



# International Association of Hydrogeologists

WESTERN AUSTRALIAN BRANCH

**Monday 29 August 2005 meeting**

**Offshore Production – Onshore Falling Water Levels:  
Gippsland Basin**

**Presented by James Underschultz**

CSIRO – Petroleum  
(Sponsored by CSIRO)

The Latrobe aquifer supports a number of water-related industries across the large region of South and Central Gippsland. Water levels in this aquifer have been falling across this region for a few decades, with associated impacts on irrigators and potentially on the wider community through land subsidence. There is current debate on the causes of these falling water levels. This presentation reviews current knowledge and publicly-available data in an attempt to determine the causes of these water table declines and the levels of uncertainty associated with those causes.

Mapped changes in aquifer pressures across the Gippsland Basin from the reconstructed virgin state of the aquifer prior to significant withdrawals of fluids reveal a complex pattern of pressure declines. This pattern reflects both the structural complexity of the Basin as well as the impacts of withdrawals by the mining, irrigation and offshore oil and gas industry. At the regional scale, off-shore abstraction has a geographically variable impact on groundwater levels on shore. The extent of impact due to mine dewatering in the Latrobe Valley is also to some degree compartmentalised, but has apparently extended east of Sale. For specific districts such as the irrigation area around Yarram, regional studies such as this cannot accurately determine the proportion of impacts due to offshore or inshore abstraction, but there is no doubt that the former is a significant component of aquifer decline. Local abstraction for irrigation has an added effect that is superimposed upon these other regional influences on water levels.

A review of subsidence modelling and monitoring indicated no unambiguous history of subsidence except the well-documented subsidence around the mines of the Latrobe Valley. There is no compelling analysis that indicates a high risk of future subsidence, but there is certainly room for improvement in the forecasts based on better structural geological data and higher resolution monitoring.

Recommendations for further analyses that would better define the sustainability of local water supplies, the recovery of water levels and subsidence risk assessment and mitigation are: (1) a review and the re-publishment of a monitoring network, introduction of state-of-the-art telemetry and remote sensing technology; (2) regional 4D subsidence modelling for the Basin; (3) coupling the offshore and onshore reservoir and aquifer models; and (4) a

decision support system to sustainably manage Gippsland's groundwater resources while optimising petroleum and coal resource production of the wider Gippsland Basin.

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<b>VENUE</b>	<b>Celtic Club, 48 Ord Street, West Perth</b>
<b>DATE</b>	<b>Monday 29 August 2005</b>
<b>TIME</b>	<b>6-7pm (light refreshments from 5.30)</b>
<b>PARKING</b>	<b>Street parking or Thomas Street Car Park</b>

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***ALL WELCOME***