

South West Water Catchment Management Community Dialogue Forum, 22nd July 2006

Information Summary Sheet

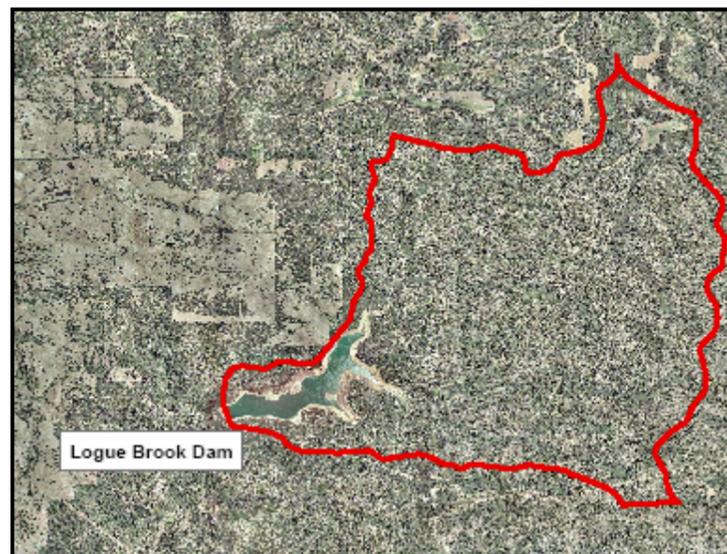


Figure 1. Logue Brook dam catchment

- **All sources of water** need to be considered in a drying climate.
- **The quality of water** in Logue Brook Dam is good and could be harvested at a low cost, but there would be impacts on current users.
- **Logue Brook catchment** is predominantly Crown Land with State Forest covering about 99% of the catchment. The only alienated land is located in the north eastern corner of the catchment. It comprises one property that is in private ownership and used for pastoral grazing.¹

- The **cost of drinking water from Logue Brook Dam** as a stand alone cost is estimated at 60 cents per kilolitre. The Economic Regulatory Authority priced alternative potable sources at between 82 cents to \$1.20 per kilolitre. "Sourcing the 5.3 GL of water per year from Logue Brook represents total savings to the State of up to \$50 million".⁴
- The **value of recreation on and around Logue Brook Dam** is estimated to be between \$1.4 million and \$3.2 million per annum. Based on a volume of 5.3 GL being taken from Logue Brook Dam, the value of water for recreation is between 0.91 cents and 2.03 cents per kilolitre.⁵
- The total asset **value of irrigation water** currently drawn from Logue Brook Dam by Harvey Water and supplied to the Harvey Irrigation District is estimated at \$11.1 million per annum (assuming 75% of the pasture irrigated is used for dairy production).⁶
- The **Integrated Water Supply Scheme (IWSS)** has a service area extending ~600 km east-west and 200 km south-north, covering towns in the South West, the Perth metropolitan area and through the Goldfields Pipeline from Mundaring Weir, towns and farmlands in the Central Wheatbelt out to Kalgoorlie – Boulder. The IWSS delivers drinking water to 1.65 million people. Existing sources supplying the IWSS have approximately 330 GL/year capacity (excluding the desalination plant).⁷

- **Activities in the catchment** are varied and include fishing, marroning, water skiing, swimming, canoeing, trail biking, four-wheel driving, mountain biking, bushwalking, sightseeing, camping, picnicking and scuba diving. These activities bring financial benefits to the local community. Activities in the catchment also provide health, spiritual, aesthetic, cultural, and historic benefits to the community.
- The **Lake Brockman Tourist Park** is leased to a private operator by the Department of Environment and Conservation. It is located on the southern bank of the reservoir about 1km from the dam wall.¹
- **Camp Logue Brook** is owned and operated by the Seventh-day Adventist Church as a youth and education camp and convention centre and is available to both the church and wider community for use. It is situated on the northern side of the dam and is just outside the Logue Brook catchment area, however many associated activities are within the catchment and on the dam.¹
- **The Munda Biddi Mountain Bike Trail** runs across the eastern end of the catchment and then heads west before joining the formed roads adjacent to the reservoir. Riders commonly stay or buy refreshments at the Tourist Park. The **Bibbulmun Track** runs to the east of the Dam and is not within the catchment.²
- There are approximately **25,000 to 40,000 visitors per year** to Logue Brook Dam and approximately **40,000 to 60,000 recreational users** of the area surrounding Logue Brook Dam.³
- **Protection and management** of the Logue Brook catchment falls under the auspices of a range of agencies including the Department of Environment and Conservation, Water Corporation, Department of Water, Shire of Harvey, Department for Planning and Infrastructure and Department of Fisheries.
- Since its construction in 1963, water from **Logue Brook Dam** has been primarily used for **irrigated agriculture and recreation**. A wide variety of produce is grown in the Harvey region. The irrigation system is managed by a co-operative called Harvey Water, which has over 550 shareholders.
- **Water savings** from piping the Harvey Irrigation Area are in the order of 17.1 GL/yr (see Table 2 for an explanation of water quantity units). The water savings will then be available to trade to the Water Corporation for the Integrated Water Supply Scheme (see Figure 2). It is proposed to source 5.3 GL/yr from Logue Brook Dam, 5.8 GL/yr from Stirling Dam and 6 GL/yr from Samson Brook Dam.²

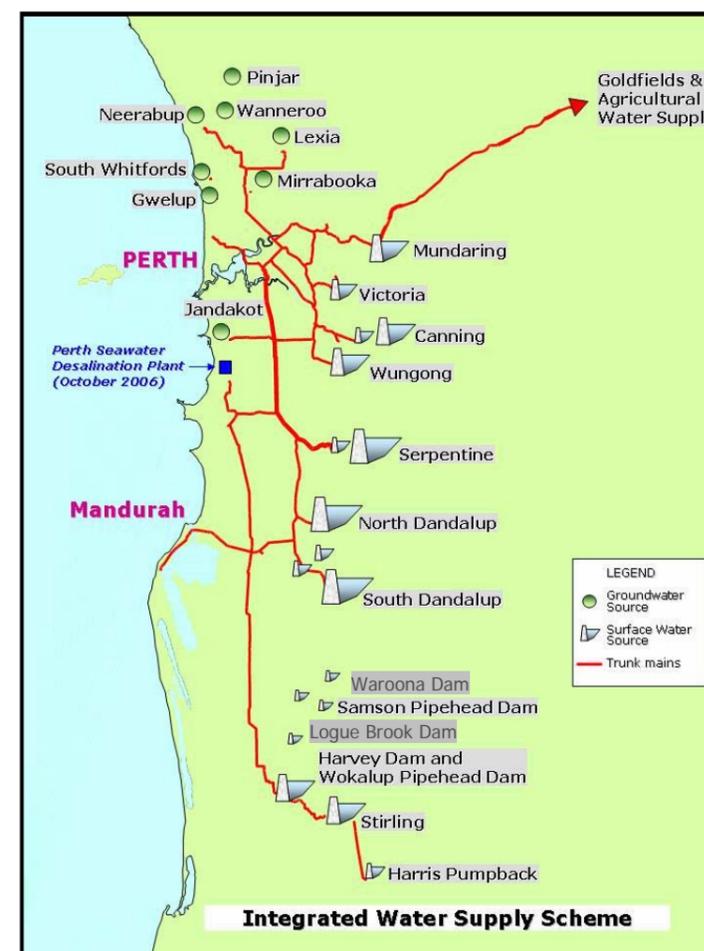


Figure 2. Integrated Water Supply Scheme (Source: Water Corporation)

- **Demand for fresh water** has doubled over the last 15 years and may double again over the next 20 years. This is caused mainly by growth in private supply for irrigated agriculture and mining, and a steady growth in demand for public water supplies in the city of Perth and regional centres.⁸
- **Per person water consumption** for Perth has fallen from about 187 kL/year in 2000/01 to 155 kL/year in 2003/04. This reduction is attributed to rebates on water conservation and efficiency products, awareness campaigns and sprinkler restrictions.⁸
- Western Australia's **total water consumption** per year is approximately 2400 GL, of which 18% (eg 430 GL) is consumed by the household sector, 24% by mining and 40% by irrigated agriculture.⁸
- **Forecasts** by the Water Corporation are that new drinking water sources totalling 107 GL/yr will be required for the IWSS by the year 2009 to allow supply and demand to be matched until 2017. **Water planning** to meet this need has the additional water being sourced from the Perth desalination plant, the South West Yaragadee aquifer and the Harvey Water Trade. Additional projects to increase security of water resources include forest thinning to improve runoff from catchments, water recycling and demand management.⁷
- Declining rainfall has halved **streamflow** into dams over the past 30 years.⁹

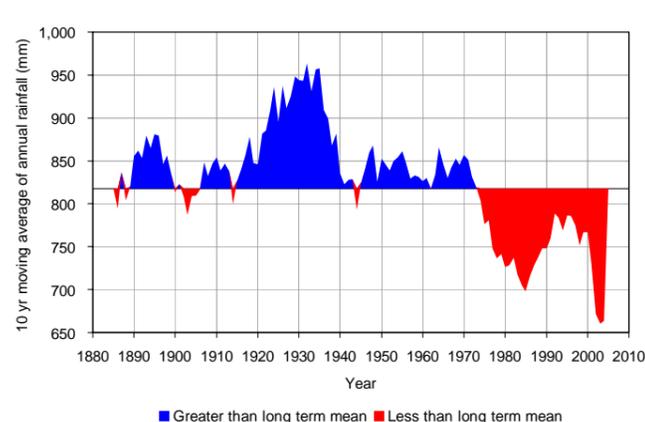


Figure 3. Rainfall pattern 1880 to 2010

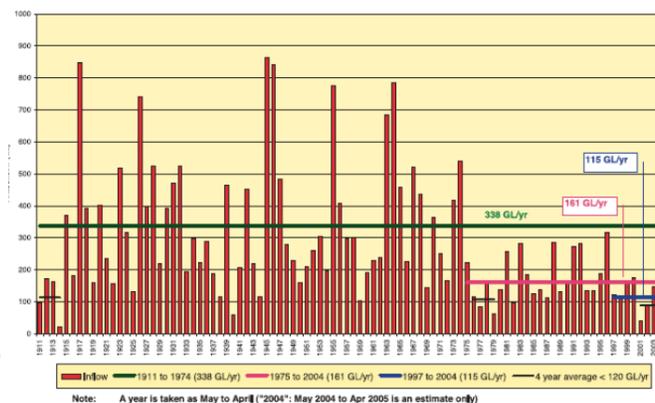


Figure 4. Yearly streamflow for major metropolitan surface water sources⁷

- **Water quality** analysis indicates that Logue Brook Dam is suitable as a drinking water source. A selection of the key water quality results for 2004/05 are listed below (rounded).

Table 1. Logue Brook Dam key water quality data 2004/05 (Source: Water Corporation)

Parameter	Result	1996 ADWG Guidelines (pre treatment)
pH	6.5	6.5 – 8.5
Conductivity	23mS/m	-
Colour	7 HU	15 TCU
Turbidity	8.8 NTU*	5 NTU
Nitrate + Nitrite as N	0	11 mg/L
Total Coliforms	24	20 cfu/100mL**
Total Filterable Solids (by sum)	110	-

* = Increased turbidity masks the presence of pathogens, such as *Cryptosporidium*, and reduces the effectiveness of disinfection and other treatment processes.

** = A count less than 20 cfu/100mL is typically associated with low levels of contamination and is used by the World Health Organisation as a microbiological contamination benchmark.

*** = The above results are indicative only and can not be relied upon as a proper assessment of risk.

The **Australian Drinking Water Guidelines (ADWG)**¹⁰ use the best available scientific evidence to provide the Australian community and the water supply industry with guidance to provide safe, good quality drinking water. The six fundamental principles are:

1. The greatest risk to consumers of drinking water are pathogenic microorganisms. Protection of water sources and treatment are of paramount importance and must never be compromised.
 2. The drinking water system must have, and continuously maintain, robust multiple barriers (eg a series of preventative measures) appropriate to the level of potential contamination facing the raw water supply.
 3. Any sudden or extreme change in water quality, flow or environmental conditions (eg extreme rainfall or flooding), should arouse suspicion that drinking water might become contaminated.
 4. System operators must be able to respond quickly and effectively to adverse monitoring signals.
 5. System operators must maintain a personal sense of responsibility and dedication to providing consumers with safe water, and should never ignore a consumer complaint about water quality.
 6. Ensuring drinking water safety and quantity requires the application of a considered risk management approach.¹⁰
- The ADWG state that “the multiple barrier approach is universally recognised as the foundation for ensuring safe drinking water. No single barrier is effective against all conceivable sources of contamination, is effective 100 per cent of the time or constantly functions at maximum efficiency.” “Prevention of contamination provides greater surety than removal of contaminants by treatment, so the most effective barrier is protection of source waters to the maximum degree practical.”¹⁰
 - Public Drinking Water Source Areas are proclaimed under the **Country Areas Water Supply (CAWS) Act 1947** or the **Metropolitan Water Supply Sewerage and Drainage (MWSDD) Act 1909**. By-laws apply in proclaimed catchments to prevent deterioration of the water quality, control development and regulate the transient activities of the community. There are currently 115 surface water catchment areas and groundwater reserves proclaimed under the CAWS Act and 35 proclaimed under the MWSDD Act.
 - **Reservoir Protection Zones (RPZs)** are a statutory 2 kilometre wide buffer area measured from the top water level of drinking water reservoirs in the Perth metropolitan area (eg at Canning and Serpentine dams). RPZs apply over Crown land and prohibit public access through the zone to the waterbody to prevent contamination (physical, chemical and biological) of the drinking water source. RPZs do not extend outside the catchment boundaries (eg downstream of the dam wall). The same measure is applied to public drinking water supply sources outside the metropolitan area, subject to a public consultation process.

Table 2. Conversions for commonly used units

One kilolitre (kL)	=	One thousand litres
One kilolitre of water	=	One thousand kilograms = one tonne
One kilolitre of water	=	One cubic metre
One Megalitre (ML)	=	One million litres
One Megalitre	=	One thousand kilolitres
One Gigalitre (GL)	=	One thousand Megalitres
One Gigalitre	=	One million kilolitres
One Gigalitre	=	One thousand million litres

References

1. Department of Conservation and Land Management (1999) *Logue Brook Reservoir and Catchment Area Management Plan 1990 – 2000*. In conjunction with the Water Authority of WA.
2. Harvey Water (2006) *Harvey Water Pipe Project*. Logue Brook Dam Stakeholder Consultation. Prepared by Strategen.
3. Department of Environment and Conservation (2006). *Logue Brook Dam Position Statement*.
4. Water Corporation (2006) *Logue Brook Dam – Water Corporation Position Statement*.
5. Department of Water (2006) *The value of recreation at Logue Brook Dam*. Prepared by ACIL Tasman for Department of Water.
6. Harvey Water (2006) *Harvey Water Irrigation Area – Logue Brook Dam Water Value for Agriculture*. Prepared by Economics Consulting Services for Harvey Water.
7. Water Corporation (2005) *Integrated Water Supply Scheme Source Development Plan 2005*. Planning Horizon 2005 – 2050.
8. Environmental Protection Authority (2006) *State of the Environment Report Western Australia draft 2006*. Scott Print
9. Commonwealth Scientific and Industrial Research Organisation – CSIRO (2005) *Water for the Future: Perth and South-West WA*, available from <http://www.cmis.csiro.au/healthycountry/updates/sep05/story1.htm>.
10. National Health and Medical Research Council and Natural Resource Management Ministerial Council (2004) *Australian Drinking Water Guidelines*.