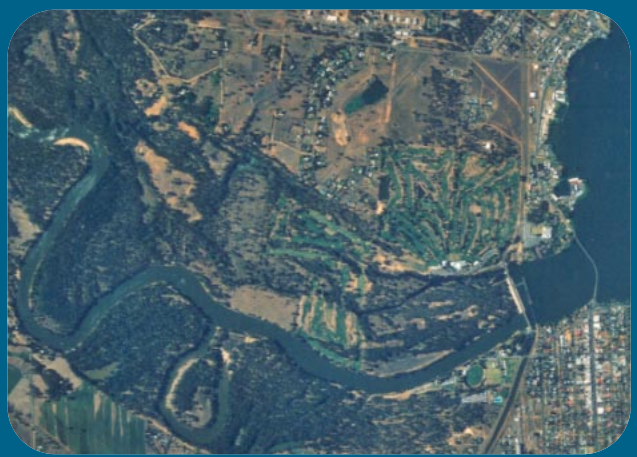
COMMUNITY UPDATE

Groundwater Contaminant Management Study – Final Report of Fieldwork at the Mulwala Facility



INTRODUCTION

This brochure provides a summary of the recently completed work on the assessment of the groundwater contamination arising from the Mulwala Facility. The groundwater assessment is a key element of ADI and Defence's on-going commitment to the Mulwala community and protection of the surrounding environment.

The assessment has been carried out during 2002 and 2003 by consultant HLA-Envirosciences (HLA), and is the culmination of a series of groundwater investigations conducted since 1987 which have now involved the installation and sampling of over 110 groundwater monitoring bores. These investigations have provided a thorough assessment of the nature and extent of groundwater impacts and provide a basis for developing a comprehensive management strategy. It is expected that the development of this strategy will be completed later this year (2003), for implementation next year.

The environmental assessment of the Mulwala facility is following a rigorous process, with critical review by an EPA-accredited Environmental Auditor (Dr Peter Nadebaum of GHD). Regular consultation on the scope of the work and its findings is being carried out with various stakeholders including community representatives, state government government authorities (EPA and DLWC) and the Shire of Corowa. Additional details of the groundwater assessment can be obtained from Mr Doug Wilson of ADI and the community representatives involved in the process (see the back page of this brochure).

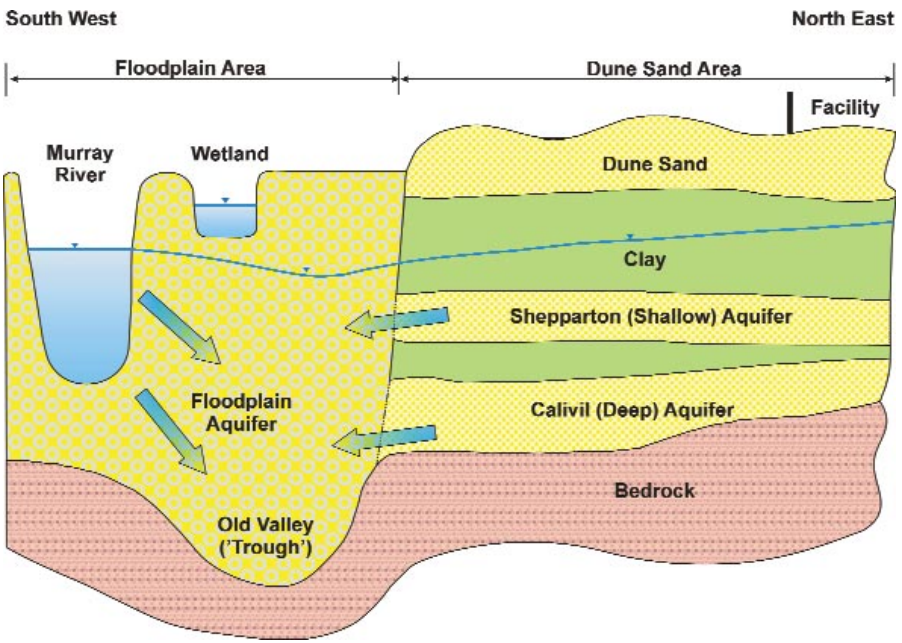
GROUNDWATER SYSTEM

The main aquifers beneath the Mulwala facility and "downstream" (southwest to the Murray River) are shown in the conceptual cross section above. Aquifers are the layers in the ground from which groundwater can be extracted and through which groundwater can move. The aquifers can be divided into the following two areas (see cross-section):

- The Dune Sand Area on which the Mulwala Facility and most of the private residential properties to the southwest of the Facility are located; and
- The Murray River Floodplain, which generally follows the Murray River.

"Sustainable environmental management must be our hallmark to ensure that we minimise our footprint on the environment"

DEFENCE ENVIRONMENTAL POLICY STATEMENT



Beneath the Dune Sand Area, the main aquifers are the shallow Shepparton Aquifer and the deeper Calivil Aquifer. The Dune Sands are not consistently water bearing and do not represent a viable aquifer. The Shepparton and Calivil Aquifers are separated across most of the area by several metres of clay. Groundwater flow in both the shallow (Shepparton) and deep (Calivil) aquifers is from the northeast, beneath the Facility, to the floodplain of the Murray River in the southwest.

The Floodplain was formed by the Murray River eroding away the Shepparton and Calivil Formations and progressively depositing more recent sediments. The Floodplain sediments are predominantly sand and gravel. Groundwater flow in the area southwest of the Facility was found to be flowing into a deeper "trough" which runs beside the Murray River, just to the east and north of the river. The "trough" coincides with the location of an old valley that was eroded into the bedrock in the area (see cross section). Groundwater flows within the "trough" to the northwest where it discharges into deeper and thicker segments of the Calivil Aquifer.

NATURE AND EXTENT OF IMPACTS

Extensive sampling for a wide range of potential contaminants found no contaminants at concentrations above levels acceptable for drinking water other than nitrates and sulphates in bores off-site from the Facility. Nitrates and sulphates occur naturally in groundwater, however, concentrations above naturally occurring background levels have been found beneath and "downstream" of the site.

The relatively low background salinity of groundwater in both the shallow and deep aquifer systems means that the groundwater could normally be used for drinking water purposes. The extent of nitrate and sulphate concentrations which are above the Australian drinking water guidelines are shown in the two figures in this brochure. The extent of affected water quality was found to be different in the shallow and deep aquifer systems.

Due to the large quantity of water flowing along the Floodplain Aquifer and entering the "trough" from the Murray River, the high nitrate and sulphate concentrations do not extend beneath the floodplain and its associated wetlands, and also do not reach the Murray River. Importantly, the extent of the groundwater impact appears to be stable and will not progressively extend to affect the floodplain or the River in the future.

In the area south of the Mulwala facility where nitrate and sulphate concentrations exceed the drinking water guidelines:

- Groundwater should not be used for drinking.
- Groundwater should not be used for stock water unless it is confirmed that the concentrations of salts will not affect the stock in question.
- Groundwater should not be used for irrigation of plants which are sensitive to the high concentrations of salts. Groundwater may be used for irrigation of more salt tolerant plants (especially those which require fertilisation with nitrate for best results) where the irrigation is carried out using methods which avoid "leaf burn" associated with accumulation of salts on the leaves due to rapid evaporation.

WHERE TO FROM HERE?

Having completed the groundwater assessment, a feasibility study of potential remedial strategies to address the off-site impacts on groundwater quality will be carried out during 2003. A detailed computer model of the groundwater systems is being developed to assist in this process. The most appropriate management strategy will be incorporated into a Contaminant Management Plan. This Plan will be completed in December 2003.

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HLA

HLA-Envirosciences