a new management response framework with abstraction rules, triggers and responses that depend on river flow and recharge for each season (see Appendix A of the plan). |
| iii. Four of the target aquifers are fully allocated however, the Millstream aquifer is arguably the most stressed with a 15 GL/yr maximum allocation against a long-term reliable allocation for Millstream at 6 GL/yr. | iii. Some of the target aquifers currently in use are fully allocated due to high demand — which is why we have provided detailed management arrangements in the plan. The recent use of water from Millstream (15 years to 2010/11) has averaged just over 4 GL/yr and has therefore been below the long-term reliable allocation. When more than the long term reliable allocation is required (which occurs when Harding Dam is empty), the department requires the licensee to manage the impacts through monitoring and applying management criteria. The Bungaroo bore field, to provide additional water to the scheme from August 2013, will alleviate pressure on the Millstream Aquifer. |
| iv. The 120 GL/yr allocation limit for the Ashburton – Hamersley–Fortescue is fully allocated; however, the size of the resource and therefore the corresponding potential impact is not evident. A map and location of the anticipated or known extraction areas and clarity on the anticipated water quality and potential end user markets for any portion of the allocation would assist. | iv. We have amended the figures to better show the location and area of all of the resources. However, due to the current and proposed management of the aquifer associated with mining and dewatering, we have decided to remove the allocation limit. The plan now shows the allocation limit as 'not set' and water availability will be assessed on a case-by-case basis, similar to the fractured rock policy in the plan. |

Public water supply

Three respondents commented on public water supply, with one supporting the public water supply reserves and allocation limits. Other comments are below:

- | | |
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| i. Some data is missing for the public water supply allocation and Table 3 (allocation limits) and should be amended to include Nullagine, Marble Bar and Wittenoom. | i. We have corrected and amended the data and figures for public water supply in the plan. |
| ii. Other public water supplies for areas within the Pilbara groundwater allocation plan appear to have little importance even though it impacts on 15 000–20 000 people. | ii. We intentionally focused on areas where demand pressure on existing supplies was most critical. However, we recognise that supply planning for all Pilbara towns is important and demand pressures can change rapidly including in smaller regional |

| Comment | Department of Water response |
|---------|---|
| | centres. The water supply status of these smaller regional centres is addressed in the water supply strategy for the region. The department will continue to work with water service providers in these centres to ensure adequate water supply and management. |

Question

If the Bungaroo resource is part of the West Pilbara water supply scheme, will the 94% reliability of supplying 10 GL/yr change?

Yes, the availability of additional water from a third source will affect the scheme yield and reliability. Bungaroo is being developed by Rio Tinto Iron Ore (RTIO) to meet their water demand at the coastal ports. Under their agreement with the State, they will relinquish their entitlement to supply from Millstream and this will reduce demand on Millstream and Harding Dam. A revised water supply agreement is being negotiated between the Water Corporation and RTIO. The provision of water from Bungaroo to meet other scheme demands will be subject to RTIO's demand for water. Revised operating rules for the scheme are yet to be finalised. The plan has been amended to include an action to revise these operating rules and revise the sustainable yield and reliability for the scheme.

Table 5 *Comments on regulation and legislation*

| Comment | Department of Water response |
|--|---|
| <p>Aligning regulatory approvals</p> <p>A few respondents commented on the department's approach to aligning regulatory approvals, with one noting that Section 4 identifies many of the regulatory and licensing matters of most interest for assessment and approval processes under the <i>Petroleum and Geothermal Energy Resources Act 1967</i>, <i>Petroleum Pipelines Act 1969</i> and <i>Mining Act 1978</i>. Other comments are below:</p> | |
| <p>i. Ensure the plan and <i>WA water in mining guideline</i> are consistent and that all Pilbara mining proponents are aware that the WA guideline will replace the Pilbara guideline and the approach in the plan will be applied where it differs.</p> <p>ii. Government should strive to remove duplication and deliver timely and transparent approvals, with the department</p> | <p>i. The plan and guideline (DoW 2013c) are generally consistent; however, we have further clarified specific issues for licensing in the Pilbara in the plan. Where these differ, the plan position will be applied in the Pilbara. We are letting stakeholders know that the WA guideline replaces the Pilbara guideline and acknowledge there will be a phase-out of it.</p> <p>ii. Ongoing work with other agencies and stakeholders when we develop processes and assess licence applications aims to</p> |

| Comment | Department of Water response |
|--|---|
| <p>facilitating cross agency coordination to deliver streamlined approvals processes where overlap occurs.</p> <p>iii. There is potential for misaligning GDE values in a regional and local context between agencies/regulators and the department should engage with OEPA to ensure appropriate alignment. We support a regional view in identifying GDEs.</p> | <p>align processes and streamline approvals and regulation where possible. The plan and <i>Western Australian water in mining guideline</i> clarify roles of government and note that, where overlap occurs, work may be aligned to meet multiple requirements.</p> <p>iii. As stated in Appendix B the department will consult with and take advice from the OEPA and Department of Environment Regulation (DER) on the conservation value of ecosystems. We will work with these agencies through this process to ensure advice is aligned.</p> |

Exemptions

Four respondents commented on exemptions from authorisations required under the *Rights in Water and Irrigation Act 1914*, with respondents welcoming the clarification for section 17 bed and banks permits and 26D licences for bores:

- | | |
|---|--|
| <p>i. Three respondents sought further clarification on how section 17 permit exemptions for mining projects differed for different types of mineral leases given that the plan provided different, additional detail on this matter than previous advice from the department.</p> <p>ii. Two respondents also sought clarification on when exemptions for section 26D licences are applied and how the type of aquifer affected this, as it is not mentioned in the exemption order.</p> <p>iii. Clarify whether this approach applies to projects developed under State Agreements.</p> | <p>i. To provide further clarification, we noted in the plan that the section 17 permit exemption for mining projects doesn't include general purpose leases. We also included miscellaneous licences but this is incorrect and has been removed from the plan.</p> <p>ii. The further clarification we provided was incorrect and we have amended the plan to be consistent with the exemption order.</p> <p>iii. This approach applies to State Agreements, unless specifically stated otherwise in the Agreement (such as whether the RIWI Act or any legislation is withstanding).</p> |
|---|--|

State Agreements and the Mining Act

A couple of respondents sought clarification on the plan's consideration of State Agreements:

- | | |
|---|---|
| <p>i. The plan should acknowledge legal complexities with regard to recognising existing rights, including State Agreements.</p> <p>ii. The plan, allocation limits and case-by-case assessment of fractured rock aquifers (where most mining occurs) require consideration of the conditions legislated in relevant State Agreements to ensure they are not contradictory.</p> | <p>i. We have amended the reference to other legislation in the plan (Section 4.1) to acknowledge that other legislation, including State Agreements, may affect application of the RIWI Act.</p> <p>ii. The allocation limits in the plan have made more water available from resources supplying Port Hedland, confirmed water available for the West Pilbara water supply scheme and are 'not set' for fractured rock aquifers. This is not contradictory with</p> |
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| Comment | Department of Water response |
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| <p>iii. Under the Mining Act the rights to take water both surface and groundwater are granted and sit within the grant of the mining tenement. Any ability to regulate under the Rights in Water and Irrigation Act is tempered by rights which overlap under the Mining Act.</p> | <p>provisions in State Agreements relating to water supply.</p> <p>iii. Section 85 of the Mining Act expressly defers to the RIWI Act, as does every other power to grant tenure (except a General Purpose Lease), and a licence is therefore required in regards to the abstraction of water. The department provided advice to industry clarifying this in mid-2012.</p> |

Table 6 *Comments on the general licensing approach*

| Comment | Department of Water response |
|---|---|
| <p>First-in first-served</p> | |
| <p>A few respondents commented on the first-in first-served approach and guidance for new and unproven water resources, including support for the clarification provided:</p> | |
| <p>i. It is still possible that proponents investing in resource development may not secure the amount of water required by the project, which is of particular concern where global and market conditions necessitate the delay of a project and water is not fully or partially available to the proponent when their project recommences. In consultation with industry, and perhaps through the department's first-in first-served policy review process, the department should set up a framework for developing formal agreements with proponents investigating resources to ensure their interests are assured while not hindering economic development.</p> <p>ii. It is expected that the department in determining who is first in time, would consider when tenement applications were made. The development of mineral resources is already allocated on a first in time basis.</p> <p>iii. The department needs to have a strategic focus on water allocations for residential</p> | <p>i. The department is committed to working with proponents on a case-by-case basis, considering commitments possibly made under State Agreements, to manage competing demands for water where projects are likely to proceed. The policy <i>Licensing applications for new or unproven resources</i> in the plan clarifies that we allocate water on a first-in first-served basis dependent on sufficient and timely submission of information. Mechanisms to set aside water for future or delayed projects are limited and are considered on a case-by-case basis. We would need to make sure other forms of development that could use the resource in the meantime were not unduly constrained. If aquifers are used as public water supply sources, the department may reserve water for future public supply. The department's statewide policy 5.01 (Managing water reserved for use by drinking water service providers) specifies that the department will only reserve water for future public water supply.</p> <p>ii. Tenement applications can be made well in advance of investigations required to support a 5C licence application. Refer to the response to the previous comment (refer to (i) above).</p> <p>iii. Existing supplies to Port Hedland and the West Pilbara are currently fully allocated to the Water Corporation (as the sole</p> |

| Comment | Department of Water response |
|---|--|
| <p>project development to support the Pilbara Cities vision and should consult with the Pilbara Development Commission when deciding how to allocate the last 30 per cent of water resources.</p> | <p>licensee) for scheme water supply to meet the needs of residential and industrial water users. Alongside the plan, the department has been preparing a regional water supply strategy to identify water supply options (DoW in prep.). The department has and will continue to consult broadly with stakeholders on allocation and water supply planning to make sure strategic directions of government are supported.</p> |

Test pumping

A couple of respondents commented on the test pumping guidance in the plan:

- The department should take caution in having a hard volumetric trigger for test pumping considering the highly variable nature of water resources and should not require test pumping to have a 5C licence.
- The department's approach is welcomed over setting hard limits for test pumping, which could be problematic due to the high permeability of Pilbara ore body aquifers.
- The recommended approach appears to enable the setting of a level agreed between the proponent and the Department of Water.

The 50 ML quoted is only a guide to indicate the general level of take for test pumping and the required authorisation. It has not been set as a hard volumetric trigger. Depending on the length of time, impacts and level of take associated with test pumping, a 5C licence may be required to ensure the take and impacts are appropriately managed. This is assessed on a case-by-case basis.

Fractured rock aquifers

Five respondents noted or commented on managing fractured rock aquifers:

- We recognise the challenges in identifying fractured rock aquifer characteristics including water availability, recharge and storage, the sustainable amount of water that can be taken each year, and the impacts of dewatering both over the short and long terms.
- The plan's approach is appropriate and consistent with the National Water Initiative (NWI) which notes that '...there may be special circumstances facing the minerals and petroleum sectors' that require approaches that account for factors such as '...isolation, relatively short project duration, water quality issues, and obligations to remediate and offset impacts...'
- Suggest the plan text (pages 16 and 33) note the requirement for stakeholder consultation on the proposal as not all applicants will be mining and therefore the

We agree and welcome the support for the approach set out in the plan. The plan has been amended to add that the department can provide guidance for non-mining projects.

| Comment | Department of Water response |
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| <i>Western Australian water in mining guideline</i> would not apply. | |

Question

On page 14 it says that ‘Allocation limits are not set for fractured rock aquifers due to their inherent nature and how water is abstracted for mining purposes (Section 3.2).’ What is ‘inherent nature’ and how does the nature of abstraction for mining preclude the need for allocation limits?

In Section 3.2 we explain this further. An allocation limit is an annual volume of water that can be taken from a resource, a sustainable amount. The structure of fractured rock aquifers means that allocation limits are difficult to set because it is technically difficult to identify the water available from, recharge to and storage of the fractures. Also, abstraction from fractured rock aquifers associated with mining often requires dewatering of the aquifer, which can be unsustainable and therefore not compatible with the concept of an allocation limit as an annual sustainable amount that can be taken from the aquifer. This type of use, in these types of aquifers, is better managed on a case-by-case basis through the department’s licensing process and the environmental approvals required under the EP Act.

Other general policies

Four respondents also commented on other general licensing policies, with one supporting the adaptive management of potential impacts:

- i. The department is encouraged not to duplicate mine closure policies already regulated by other agencies, such as the requirement for mine closure plans which may prove impractical and excessive in numerous scenarios.
- ii. The water source options wording (page 30 of plan) suggests that industry use is not a high value usage and while it is agreed that lower water quality is usually acceptable for industry use, it provides a high return to the state even though it is often perceived as a low value use.
- iii. Clarify that where an applicant does not have legal access to land, that the letter of undertaking from the Minister has a limited timeframe for the applicant to comply (RiWI Schedule 1, Cl 9).

- i. We do not intend to duplicate mine closure planning through the policy provided. We provide specialist advice to DMP and OEPA on closure plans. If proponents require a licence during the mine closure phase we will use the mine closure plans produced to meet DMP requirements and issue licences compliant with the DMP approved closure plans.
- ii. This was not our intention and we agree with the comment provided. Drinking water quality sources are limited in coastal areas and we need to make sure that these needs are met. If lower quality water is available and suitable for industry use it should be considered as an alternative.
- iii. We have amended text on legal access to land to clarify this point.

Table 7 *Comments and questions on managing cumulative impacts*

| Comment | Department of Water response |
|--|---|
| Support | |
| <p>Eight respondents noted their support for our proposed approach to manage cumulative impacts, with most welcoming the department's commitments. Respondents noted that the approach requires:</p> <ul style="list-style-type: none"> • an across-agency coordinated approach • a robust information management system to gather and store sensitive data • mechanisms and principles that are sufficiently transferable and flexible to ensure they can be applied to other contexts if and when they emerge. | <p>The department welcomes support for this work. We have already worked on guidance for the Fortescue Marsh with the OEPA and DER, and we are scoping a project to progress the staged approach outlined in the plan. Stakeholder involvement (including mining and other government agencies) will be crucial, especially as some of the limiting factors have been varying expectations across industry, and constraints to sharing data.</p> |
| Other comments are below: | |
| <ol style="list-style-type: none"> i. The plan and supporting documents inadequately explain or reference cumulative impact management of mine dewatering processes. ii. The current 'ad hoc' approach has left noticeable gaps in what would usefully be an integrated process. iii. it appears that water allocation planning is not required where there is only one interest taking water (i.e. mining), but this fails to address the increasing competition for water between adjoining mines and impacts on ecosystems iv. The difference between water allocation planning (as set out in the NWI) and the licensing process proposed appears to be that the plan and guidelines shift responsibility to assess and identify cumulative impacts to the proponent. v. The plan's commitments are similar to those made in the Pilbara Regional Water Plan, which have not been actioned and there is no clear commitment to progress this issue. | <ol style="list-style-type: none"> i. & ii Management of mine dewatering is addressed in the water in mining guideline. Processes to deliver integrated management of cumulative impacts are outside the scope of this plan. However, the water aspects are being considered as a separate project following on from the plan. iii. Increasing competition for water is considered through water supply planning and impacts on ecosystems will continue to be considered as part of the department's licence assessment process. iv. Regulatory agencies will continue to assess and grant licences/projects based on information provided by proponents. This is appropriate given the number, scale and nature of developments and is consistent with provisions made in the NWI. v. The Fortescue Marsh Guideline was largely a response to the comments received on the regional plan and the mining guideline. While its release was delayed, the department is scoping further work, as described in the plan. |
| Subregions | |
| A few of the respondents commented on the development of subregions: | |
| <ol style="list-style-type: none"> i. The plan could have included more of the basic information to identify the subregions potentially affected, especially for Indigenous interests in water. | <ol style="list-style-type: none"> i. There are clearly some areas that already experience or have obvious potential to experience cumulative impacts such as the Fortescue Marsh, Marillana Creek and Weeli Wolli Springs and the Hamersley area of the Millstream aquifer. However boundaries need to be defined and other potential areas identified. This work would |

| Comment | Department of Water response |
|---|---|
| <p>ii. Subregions need to be based on risk assessment that considers both current and potential location of cumulative impacts and consider impacts on economic and social values, not just the environment.</p> <p>iii. Objectives for each subregion should be based on the values that may be impacted, which should be identified and agreed amongst all key stakeholders.</p> <p>iv. Any process for the identification of values needs to acknowledge that access to certain tenure to identify values may be limited or restricted for certain stakeholders.</p> | <p>be an initial step of a follow up project, as identified in the plan.</p> <p>ii. As above. A DoW project would initially focus on water and water related impacts.</p> <p>iii. Agreed. This work has already been done for the Fortescue Marsh area.</p> <p>iv. Noted.</p> |
| <p>Question</p> <p>How extensive will the subregions be, what process of stakeholder engagement will be undertaken and what will be the breadth of the guidance?</p> | <p>Scale of subregions or management areas would vary across the region. The department would work with stakeholders to prioritise areas.</p> |
| <p>Fortescue Marsh Guideline</p> <p>One respondent commented that the Fortescue Marsh Guideline:</p> <p>i. appears to only provide guidance and not a prescriptive management plan or policy, so the authority of the guideline is uncertain</p> <p>ii. is limited as it focuses not on formulating an integrated resources approach but on mining and related activities and therefore it won't consider issues such as pastoral activities, Indigenous interests and tourism, which seems at odds with the plan.</p> | <p>i. The intent of the guideline is to provide a clear set of environmental or water objectives and provide a framework for aligned management. Its success will depend on whether it is applied by government and industry.</p> <p>ii. The guideline was intended to focus on mining as the dominant influence on water management issues for the area. We will use the guideline to inform water assessment and licensing, and provide advice to other agencies on the Fortescue Marsh area.</p> |
| <p>Suggestions</p> <p>Four respondents made suggestions, saying that developing a process for managing cumulative impacts should do the following:</p> <ul style="list-style-type: none"> • Clarify and define the Government's role in facilitating the management of cumulative impacts. • Establish clear expectations (on the part of regulators, water users, and other key stakeholders) within relevant subregions. • Achieve critical alignment amongst regulators, with all regulators being brought | <p>We appreciate all of the suggestions, comments and support for developing a process for managing the cumulative impacts to the water regime. We will consider these, as appropriate, in scoping and developing a project to progress management of cumulative impacts of water drawdown and release. This would provide a basis for broader engagement and alignment across government and industry.</p> |

| Comment | Department of Water response |
|--|------------------------------|
| <p>together when liaising with mining interests on these matters.</p> <ul style="list-style-type: none"> • Not just consider the position to date of requiring bilateral (proponent to proponent) planning, management and resolution of cumulative impacts issues. • Ensure effective engagement with key proponents is maintained throughout the development of the framework. • Be pragmatic and consider appropriate management approaches for different catchment circumstances. • Consider impacts on other water users and licensees • Include urgent research on requirements for a data-sharing process as it underpins the subregion planning approach. • Determine a reasonable temporal context for assessments (a medium- to long-term scope acknowledges the role of factors affecting significant environmental variation such as flood and fire), which requires the appropriate science to address issues of sustainable ecosystems' resilience and provide a robust, endorsed approach to managing this issue. | |

Table 8 *Comments on mine dewatering surplus*

| Comment | Department of Water response |
|---|--|
| <p>Five respondents commented on the use of mine dewatering surplus, with most supporting clarification of the issue and the department's support. Other comments are below:</p> <ol style="list-style-type: none"> i. The plan should refer to the department's draft Strategic Policy on use of mine dewatering surplus (page 33) and say that when finalised that this policy will apply. ii. It is important that this represents a whole-of-government view, as the uses of the surplus water can cross portfolio boundaries (e.g. agriculture, water service provision, regional development). iii. The on-use of mine dewater is not currently referenced to broad water allocation planning when there are benefits in integrating the concepts, not least in gaining an insight into the total water balance and water 'opportunities' in an area. iv. A number of pieces of legislation can | <ol style="list-style-type: none"> i. We have now included reference to the department's dewatering policy. The plan is consistent with the strategic policy. ii. The strategic policy has been developed to acknowledge and where possible address cross agency boundaries. iii. The allocation limits section of the plan focuses on resources that are currently or have immediate potential to become sources to coastal demand centres. Opportunities for suitable use of dewater including as water supply are addressed in the dewatering policy. iv. & v. The department has obtained advice |

| Comment | Department of Water response |
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| <p>potentially create constraints on the use of dewater for non-mining purposes, with the major one being the Mining Act, where the tenure under the Act has limitations as to what the land and, therefore, water can be used for.</p> <p>v. In 2012 a report commissioned by the National Water Commission recommended that mine approvals should be flexible to deal with on-supply of surplus water and that 'legislative barriers to the on-supply of excess mine water should be removed in all jurisdictions' so that beneficial use is facilitated rather than impeded.</p> | <p>that neither the RIWI Act nor the Mining Act present legislative impediments to the use of dewater for non-mining purposes if there is another lawful source of authority for such use. The department's strategic dewatering policy provides additional clarity.</p> |

Table 9 *Comments and questions on the lower Yule and De Grey aquifers*

| Comment | Department of Water response |
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| <p>With the Lower De Grey groundwater model not accounting for Atlas' modelling results and only including monitoring data up to 2009, it does not include potential responses from dewatering operations at the Pardoo mine site and the trigger levels may be inaccurate in the short term.</p> | <p>Trigger levels were developed to represent the predicted range of tolerances of dependent ecosystems. We used historical groundwater levels and results of the Yule pumping trial and other relevant studies. The data used were appropriate for the purpose of identifying ecosystem triggers. If groundwater levels fall below trigger levels as a result of additional abstraction this does not necessarily indicate that the trigger levels are inaccurate. It could mean groundwater levels are outside the predicted range of ecosystem tolerances. The triggers will be applied as part of an adaptive management framework that includes review of the triggers if monitoring data shows that this is necessary.</p> |

Table 10 *Comments and questions on the Millstream aquifer*

| Comment | Department of Water response |
|---|--|
| <p>Three respondents commented on managing the Millstream aquifer, with some support for the policies in the plan:</p> <p>i. The Millstream water management plan (Welker 1998) provided inadequate when, in the early 2000s, the Millstream aquifer filled to a higher level than previously recorded. The management plan may need updating during the life of this plan.</p> <p>ii. Water quality issues often compromise optimum water use from Harding Dam which further increases the occurrence of overdrawing the Millstream aquifer.</p> | <p>i. The final plan includes revised management criteria for the Millstream aquifer. These criteria and the supporting methods report replace the Millstream water management plan.</p> <p>ii. We acknowledge that water quality is an issue for Harding Dam at low storage levels. We work with the Water Corporation to actively manage take from the two sources. In the medium term, the demand</p> |

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|---|---|
| <p>iii. Use is entirely for potable supply with little evidence of allocation for environmental or cultural uses including sustainable Indigenous farming practices.</p> <p>iv. The criteria refer to the target aquifer levels and discharge quantities as being those listed in the 'Directory of Important Wetlands (EA 2001)' in which it was difficult to find any such reference and is perhaps no longer a suitable benchmark with it being from known data 12 years ago in an environment subject to significant climate variability and growing demand pressures.</p> <p>v. The maximum draw from Millstream (15 GL/yr) is 250% beyond the reliable 6 GL/yr. With Harding Dam and Millstream aquifer so close, they are very often recharged by the same events and in successive dry years there is in effect a double negative impact on Millstream – excessive draw way beyond recommended levels and nil recharge. Accelerating the potential extensions of the Bungaroo scheme is encouraged as alternate, more reliable sources than the Harding Dam.</p> <p>vi. The Yindjibarndi Aboriginal Corporation (YAC) requested it be provided an opportunity for review and input to the triennial report from the Millstream-Harding Consultative Committee (MHCC) to the EPA on the management of the Millstream and Harding Dam resources and suggested that the scope of the report be expanded to include catchment management in the Millstream National Park.</p> <p>vii. YAC requested a position on the MHCC to ensure its traditional owner representation of water related matters (particularly Millstream) is ongoing and consistent and suggested that input from YAC could also be provided to the subsidiary technical working group.</p> <p>viii. The YAC would like to contribute to the</p> | <p>on Millstream will be alleviated by water supplemented from the Bungaroo bore field, from August 2013 onwards.</p> <p>iii. Water for the environment and cultural values (non-consumptive) of Millstream is not allocated but left in the system so it is not available to be allocated for consumptive uses. Sufficient water for environmental and cultural uses is provided through applying minimum operating levels and groundwater level criteria that limit allocation and maintain adequate discharge to wetlands and groundwater levels for riparian vegetation.</p> <p>iv. Target aquifer levels and criteria were revised for this plan based on site-specific groundwater modelling and monitoring data. The <i>Directory of important wetlands</i> identifies the sites to protect (part of the resource objective), not the criteria. The listing of the Millstream wetlands on the directory demonstrates that this site is recognised at a national level.</p> <p>v. The 6 GL/yr is an average amount that over the long term can be reliably taken from the aquifer and is not intended to be used as an annual total allocation. The reliable allocation was calculated recognising the variability in recharge to guide source planning. Water available to supplement the scheme from Bungaroo from August 2013 reduces the take from Millstream. Increases to the allocation limit for the Bungaroo resource beyond the current 10GL/yr limit will be based on consideration of how the aquifer responds to the initial rates of abstraction.</p> <p>vi. YAC are provided membership on the MHCC and this includes opportunity to review the triennial report. The current scope of the report is defined by the reporting requirements to the EPA.</p> <p>vii. YAC are provided membership on the MHCC.</p> <p>viii. The department's Pilbara region has</p> |
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wider catchment management issues including pollution from some of the camping and tourist activities at Millstream and along the Fortescue River and Gregory's Gorge area and significant tree deaths along the river, as it is a significant issue in managing the integrity of the water quality and the ecological and environmental values of this unique area.

previously and continues to welcome the opportunity to further work with YAC in addressing wider catchment management issues and suggest YAC also continue to engage with Department of Parks and Wildlife (DPaW) on these matters.

Questions

1. How do the local licensing policies for Millstream (Table 6 of the plan) take account of the Bungaroo resource?
2. What is the purpose of the condition to supplement pool outflow, was the maintenance of the pools a base for allocation in the aquifer and, if pool water balances are affected, would this suggest bridging licensing conditions?

1. The local policies in Table 6 of the plan are for Millstream only. Operating rules for the West Pilbara water supply scheme will be reviewed in 2013 and rules for incorporating water from Bungaroo will be part of this review.
2. Supplementing pool outflows is a response triggered when flows decline below levels considered adequate to maintain downstream environments. Supplementation and the triggers for supplementation are included in the operating strategy for the scheme.

Table 11 *Comments on the Lower Bungaroo Valley aquifer*

| Comment | Department of Water response |
|---|--|
| <p>Four respondents commented on managing the Lower Bungaroo Valley aquifer:</p> <ol style="list-style-type: none"> i. It should be discussed in more detail throughout the plan, including Figure 1 (water supply schemes) and allocation limit components, due to its significance as a potential public water supply source and the current works being carried out. ii. The statements on reserving the next 15 GL/yr from Bungaroo for public water supply (page 21) are too speculative and should be modified to encompass the uncertainty in the reliable long-term yield. iii. Suggest having a separate discussion on the detail of supplementation from the Lower Bungaroo Valley (page 40). iv. Dewatering in the upper catchment may affect water available in the Lower Bungaroo Valley, depending on how the Bungaroo Creek catchment and recharge is to be managed. v. Excess water produced in dewatering the | <ol style="list-style-type: none"> i. Greater detail on the implications for the West Pilbara Water Supply Scheme (WPWSS) of the current and future development of the lower Bungaroo Valley will be provided in the Pilbara water supply strategy. We have clarified the supply from Bungaroo in consultation with Rio Tinto. ii. We agree and have modified the statements in the plan. iii. We have included more detail throughout rather than include a new section. Arrangements for supplementation of the WPWSS and revised operating rules for the scheme are yet to be confirmed. We have added review of the reliability of the scheme and operating rules as an action of the plan. iv. We will work with proponents of projects in the Upper Bungaroo catchment to address management of potential risks to the lower Bungaroo valley aquifer. v. We are considering alternative options |

| Comment | Department of Water response |
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| upper catchment could be contributed directly to the public water supply allocation and the plan should not preclude such options or constrain access to mineral resources in this catchment. | such as the use of dewater for public water supply (provided source protection issues are addressed) and/or industrial use. This is consistent with our policy in the plan on assessing licences for mine dewater and the use of dewater surplus. |
| vi. It is unclear how the allocation limit for the Lower Bungaroo Valley aquifer was derived and there are no modelling results available online. | vi. The department set the allocation limit for the Lower Bungaroo Valley based on our assessment of Rio Tinto's investigations submitted with their licence application. As this was through licence assessment, this information has not been published. |
| Question | |
| 1. How will the department assess and manage licence applications outside of the allocated area but which may impact on an aquifer that is notionally fully allocated? | 1. We assess and manage licences to prevent or mitigate potential impacts on water supply sources. Proponents will need to demonstrate that they can manage projects adjacent to water supply sources to prevent impacts on supply capacity and water quality. |
| 2. What are the 'other' aquifers on the northern flanks of the Hamersley Ranges related to the possible Bungaroo extension areas (page 21 of plan). | 2. The department is undertaking a Royalties for Regions funded project to review available information and this will identify any potential alluvial aquifers within and on the flanks of the Hamersley Range similar to the Bungaroo Aquifer. |

Table 12 *Comments and questions on the West Canning Basin*

| Comment | Department of Water response |
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| Boundaries and hydrogeology | |
| A couple of respondents commented on the boundaries for the West Canning Basin: | |
| i. The West Canning Basin seems arbitrarily broken into three subareas. | i. The majority of the Canning-Wallal is covered by the West Canning subarea, with only a small portion in the East Pilbara subarea, which is a legal boundary that can only be changed through proclamation. The Canning-Broome has its own subarea. We have amended the figures to make this clearer. |
| ii. The North-East part of the plan boundary should include the recharge areas to the Wallal Formation according to Philip Commander. | ii. We consider recharge when making licensing and allocation limit decisions and so it does not need to be included in the plan boundary. |
| iii. Suggest revising the West Canning Basin subarea boundaries to reflect groundwater conditions and the current knowledge of the aquifers so that meaningful management zones can be drawn and guidance on likely | iii. The subarea boundaries are administrative, not affecting management. The management zones may be amended as we find out more through investigations and monitoring from new use. |

| Comment | Department of Water response |
|---|--|
| <p>constraints and opportunities in relation to groundwater quality and potential yield can be shown.</p> <p>iv. The department should use current studies underway to reassess the conceptual hydrogeology of the West Canning Basin before finalising the allocation plan.</p> | <p>iv. The plan states that the department will use additional information to review allocation limits for the West Canning Basin as it becomes available and there is realised demand. The allocation limit was set using the information available at the time.</p> |
| Question | |
| <p>1. Is the top of the Wallal aquifer identified at the top of the Alexander Formation or the top of the Wallal Sandstone?</p> <p>2. What defines the coastal management zone? Is it based on elevation, geomorphology or hydrogeology?</p> | <p>1. We haven't identified the Alexander as a separate formation because there is generally good hydraulic connection through the Alexander to the Wallal Formation.</p> <p>2. The coastal management zone boundary was defined based on a distance of 10 km from the coast.</p> |
| Local policy | |
| <p>Three respondents commented on the local, management zone policy for the West Canning Basin:</p> | |
| <p>i. Maintaining a potentiometric head of 5 mAHD may be:</p> <ul style="list-style-type: none"> - inconsistent with directional advice on managing the interference between water users - too simplistic, given the variable depth to the base of the Wallal and hydraulic heads from west to east (a dynamic criterion may be more appropriate). <p>ii. Clarify the purpose for keeping the Wallal Aquifer confined in the southern area of the inland management zone.</p> <p>iii. Given the lack of environmental and social water requirements, clarify why a 5 m hydraulic head criterion above the base of the Jarlemai Siltstone is applied.</p> <p>iv. Pressure gauges are not applicable for Broome nor inland Wallal bores where the aquifer is not artesian. Modify to reflect suitable monitoring of water levels or pressure.</p> <p>v. Protection of pressure heads should be on a case-by-case basis as it is likely that there are areas where significant loss of pressure can be tolerated, and others where there are receptors sensitive to small pressure losses.</p> | <p>i. The 5 mAHD potentiometric head is not a management tool for managing interference between users. It has been set as a medium-term objective to maintain the aquifer as confined (and maintain resource storage capacity) and to manage the risks of seawater intrusion. This level was suitable given the information we had available and its purpose.</p> <p>ii. & iii We aim to maintain the aquifer as confined (where Jarlemai siltstone is present) to manage the risk of impacts to the aquifer's storage capacity and structure.</p> <p>iv. Agree and have amended the plan to be clarify this.</p> <p>v. We agree and that is the intent of the policy. The 5 mAHD level is to maintain the aquifer as confined, not for maintaining artesian pressure. Most areas have a ground level greater than 5 mAHD.</p> |

| Comment | Department of Water response |
|---|---|
| Managing interference between users | |
| A couple of respondents commented on our position on managing interference between water users in the West Canning Basin: | |
| i. Concerned with expectations that existing licences may have with regards to the right to maintain 'potentiometric head'. As far as we are aware, the department licenses groundwater allocation, but not the way it is accessed. | i. As discussed with stakeholders during development and review of the policy the intent is not to infer a right to maintain potentiometric head absolutely. Instead, it is to make sure that the water resource is managed fairly and equitably. In assessing licence applications we are required to consider a range of factors including how it is accessed and the potential effect that may have on the resource and existing and future users. |
| ii. Concern that the requirement for new licence applicants to consult and negotiate with existing water users to address any detrimental impacts could lead to protracted negotiations when considering and agreeing on cumulative impacts and may hinder equitable and effective development. Amend to minimise protracted negotiations and potential disputes over compensation. | ii. We have reworded the policy to provide clarity. Our intention is for any impacts to be negotiated between the new and existing users as part of the licence assessment process; however the final decision on abstraction and management is ours and we may include any mitigation requirements as conditions on the licence. |
| iii. We are concerned the current draft provisions do not provide agreed and measurable management objectives and introduce regulatory and policy inconsistency. | iii. The policy was developed in consultation (and agreement) with stakeholders. Our management objectives are clearly stated and are consistent in the level of detail with those set for other resources and the level of information we have for the West Canning Basin. |
| iv. The requirements for new licence applications to demonstrate how they will minimise any detrimental impacts to other users appears to contemplate that a reduction in potentiometric head is considered a detrimental impact. We do not believe that it would be considered a detrimental impact under the <i>Rights in Water and Irrigation Act 1914</i> . Clarify the definition of 'detrimental impact'. | iv. Determination of what constitutes a detrimental impact is done on a case-by-case basis. Consideration of detrimental impacts is only one of many factors considered in assessing licences and may not necessarily be determinative of whether or not a licence should be granted. |
| v. Request amendment of Section 5.3, and elsewhere, so that all licence applicants are treated equitably (as opposed to first licensee has rights to potentiometric head over subsequent licensees). | v. This is not our intent. Consideration of the potential impacts on existing users is one of many in assessing licence applications. See above responses also. |
| vi. Request amendments to ensure that the licensing process and conditions are supported by measured aquifer and environmental protection values. | vi. The aquifer levels and environmental values to be maintained will be specified as licence conditions or in operating strategies. This will be completed through our normal licence assessment process. |

| Comment | Department of Water response |
|--|--|
| <p>Questions</p> | |
| <p>1. Who will be responsible for overseeing the consultation and negotiations and is this reasonable or appropriate when considering that the resource is a resource for all?</p> | <p>1. Proponents will be required to consider ways to minimise their potential impacts to existing users and attempt to negotiate an agreed outcome with existing users should there be a significant impact. The department has the responsibility of making the decision to grant or refuse the licence, and to decide what conditions are to be applied.</p> |
| <p>2. Will an existing licensee profit from the entry of new licensees into the source, or have the ability to favour one licensee over another? We believe that it is appropriate for the department, not an existing licensee, to determine whether another licence holder may take from the source and under what conditions.</p> | <p>2. It is the department's responsibility to assess and grant licence entitlements in accordance with the RIWI Act and our assessment of applications under Section 7(2). Consideration of the potential impacts on existing users by licence applicants is one consideration of the assessment.</p> |
| <p>Suggestions</p> | |
| <p>Five respondents made suggestions for the West Canning Basin:</p> | |
| <p>i. Concern that proponents investigating the resource may not secure access to an amount required by the project.</p> | <p>i. Licences will be issued on a first-in first-served basis consistent with guidance provided in the plan regarding new or unproven resources.</p> |
| <p>ii. The plan could reference the potential to develop shale gas/liquid resources as a potential future impact, which has a high water demand for fracking activities and also potential contamination of aquifers.</p> | <p>ii. Information currently available on potential shale gas resources indicates that suitable areas occur outside of the plan area. For any developments that do proceed, we are currently providing input to DMP's draft policy titled <i>WA's onshore unconventional gas development framework</i>.</p> |
| <p>iii. Request that proponents can be required, as opposed to requested, to provide completed modelling work to the department to enable a more robust regional model.</p> | <p>iii. Proponents are required to provide modelling outputs and results as a part of hydrogeological reports to support licence assessment as per our statewide policy 5.12 on hydrogeological reporting. However, provision of complete models to help develop shared regional models is not a requirement.</p> |
| <p>iv. Suggest that a cumulative impact management approach be taken (similar to general approach in plan) and ascertain long term sustainable yields as it is identified as a potentially large resource and has generated considerable interest.</p> | <p>iv. Management of multiple users in the West Canning Basin will require a coordinated approach similar to managing cumulative impacts and consistent with management of resources with multiple users elsewhere in the State. Investigations, by the department and proponents, are currently underway and we will use the information to review allocation limits as it becomes available and as required.</p> |
| <p>v. The Eighty Mile Beach wetlands are referred to but not identified or explained. There is not a good hydrological or</p> | <p>v. The wetlands have been identified and mapped in the dataset held by the DPaW. They are considered wetlands consistent with the accepted definition of wetlands</p> |

| Comment | Department of Water response |
|--|---|
| hydrogeological understanding of how these features work or whether they are indeed wetlands so the plan should clearly state the lack of geographic mapping and technical understanding of the systems. | used by state government agencies. Information on their hydrology and connectivity with aquifers is limited. They are Ramsar listed wetlands and so this value needs to be recognised and protected in accordance with the Ramsar convention. |

Table 13 *Comments and questions on water for Indigenous and heritage values*

| Comment | Department of Water response |
|--|--|
| <p>Two respondents commented on Indigenous and heritage values, noting that Millstream's cultural, heritage and community values are of great significance to the Yindjibarndi people. Other comments are below:</p> <p>i. Request clarification on how Indigenous cultural and social values were identified and incorporated into determining the environmental water provision and what consultation was completed.</p> <p>ii. Request negotiation of a water allocation for Indigenous economic development consistent with the intent of the NWI and the United Nations Declaration on the Rights of Indigenous Peoples, to maintain Indigenous culture and wellbeing and facilitate Indigenous economic opportunities that will reduce Indigenous disadvantage.</p> <p>iii. Request negotiation and agreement on the Yindjibarndi Aboriginal Corporation sharing water allocation and management responsibility with the department for the Millstream Water Reserve.</p> <p>iv. The plan should identify the existence of groundwater-dependent heritage issues and resolution of conflict as an issue and that there are mechanisms (within or outside of the Department of Water's control) that are in place to manage this.</p> | <p>i. We consulted with traditional owner groups for the Regional plan and through the Water for the Future project from 2007 to 2010. This included meetings, on-country visits and, in the case of Yindjibarndi, provision of funding to support documentation of Indigenous cultural values. As indicated in Section 3 of the plan, the methods reports explain how environmental water was decided.</p> <p>ii. The Department of Water's established water licensing process, water allocation planning process and supporting policies provide clear pathways for access to water for commercial use by Indigenous water users in a way that is no different to the provision of access for non-Indigenous water users, as defined under the <i>Rights in Water and Irrigation Act 1914</i>. The department can provide support and advice for groups in regard to the licensing and assessment process.</p> <p>iii. The MHCC, and the Yindjibarndi as one of its members, provides for continued and ongoing stakeholder input into water and land management issues for the resource.</p> <p>iv. We have now included Native Title and Aboriginal heritage under other legislation in the plan. Potential impacts on registered sites of heritage significance are considered as part of our normal licence assessment process. Where necessary and appropriate operating strategies will need to include measures to address risk to registered sites.</p> |

Table 14 *Comments and questions on water supply planning*

| Comment | Department of Water response |
|---|---|
| <p>Five respondents commented on water supply planning, with some support for developing a water supply strategy for the Pilbara. Comments suggested the water supply planning strategy for the Pilbara should:</p> <ul style="list-style-type: none"> i. Include a new pipeline from Pardoo (West Canning Basin) as the highest priority to relieve the pressure on the Yule and De Grey bore fields. ii. Consider alternative investment strategies, including public private partnerships. iii. Involve the department liaising closely with the resources sector, which is both a major user and potential supplier of water in the region, to ensure that proposed solutions meet the needs of the industry. iv. Flag the need to investigate and consider the next source to the West Pilbara water supply scheme to ensure future demand is appropriately accommodated. v. Consider the potential water supply opportunity presented by the potential development of FMG's North Star project and magnetite slurry pipeline to Port Hedland where reclaimed water from the pipeline for industrial supplies could be used by industry. The department could negotiate licence conditions with FMG to facilitate a water use plan featuring reclamation at the port. | <ul style="list-style-type: none"> i. The Pilbara regional water supply strategy we are developing identifies development of the West Canning Basin as a priority to supplement supply to Port Hedland. Investigations and assessment around this are due to be completed in 2013. Development of the scheme will be dependent on industry demand and commitment of funding. ii. While the department has not been involved directly, alternate investment strategies including public private partnerships, have been used to fund previous water infrastructure projects. These are likely to continue to be an important way of securing investment in public water supply infrastructure. iii. We are developing the supply strategy in consultation with industry and other government agencies. iv. The department is currently investigating potential new sources for the West Pilbara water supply scheme and looking beyond current sources as part of current supply planning. v. We are open to consider a range of options to secure water supplies to Port Hedland, including fit-for-purpose sources and will work with other agencies and industry to explore all options. We are aware of the North Star project and are working with FMG to help secure their water needs. |

Table 15 *Comments and questions on water use efficiency at ports*

| Comment | Department of Water response |
|---|---|
| <p>Six respondents commented on water use efficiency at ports, noting support for and the existing measures put in place for water use efficiency:</p> <ul style="list-style-type: none"> i. Wasting water on iron ore stockpiles and roads must be paid for by the users. | <ul style="list-style-type: none"> i. Water supplied to port operators is provided under commercial agreements |

| Comment | Department of Water response |
|---|---|
| ii. Mining companies should shandy the water to 3000/5000 parts per million with saltwater from ocean. | and paid for. |
| iii. Generally, port operators only require water for dust suppression with TDS of 2000 to 3000 mg/L, which we would not consider to be high-quality. If higher-quality is used, it is because this water is inexpensive and readily available. | ii. A range of options for alternate water supplies have and are being considered including fit-for-purpose supplies. Given the salinity of seawater versus current supplies, shandying would not provide enough savings. |
| iv. As bulk handlers of iron ore, port operators should not be precluded from using potable water at coastal and port operations to operate and minimise the impacts of dust emissions on the local population. | iii. We agree. Guidance provided in the plan encourages efficient use of water and consideration of alternate fit-for-purpose sources if they are available and suitable. |
| v. Clarify whether the department's guideline will assist in the requirement for a Water Efficiency Management Plan (WEMP) to the Water Corporation or a Water Improvement Management Plan (WIMP) to the Office of the EPA. We discourage duplication and/or introduction of additional reporting. | iv. Port operators are not and will not be precluded from using potable water. See response (iii) above. |
| vi. We will continue to need high quality water at port operations. Importantly, although water use efficiency is recognised, water will be sourced under existing water supply agreements. Should we request an increase in our entitlement, the supplier will use best endeavours to supply the increase. | v. The draft guideline applies to both WEMPs and WIMPs and mainly elevates water efficiency and recycling initiatives higher into the project planning process. More and cheaper opportunities to achieve wise water use are gained from planning for efficient water use before infrastructure is built. There are no additional reporting requirements in the department's guideline. |
| vii. Given the critical value of water to port operations and the coastal scarcity of water, a transparent assessment of port water use should be undertaken. | vi. Allocation limits in the plan have increased the water available to Port Hedland and clarified water available to the West Pilbara water supply scheme. The agreements referred to recognise that the supplier requires a licence and that future demand is to be met from any unused portion of the safe yield of existing sources. We have used available demand projections including projected demand increases to assist in the development of the Pilbara water supply strategy. We encourage industrial water users to identify projected changes in demand with us as soon as possible. |
| | vii. Projected demand for water at ports has been incorporated into future resource management as part of the Pilbara water supply strategy. The department is developing a guideline on efficiency planning at ports (see response (v)). |

Table 16 *Comments and questions on water sharing/variable take*

| Comment | Department of Water response |
|---|---|
| <p>Two proponents commented on water sharing or variable take:</p> <ol style="list-style-type: none"> i. There seems to be a real recognition of the variability of the groundwater resource availability but an insufficient attempt to define a regular management response to that variability, with variable take rules for Millstream not yet defined (although to be included in the final plan) and other important (alluvial) aquifers do not seem to be subject to variable take rules. ii. Clarify how the variable allocation principles and concepts that could be applied to the target aquifers (or others) will be implemented and enforced. iii. Clarify how the department will consult with licensees for notifications of trigger and criteria levels and what mechanism will be used to enforce these levels. | <ol style="list-style-type: none"> i. Variable take rules can only be applied where there is flexibility in demand or sufficient alternate contingency sources and delivery infrastructure to meet demand. For the Yule aquifer, variable take rules have been developed due to the high risk associated with the full allocation and the highly variable recharge to this aquifer. Risks will be managed in other resources through alternate means such as redistributing take within bore fields. ii. Where applied, annual variation in take will be managed through post-wet season reviews in consultation with licensees. The management framework to implement this approach will be incorporated into operating strategies for relevant resources. iii. The department will meet with affected licensees to discuss the implementation of the trigger and criteria levels. The trigger and criteria levels will be incorporated into revised operating strategies for licences in the affected resources. |
| <p>Questions</p> | |
| <ol style="list-style-type: none"> 1. Should the allocation limits vary in times of high and low water storages over the life of the plan? Or does the department do this using the trigger and criteria levels (for monitoring the target aquifers) in the plan's Appendices. If this is the case then this could be highlighted as it is a superior management technique to allocating to a single volumetric allocation limit. 2. The NWI encourages jurisdictions to move to a 'capacity share' of aquifers and the target aquifers and Bungaroo seem suited to it as each only has one user with which to negotiate annual allocations. Is there an intention to manage the aquifers on an annual basis depending on seasonal conditions with these sole users? If so, perhaps this needs to be mentioned. 3. It is noted that when recharge for Yule fails there will be a reduction of the annual take to 8.5 GL, 85% of the nominal annual take. Is this a realistically flexible variable take? Why would it be limited to 85%? | <ol style="list-style-type: none"> 1.& 2. Variable take rules can only be applied where there is flexibility in demand or sufficient alternate contingency sources and infrastructure to meet demand. For most of the target aquifers we have developed a trigger and response framework to manage variability rather than change the allocation limit. This is more appropriate with only one or few users for each resource. This is consistent with clauses 34 and 35 of the NWI, which relate to the applicability of NWI provisions. 3. The reduction of about 80% of annual take to 8.5 GL from 10.5 GL is based on the assessment of risk (to the aquifer and dependent values) using a range of modelled scenarios. Given the range of sources available to the Port Hedland scheme and planned development of |

| Comment | Department of Water response |
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| | additional sources, this approach should be achievable. Additional information on the assessment of scenarios and risks of alternate allocation scenarios is provided in the <i>Lower De Grey and Yule groundwater allocation limits report</i> (DoW 2012a). |

Table 17 Comments and question on objectives and outcomes

| Comment | Department of Water response |
|---|---|
| <p>Four proponents commented on the plan's objectives and outcomes:</p> <p>i. Outcomes are in accordance with the objects of Part III of the RIWI Act; however, there is very little evidence of data to verify performance against these important outcomes for the Millstream aquifer, arguably one of the most important strategic water resources in the Pilbara.</p> <p>Chapter 2 quoted object of RIWI Act (object (a)(i)) refers to potable water only.</p> <p>ii. The first outcome of the plan should say "potable groundwater is available to support Pilbara cities development".</p> <p>iii. Suggest the first plan outcome under 2.1 should be 'there is certainty about how much water is available to support regional development, including the achievement of the Western Australian Government's Pilbara Cities vision'.</p> | <p>i. Our performance in achieving the desired outcomes will be measured against the specific resource objectives and performance indicators for each water resource including Millstream. The details of how our success will be measured and what monitoring will be undertaken is detailed in Chapters 6 and 7 of the plan and in the <i>Monitoring program to support the Pilbara groundwater allocation plan</i> (DoW 2013a).</p> <p>ii. Neither the Act (in this section) nor the plan solely or specifically refers to potable water only.</p> <p>iii. We disagree. The target resources in the plan include resources with a range of water qualities including non-potable sources that may be suitable as fit-for-purpose industrial supplies. This approach is also supported by the general policy section.</p> <p>iv. We disagree. This plan is to define water availability from aquifers which have the potential to provide town growth. The <i>Pilbara regional water supply strategy</i> (DoW in prep.) will present other water supply options to support the Pilbara Cities vision.</p> |
| <p>Question</p> <p>The water resource objectives seem to be constraints to resource development. Is there an overall objective to 'Maximise water resource use' subject to these listed constraints?</p> | <p>One outcome of the plan is: 'the availability of water is maximised given the particularly high economic values of the water supplies to the state'.</p> <p>The resource objectives are set to maintain ongoing productivity of the resource. As such, they do define the limits to maximising use in the short term because they support the ongoing, long-term productivity of the resource. See Section 2.2 for the relationship between objectives and outcomes.</p> |

Table 18 *Comments and questions on monitoring and measurement*

| Comment | Department of Water response |
|--|---|
| Monitoring | |
| <p>Five respondents commented on the monitoring proposed in the plan, with support for an appropriate monitoring program to ensure sustainable use of the resource:</p> | |
| <p>i. Licensee monitoring is shown under ‘currently unlicensed’ aquifers. If there are no allocations it implies that there is no licensee to do monitoring.</p> | <p>i. Monitoring consistent with that proposed in the plan will be a requirement for future licensees. Monitoring in some currently unlicensed aquifers is conducted by the department to collect baseline information on the water resources.</p> |
| <p>ii. Unaware of department monitoring in Broome and Wallal resources. Either reference properly or remove.</p> | <p>ii. The monitoring referred to is to be completed to support the implementation of the plan. Details of monitoring sites, frequencies etc are provided in the <i>Monitoring program to support the Pilbara groundwater allocation plan</i> (DoW 2013a).</p> |
| <p>iii. With regional monitoring programs progressively downsized over recent years, the plan should commit to ongoing funding of these programs.</p> | <p>iii. Funding arrangements aren’t appropriate for inclusion in an allocation plan. The monitoring program developed to support the plan is fully funded and, in the case of the groundwater monitoring, has been developed through refinement and improvement of the existing monitoring program to achieve better, targeted outcomes.</p> |
| <p>iv. Any reference to a bore should include the full reference (e.g. WCB25Y (Wallal), WCB25Z (Broome)) as bores are screened at different depths within different aquifers and some bores are dry.</p> | <p>iv. We agree and have amended references in Section 6 and appendices.</p> |
| <p>v. In Table 9, clarify the type of data to be collected at the nominated frequency (e.g. water pressure/level or quality).</p> | <p>v. Table 9 (now Table 8) of the plan already infers this information under the heading ‘Performance indicator’. Additional details are available in the monitoring program (see response ii above).</p> |
| <p>vi. Clarify the location of pools and monitoring bores with water level triggers.</p> | <p>vi. Locations and coordinates for pool and monitoring points have been incorporated into the monitoring program.</p> |
| <p>vii. There are no accepted or practical, best practice monitoring techniques that provide reliable information on vegetation response to drought, whether natural or induced. Without complex and expensive in situ plant physiological studies, there are limited tools to determine plant condition, and no predictive tools. If this is an expectation of regulators a best practice process should be included.</p> | <p>vii. Reliable information on vegetation response can be obtained through simpler techniques or remote sensing when coupled with adequate groundwater monitoring and incorporated into a well-designed monitoring program. Intensive ecophysiological techniques should only be used for targeted studies and are not generally suitable for ongoing regulatory monitoring.</p> |

| Comment | Department of Water response |
|---|---|
| Trigger and criteria levels (performance indicators) | |
| Five respondents commented on trigger and criteria levels: | |
| <ul style="list-style-type: none"> i. For the non-expert reader, the application of triggers and management responses (6.2 and Appendix A) are not easy to follow. ii. It is unclear if the groundwater levels and quality triggers and criteria apply to all groundwater licensees or only those related to the Port Hedland regional water supply scheme. iii. The water year should be April–March (not May–April). iv. Page 40, Table 5 says the water year is May–April, but in terms of regional rainfall it should be 1st October – 30th September (the allocation limits report use this). v. In Appendix A, the West Pilbara scheme and therefore Millstream are not covered. Hopefully it will be in the final plan. vi. The department should develop management responses for the Lower Robe and Lower Fortescue aquifers. vii. The De Grey criteria do not appear consistent with our understanding of the system. We investigated whether stage levels at Coolenar Pool could be used to set management triggers for the De Grey and Ridley aquifers and were advised by the department that the correlation between flow and the Ridley River aquifer was not strong enough. This approach seems inconsistent with this advice. | <ul style="list-style-type: none"> i. We have amended these sections to make application of the management framework clearer. ii. Trigger levels specified for the De Grey alluvial aquifer are intended to apply to any licensee operating within the resource or impacting on the resource. We will discuss implementation with affected licensees (see also response (v) in Table 20). iii. We are altering the water year to May–April to make sure wet seasons are captured in a single water year. This will be consistent across target aquifers and discussed with affected licensees. iv. Application of a water year from May to April will achieve a similar outcome to October to September in terms of capturing a full wet season. v. The final plan has trigger and criteria levels for Millstream in Appendix A. vi. Management responses for both the lower Fortescue and Robe alluvial aquifers have been developed. The lower Fortescue is currently licensed well below the allocation limit and the Robe has no current licensed take. vii. We checked the strength of the correlations between flow and aquifer levels as part of developing triggers and criteria. Details are in the EWR report for the lower De Grey River (DoW 2012a). |
| Questions | |
| <ul style="list-style-type: none"> 1. How will recharge classes and trigger levels be applied with a set up of a single allocation limit for the Lower Yule, De Grey, Robe and Fortescue alluvial aquifers? 2. Are the 5, 20 and 50 percentile | <ul style="list-style-type: none"> 1. The recharge classes and trigger levels are used to implement the appropriate management responses, which will incorporate changes in the distribution of take within the bore field and potentially use contingency sources. 2. The criteria are based on historical |

| Comment | Department of Water response |
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| <p>groundwater level criteria based on the historical sequence of levels, or have some wet years been removed to obtain them? Clarify how these levels relate to recharge, river flows and rainfall, all of which may have non-linear relationships (e.g. the 5 percentile rainfall may not produce the 5 percentile river flow, 5 percentile recharge and 5 percentile groundwater levels).</p> | <p>groundwater levels, incorporating a degree of the predicted response to additional abstraction. The occurrence of trigger and criteria levels in relation to recharge classes as defined by river flow correlate well. We will review the relationships as part of the monitoring and evaluation cycle of the plan. Rainfall does not correlate well with groundwater levels because the main source of recharge to most aquifers is river flow. Rainfall has not been used in defining classes or triggers and criteria.</p> |

Table 19 *Comments and questions on climate and hydrology*

| Comment | Department of Water response |
|---|--|
| <p>Climate</p> | |
| <p>Two respondents commented on a lack of basic climate data. Specifically that there is no:</p> <ul style="list-style-type: none"> • explanation or reference to data such as rainfall patterns and water resources flow and recharge, and there is no clear map of the groundwater-dependent ecosystems or locations of Indigenous values • explanation of the basic climate change effects and predictions, or a specific reference to where this is discussed in earlier documentation. | <p>We have included more reference to information on current climate and climate change predictions in explaining the methods used to set allocation limits at the beginning of Section 3. However, because the plan covers nine target aquifers, it is difficult and not appropriate to include large amounts of technical information in the allocation plan. Additional detail, including maps of GDE (where available), is provided in the supporting documents – such as the allocation limit reports referenced in the plan.</p> |
| <p>Questions</p> | |
| <ol style="list-style-type: none"> 1. Does a short planning horizon (plan life), mean that climate change has not been considered in setting any of the limits? 2. A 'highly variable climate' is mentioned in Section 2, but climate change is not considered in the plan. Are no trends in temperature, rainfall or potential evaporation expected in future? | <ol style="list-style-type: none"> 1. Climate change predictions for the Pilbara are less conclusive than for other parts of the state. In our modelling we included 'worst case' scenarios of a drier climate but our allocation decisions were primarily based on climate scenarios modelled on a continuation of the recent historical climate. 2. The highly variable climate mentioned in Section 2 refers to variability (year to year) in the current climate. Also see 1. above. |
| <p>Surface water–groundwater connectivity</p> | |
| <p>One respondent commented on surface water–groundwater connectivity:</p> <ol style="list-style-type: none"> i. There does not appear to be any recognition of surface water as the main source of recharge and groundwater | <ol style="list-style-type: none"> i. The management framework for most of the target aquifers is closely linked to river flow through using recharge classes and related groundwater level triggers and criteria. This is because surface water flow is the main source of recharge to these |

| Comment | Department of Water response |
|--|--|
| <p>baseflow as the main source of spring flow and pool maintenance. Nor of the possibility that streamflow will be impacted by climate change which could impact recharge to aquifers.</p> <p>ii. In other jurisdictions, catchment based integrated water plans are common; numerical models are available which can assess impacts on groundwater recharge and river/spring baseflow using meteorological data, digital terrain models, GIS and streamflow/springflow data. This may be a future action that the department may wish to consider supported by the various iron ore mining companies.</p> | <p>aquifers. In determining allocation limits we reviewed the results of a 'dry climate' scenario. Additional details are provided in the allocation limit reports.</p> <p>ii. Details of the modelling approaches (groundwater and surface water) used for each aquifer are provided in supporting documents to the plan including numerical groundwater modelling reports. The department is a project partner in the Pilbara water resource assessment project (hosted by CSIRO) that is further developing groundwater and surface water modelling for the target resources.</p> |

Question

Has any consideration been given to the development of an integrated groundwater/surface water plan recognising that they are interconnected?

We recognise that groundwater and surface water are interconnected. We have used surface water flow information to determine recharge to target aquifers, so the connectivity informs this plan. However, apart from Harding Dam water for use is taken from groundwater. Conditions on release of dewater to surface water systems is managed through the licence or through advice from other regulators as appropriate. The licensing for Harding Dam and Millstream is integrated.

Table 20 *Comments and question on implementing and evaluating the plan*

| Comment | Department of Water response |
|---|--|
| <h3>Implementing the plan</h3> | |
| <p>Four respondents commented on implementing the plan:</p> <p>i. Suggest further clarifying Policy 5.3 by identifying the mechanism for review of the status of scheme resources and the precision of an annual statement (summary).</p> <p>ii. Clarify the timeline of Action 5 (updating operation strategies with new monitoring requirements).</p> <p>iii. Request a timeframe for actions 12 and 13 (allocation limit reviews) in line with the planned completion of the Royalties for</p> | <p>i. The department will use available monitoring data and existing reporting mechanisms to complete the annual evaluation. It will focus on assessing the current status of the scheme sources and identify the likelihood of management issues for the coming 12 months. The requirement will be incorporated into a revised operating strategy for the scheme. We will work with affected licensees to revise operating strategies and clarify reporting requirements.</p> <p>ii. We anticipate operating strategies will be revised as licences come up for renewal. We will work with affected licensees to revise the operating strategies.</p> <p>iii. These were amended. The West Canning Basin – Sandfire (part of the Water for Pilbara Cities project) will be completed in</p> |

| Comment | Department of Water response |
|---|---|
| Regions project. | early 2016 and the Hamersley Ranges project will be completed in 2014. Allocation limit reviews will follow completion of this work. However, revision of the allocation limit could be completed earlier if supported (and necessary) by information provided by licence applicants. |
| iv. Suggest that the resourcing commitments and a reporting process are detailed. | iv. Details of resourcing are not included in allocation plans. The department is committed to the actions detailed in the plan. Evaluation processes are detailed in the plan and the monitoring program. |
| v. Confirm that existing approvals will not be subjected to this plan and only future approvals will be managed through the plan. | v. Existing licences and conditions on licences will not be altered. However, if and when licences are renewed, we will review licences in consideration of the plan. |

Question

Strategy 1 indicates that single volumetric allocation limits will be the main management tool for the life of the plan. Or do the subsequent policies allow for these limits to be varied according to seasonal conditions in which case Strategy 1 may not be met?

Volumetric allocation limits and management of licences in accordance with the local policies (strategy 2) detailed in the plan are both key parts of the management framework for the life of the plan. Our management framework for Millstream and alluvial aquifers incorporates variability.

Evaluating the plan

Three respondents commented on plan evaluation:

- | | |
|--|---|
| i. Suggest the resource objective evaluations be more flexible due to ongoing scheme reviews and resource investigations. In particular, how resource objectives are met through sites, performance indicators and frequency of data collection. | i. We have developed the monitoring program to specifically support evaluation against resource objectives and it is a required part of plan implementation. We have detailed the program in the plan to provide transparency. We will discuss the implications with licensees as part of plan implementation. We will also evaluate the monitoring program and adapt if required. |
| ii. Annual updates should be provided to stakeholders as 3 years is too long to report. A regional panel of resource industry, agriculture, conservation, community and Indigenous representatives should be formed to assess the department's performance against the objectives and oversee plan delivery. | ii. iii & iv Evaluation of the department's performance against the actions in the plan and status of the resources will be completed annually, but given the number of plans across the state and resources required, publishing evaluation statements will be completed every three years (unless otherwise triggered). We will consult on the status of the plan as required based on the outcomes of our evaluations. Evaluations will show whether we have met the performance indicators for each water resource management objective. More specific measures will be included on licences and included in reporting requirements, which we will use in our |
| iii. The department should provide the opportunity for stakeholder input into periodic evaluation statements. | |
| iv. Request the department include express measures for its periodic evaluation statements within the plan. | |

| Comment | Department of Water response |
|---------|------------------------------|
| | annual evaluations. |

Table 21 *Comments and question on related plans and strategies*

| Comment | Department of Water response |
|---|--|
| <p>One proponent commented on water resource protection plans:</p> <ul style="list-style-type: none"> i. Request that the Bungaroo Creek, Southern Fortescue and Marandoo water source protection plans be proclaimed and gazetted in accordance with the recommendations of the respective plans to ensure the proper protections are afforded these drinking water sources. ii. Further clarify the statement on page 8 of the plan with regard to the regulatory arrangements for operators of private drinking water sources. We support the continued application of the Memorandum from the State Mining Engineer dated 14 July 2008. | <ul style="list-style-type: none"> i. Proclamation of the Southern Fortescue and Marandoo public drinking water source area is underway and Bungaroo will be commenced as soon as possible. This will occur under the <i>Country Areas Water Supply Act 1947</i> and will be undertaken as recommended in the publicly consulted drinking water source protection plans. ii. We have clarified this section of the plan. |
| <p>Question</p> <p>If the <i>Pilbara Regional Water Plan 2010–2030</i> is no longer supported by the department, should it be referenced as a key supporting document?</p> | <p>The Pilbara regional plan is current and is supported by the department. The development of the <i>Pilbara groundwater allocation plan</i> was a commitment of the regional plan and has built on the work completed as part of the regional planning exercise.</p> |

Where to next?

Where indicated, responses have been incorporated in the final *Pilbara groundwater allocation plan*. The plan is available from the department's website <www.water.wa.gov.au/allocationplanning>. It outlines how the department will allocate and manage groundwater resources in the Pilbara region through allocation limits, licensing assessment, monitoring and evaluation.

Further information

For licensing information, please contact our:

Karratha Regional office
 Lot 4608 Cherratta Road Karratha WA 6714
 Phone 08 9144 0200

For planning information, please contact our:

Water Allocation planning branch
 Phone 08 6364 7600
 Email .wa.gov.au

Shortened forms

| | |
|-------|--|
| AHD | Australian Height Datum |
| CIM | Cumulative impact management |
| CSIRO | The Commonwealth Scientific and Industrial Research Organisation |
| DER | Department of Environment Regulation |
| DIWA | Directory of Important Wetlands in Australia |
| DMP | Department of Mining and Petroleum |
| DoW | Department of Water |
| DPaW | Department of Parks and Wildlife |
| EA | Environment Australia |
| EPA | Environmental Protection Authority |
| EWR | Environmental water requirement/s |
| FMG | Fortescue Metals Group Ltd |
| GDE | Groundwater-dependent ecosystem |
| GIS | Geographic Information System |
| MHCC | Millstream-Harding Consultative Committee |
| NWI | National Water Initiative |
| OEPA | Office of the Environmental Protection Authority |
| RTIO | Rio Tinto Iron Ore |
| RIWI | <i>Rights in Water and Irrigation Act 1914 (WA)</i> |
| TDS | total dissolved salts or solids |
| UWA | University of Western Australia |
| WEMP | Water Efficiency Management Plan |
| WIMP | Water Improvement Management Plan |
| WPWSS | West Pilbara water supply scheme |
| YAC | Yindjibarndi Aboriginal Corporation |

Volumes of water

| | | | |
|-----------------------------|----------------------|-------------|------|
| One litre | 1 litre | 1 litre | (L) |
| One thousand litres | 1000 litres | 1 kilolitre | (kL) |
| One million litres | 1 000 000 litres | 1 megalitre | (ML) |
| One thousand million litres | 1 000 000 000 litres | 1 gigalitre | (GL) |

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RECYCLED CONTENT

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