

## Chapter 10 – Information sources

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## 10 Information sources

This chapter gives a brief overview of the information sources used to prepare this report, the reliability and currency of the information sources and any uncertainties in the information sources used.

This report was prepared by Northern Victoria Irrigation Renewal Project (**NVIRP**) with assistance from the Department of Sustainability and Environment (**DSE**). In preparing this report NVIRP consulted with DSE and Goulburn-Murray Water (**G-MW**). In addition, NVIRP has established or participates in a number of committees to help guide the development and implementation of the project. These are described in Chapter 11.

The information in this report is drawn largely from nine technical reports that were prepared specifically for the project during 2008 and 2009 using the most up-to-date information and methodologies available. The initial Environmental Referrals report (SKM 2008) was submitted as part of the referral under the Victorian Environment Effects Act 1978 (**EE Act**) for consideration by the Minister for Planning. The eight subsequent technical reports were reviewed by an Expert Review Panel (**ERP**), convened as part of Condition 2 of the Victorian Minister for Planning's determination that the project did not require an Environment Effects Statement (**EES**).

### 10.1 Sources of information

The estimates of water savings used in the PER were developed in accordance with the Phase 1 of a water savings project, as set out in the Water Savings Protocol (Appendix 6). Phase 1 estimates provide initial long term estimates of water savings for the planned program of works. In the case of the action, the estimates are for 425 GL of water savings, in accordance with the project's objectives. Mitigation water is provided in advance of any calculation of formal water savings from the project and must be provided as an obligation of NVIRP, providing assurance that significant impacts on MNES will be avoided, irrespective of the level of water savings achieved. NVIRP is confident of achieving up to 425 GL of water savings. The assessment does not include the beneficial effects of the 175 GL for the environment. If the use of this water were taken into account, then there would be significant net benefits for MNES.

This PER was prepared using information from the nine technical reports outlined below and the information sources listed within each report:

- *Food Bowl Modernisation Project – Environmental Referrals* (SKM 2008)
- *NVIRP Waterway Short-Listing Report – Final Report* (Feehan 2009)
- *NVIRP Wetland Short-Listing Report – Final Report* (Hydro Environmental 2009a)
- *Assessment of hydrological changes from the operation of the NVIRP modernised GMID – Surface Water Hydrology* (SKM 2009a)
- *Assessment of hydrological changes from the operation of the NVIRP modernised GMID – Groundwater Hydrology* (SKM 2009b)

- *NVIRP Operational Impact Assessment on Terrestrial Vertebrate Fauna* (Brett Lane and Associates 2009)
- *NVIRP Operational Impact Assessment on Wetlands of International Importance (Ramsar)* (Hale 2009)
- *NVIRP Operational Impact Assessment on Aquatic Fauna* (King and Tonkin 2009)
- *NVIRP Assessment of Impacts on Flora Issues of National Environmental Significance* (Ecological Associates 2009)

These technical reports used a wide variety of methods to gather information including desktop studies and reviews, site inspections and data collection, ground-truthing and validation, consultation, expert advice and modelling. All documents including surveys referenced in the technical reports are publicly available.

The Environmental Referrals report (SKM 2008) was reviewed by the Victorian Minister for Planning as part of the EES determination.

The remaining eight reports were all reviewed by the ERP, which is made up of three experts in the fields of aquatic ecology, vegetation ecology and strategic water resource planning (see Chapter 8). In its advice of 11 August 2009, the ERP identified some risks associated with the short-listing process to identify the wetlands and waterways requiring Environmental Watering Plans. In its subsequent advice of 25 February 2010, the ERP advised that these risks had been addressed in the hydrological and ecological assessment reports prepared as part of the Public Environment Report preparation. The ERP advice is attached at Appendix 20.

## **10.2 Currency of information**

All of the technical reports were prepared specifically for this project and eight of the nine reports were written in the past year, ensuring that the information used in preparing this PER is current and specifically tailored for the purpose of assessing the potential impacts of the modified operation of the fully modernised GMID.

## **10.3 Reliability of information**

The reliability of the information sources used to prepare this report has been strengthened by the critical review processes that the nine technical reports have been through preceding the publication of this report. The Environmental Referrals report (SKM 2008) was reviewed by the Victorian Minister for Planning and the reliability of information in the remaining eight technical reports was further improved following the review process by the ERP and the incorporation of their comments into the final versions of the eight technical reports published in 2009.

The findings from the Environmental Referrals report (SKM 2008) and the wetland and waterway short-listing reports (Feehan 2009, Hydro Environmental 2009a) were cross-checked and compared wherever there had been insufficient information available during the desktop review in 2008. All cross checks were also examined for any contradictory findings during the validation process in 2009, thus improving the reliability of this information. These were reviewed again by Brett Lane and Associates in 2009.

The reliability of information sources used in the four ecological assessments was outlined in detail in Chapter 4 (Table 4-2).

The reliability of the information sources used in the surface water and groundwater assessments is largely dependent upon uncertainties in the models used and is described in the following section.

## 10.4 Uncertainties in the information

Most of the information on listed species of birds available from the region takes the form of presence-absence records, generally with no indication of the numbers of individuals or population sizes involved at a site. Notwithstanding this, examination of shorebird distribution records in Victoria (Emison et al. 1987 in Brett Lane and Associates 2009) shows a close correlation between higher reporting rates (i.e. numbers of records as a percentage of all lists submitted for an area) and known significant numbers of shorebirds. Higher reporting rates, based on presence-absence data generally correlate with higher abundance, although the relationship is not tight. Sites with the highest known abundance however did correspond to areas with the highest numbers of records.

It is possible that significant aggregations of some species may occur occasionally in wetlands not regularly visited by observers and these sites could have been missed by the analysis undertaken here. Notwithstanding this, higher numbers of records of wetland bird species were found to occur in those wetlands known to those familiar with the region as the largest and most environmentally intact wetlands in the GMID. This limitation is not considered to be a significant gap in the analysis.

The project will achieve water savings of up to 425 GL from a range of modernisation activities. The relative contribution of each activity could vary over the course of the project. The prediction of hydrological effects of the action, described in this assessment, is based on estimated water savings in accordance with DSE's Technical Manual for the Quantification of Water Savings (DSE 2009b). Details of this are provided in Chapter 3. The estimated savings are based on the best available information at this time. The determination of the actual volume of water saved will be based on measured data on a site by site basis. Any differences between estimated and actual water savings will only relate to the relative contribution of modernisation activities and not the quantity of water savings and therefore will not affect the outcomes of the assessment for the purposes of this PER.

Uncertainties in the information used in preparing this report relate mostly to the assessments of hydrological changes to surface water and groundwater in the GMID from the modernised operation of the fully modified GMID due to uncertainties in some aspects of the modelling. These uncertainties are not such as to invalidate the findings of these reports (SKM 2009a, SKM 2009b) and the information they provide is considered fit for purpose. Both reports have used multiple lines of evidence to identify and support their findings.

A detailed description of sources of uncertainty, their treatment and implications for the results of the surface water assessment can be found in Table 4-10 of the technical report on surface water (SKM 2009a).

Sources of uncertainty, their treatment and implications for the results of the groundwater assessment can be found in Tables 4-3, 4-4, 4-5 and 4-6 of the technical report on groundwater (SKM 2009b).

## **10.5 Conclusion**

The nine technical reports described above provide robust and up-to-date information with which to assess the potential impacts of the modified operation of the fully modernised GMID. The ERP process has ensured that these reports are based on rigorous scientific approaches and assessment methodologies and determined that the information they provide is fit for the purpose of assessing the operational impacts of NVRIP.