RURAL IRRIGATION PRICE REVIEW

ASSESSMENT OF HYDROLOGIC FACTORS - GIRU BENEFITTED AREA

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OBJECTIVES

• To provide hydrologic advice to the QCA to assist in apportionment of costs between customer groups
• To provide an independent review of the submitted GBA hydrologic study
• To advise on the proportion of water delivered by natural recharge of the aquifer to GBA users compared to that from supplemented releases

Noted that review of non-hydrologic factors is beyond the scope of the review
• Issues identified include:
  • Poor description of data, assumptions and calculations used in the model
  • Evaporation effects not well configured
  • Demand pattern is ‘lumpy’
  • Effect of local rain ignored
  • Shift of extraction to direct from surface water not assessed
  • Weir operating levels are high
  • No weir outlet rating curves included
  • Ground-surface water interchange rules ignore groundwater level
  • ROL passflow release rule (40 ML/d) not included
  • Unsupplemented case still includes weirs
  • Limited calibration

• In summary, significant issues identified – use of model for pricing not recommended.
A BASIS FOR PRICING - THE MODEL

• Use of model for pricing is not recommended - Nevertheless, an assessment of the reported results was performed.

• For the unsupplemented case to provide a valid measure of unsupplemented yield, it must provide the same:
  • Allocation performance, and
  • Environmental performance

• Allocation performance
  • 30% and 50% unsupplemented cases do deliver the indicated demand – same allocation performance as supplemented case
  • However, some difference in access (surface vs groundwater)
ENVIRONMENTAL PERFORMANCE

• Key indicators:
  • Water Plan Environmental Flow Objectives (EFOs)
  • Aquifer level
• Water Plan EFOs are complex, and no EFO stats presented in the report
• But - the 40 ML/d passflow rule is likely to be a ~proxy for the EFOs
• Passflow performance in the model:

<table>
<thead>
<tr>
<th>Case</th>
<th>% Days Passflow Compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplemented</td>
<td>59%</td>
</tr>
<tr>
<td>Unsupplemented, 50% Demand</td>
<td>60%</td>
</tr>
<tr>
<td>Unsupplemented, 30% Demand</td>
<td>60%</td>
</tr>
</tbody>
</table>
Aquifer Level Performance

![Graph showing bore level performance over time with different conditions and demand levels.](Bore_11900058.png)
Aquifer Levels — Ranked Plot

GBA Aquifer

Level (m)

Percent Exceedance

Base - Sup 100%  Unsup 50%
Unsup 30%  Unsup 15%
Unsup 10%  Unsup 5%
Unsup 0%
**Release Data**

- OD Hydrology Report
  - 68,000 ML recorded release over 2 years 2016 and 2017
  - Modelled average demand 34,500 ML/a
  - Roughly 1:1 release:diversion ratio
- Kavanagh Report – presents historical data
  - Roughly 1:1 release:diversion ratio over 1997-2016
  - Roughly 1.4:1.0 release:diversion ratio over dry period 2011-2014
- Release data does not appear to indicate that natural flows are significantly contributing
CONCLUSIONS

• Significant issues with model – use (without upgrade) is not recommended
• Submitted release data tends to indicate little contribution from natural flows
• Model results, while questionable, also indicate little contribution from natural flows
• Therefore, there does not appear to be a strong hydrologic basis for differential pricing between MP allocations (including the GBA) in the BH Channel Distribution System
Questions ?