Water from the North

Background

Climate change and variability in the south west of Western Australia during the last 15 years led to significant public interest in sourcing water from the north of the State.

The Kimberley region has over 60% of the State's surface water resources due to tropical monsoonal weather patterns. Most of the rain falls in the wet season from November to April when water demand in the southern half of the State is high.

In December 2004 the State Government appointed an independent expert panel to evaluate the technical and financial viability of transporting water from the Kimberley region to Perth and towns on the Perth to Kalgoorlie pipeline. A comprehensive report was published in 2006.

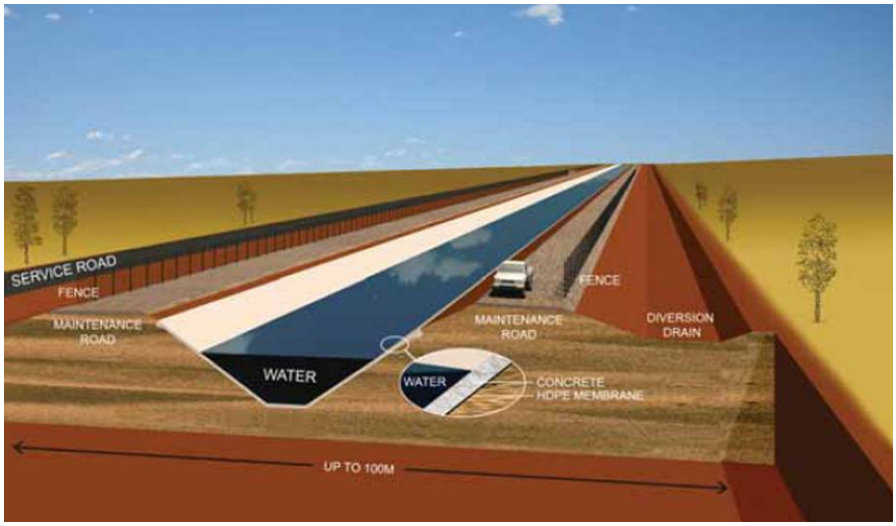

Fig. 1 Diagrammatic Cross Section of the Proposed Canal
(Photo Courtesy of the Department of Premier and Cabinet)

Four supply options were investigated in detail:

1. *Pipeline Preferred Option*

   A pipeline from an off-stream storage on the Fitzroy River running directly towards Perth for 1,900 kilometres before pumping into Canning dam. The Fitzroy River was the preferred water source for this option.

2. *Canal Preferred Option*

   A canal from a storage dam on a tributary of the Fitzroy, running along the coast for 3,700 kilometres before pumping into Perth hills dams. While the Fitzroy River was the most suitable water source for this option, the panel found that the reliability of this resource for a canal was unacceptably low.

3. *Super-tankers*

   Two ocean transport concepts were considered. The first was using super-tankers. The Ord Dam was the preferred water source for this option. This was the lowest cost option evaluated.

4. *Towed water bags*

   The second ocean transport option was to tow very large water bags. This option proved to be highly risky as the technology for bags of this size is not yet developed. The Ord Dam was the preferred water source for this option.

Current Situation

Government has accepted the findings of the expert panel which were released in May 2006. The Premier noted that the projects were high risk, high cost and generally impractical.

The findings of the Panel are summarised in the following table.

Comparative Issue	Pipeline Option	Canal Option	Ocean Tankers	0.5 GL Water Bags
Design Certainty	High	Uncertain	High	Unknown
Reliability of Supply	Acceptable	Unacceptable	Acceptable	Unknown
Source	Fitzroy	Fitzroy	Fitzroy/Ord	Fitzroy/Ord
Length of Delivery Chain	1900 km	3700 km	3000 km	3000 km
Water Quality Issues	Managed	Variable	Managed	Managed
200 GL/year Scenario				
Number of vessels to deliver 200 GL/year	NA	NA	14	35
Time in transit (Days)	17	93	14	32
Energy Consumption kWhr/kl delivered	5.8	3.7	10.5	8.6
Greenhouse Gas Produced (Tonnes of CO_2 equivalent)	0.6 M	0.5 M	2.0 M	1.6 M
Costs from day one (200 GL/year)				
Capital Cost (Billion)	$11.9	$14.5	$6.2	$5.3
NPV Capital Cost (Billion)	$7.5	$8.0	$5.3	$6.4
NPV Operating Cost (Billion)	$1.5	$1.6	$5.9	$4.6
Unit Cost of Water ($/kl)	$5.1	$6.5	$5.0	$5.0
Cost for demand Matching Scenario (20 GL/year increasing to 200 GL/year over 50 years)				
NPV Capital Cost (Billion)	$4.5	$8.0	$2.7	Not Calculated
NPV Operating Cost (Billion)	$0.6	$1.6	$2.5	Not Calculated
Unit Cost of Water ($/kl)	$9.7	$20.5	$6.7	Not Calculated

Sustainability considerations (water tanker option)

Economic	Social and cultural	Environmental
Much more expensive than existing sources.	Indigenous Kimberley communities did not support taking water from the region.	Ocean transport has the least adverse environmental impact on the land.
Supply could vary with demand.	Incorporating the preferred option would at least double the average household water bill.	Sourcing water from the Ord dam would have less environmental impact than from the Fitzroy River, although lower reaches are important wetlands.
May require investment in associated infrastructure, including roads and ports.	May inhibit use of water in the region for other purposes including tourism and agriculture.	Most energy intensive option.

Potential source yield

The Panel examined source options with a yield of 200 gigalitres per annum.

Recognising that demand for this quantity of water does not presently exist, the Panel costed all options assuming a 20 gigalitre per year supply for the first year, growing to 200 gigalitres per year over 50 years. A source of this size could supply water to more than 800,000 houses per year.

Potential cost

The highest cost option was the canal at $20.50 per kilolitre.

The pipeline was half of this cost at $9.70 per kilolitre, followed by transportation by ocean tankers estimated to be $6.70 per kilolitre.

Reliable cost estimates were not available for the water bag option.

The Future

Further to the findings of the panel and Government decisions in this regard, moving water from the north as a supply to Perth is not considered environmentally, socially or economically desirable at this time.

The State and Federal Governments are currently investigating the feasibility of developing these Kimberley water resources to support more irrigated horticulture and other commercial activities in the region. This development could attract substantial investment and enhance employment for local communities.

More Information

- Options for bringing water to Peth from the Kimberley - An Independent Review
  Department of the Premier and Cabinet, 2006
  http://portal.water.wa.gov.au/portal/page/portal/PlanningWaterFuture/Publications/KimberleyWaterSource/Content/Finalreport_000.pdf

Key

Potential source yield (in 50 year planning horizon)

Potential cost (2007 $)

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