water affairs



Department: Water Affairs **REPUBLIC OF SOUTH AFRICA**

Feasibility Study Foxwood Dam Stakeholder Newsletter 2 April 2014

We welcome you to our second feedback letter in which we wish to share our progress on the Foxwood Dam Feasibility Study. We are pleased to report that good progress has been made, with the Preliminary Study being completed and work having commenced on the concept design of a possible dam. Nevertheless, there is still a great deal of work to be undertaken to the completion of the feasibility study.

For our local stakeholders, we are also pleased to see that the study area has experienced excellent rains in the recent past, as indicated by the lush vegetation and strongly flowing Koonap River in the photos below.



Before embarking on new capital expenditure, it is important to understand and make sure that optimum benefit is being derived from existing infrastructure. Part of the Preliminary Study involved a review of the water requirements of the potential supply area around the Foxwood site and an **assessment of alternative water supply options** for Adelaide. This study also enabled an assessment of whether existing infrastructure can be upgraded and/or expanded to cater for the current and probable future domestic water needs of the area to be served by a possible dam at the Foxwood site.



Both Adelaide and Bedford lie within the Koonap River valley. Fort Beaufort is approximately 20km to the east of Adelaide, within the Kat River valley. Bedford's main water source is the Andrew Turpin Dam which is supplied from tributaries within the Koonap River catchment. This supply is backed up by the Fish River transfer scheme as well as boreholes. Fort Beaufort's water supply comes from the Kat River and Kat River Dam with some groundwater as well. Adelaide's main source of potable water is via a canal supplied from the Elandsdrift Weir which provides water to the Adelaide Dam. This supply is backed up by a municipal borehole and an



extension of Bedford's Fish River transfer scheme. The overiding result of this assessment is that with appropriate maintenance, the existing water supply infrastructure is sufficient to meet the existing and likely projected domestic water demands. Furthermore, with relatively minor interventions, increased supply could be achieved.

This study was informed by work carried out to determine the **likely future water use** in the area of Adelaide, including an assessment of the other large town in the Nxuba Local Municipality, viz. Bedford. Existing domestic water demands for Adelaide and Bedford are estimated to be of the order of 0.7 million m³ per year and 0.5 million m³ per year, respectively. Both of these demands are significantly lower than the probable cost effective yield of Foxwood Dam. Given that the existing water supply infrastructure in Adelaide and Bedford should be capable of meeting these demands provided there is a good maintenance regime, in the absence of the industrial use of water, it would appear that the most productive use of water from Foxwood would be to support increased irrigated agriculture development along the Koonap River. However, this matter continues to receive attention and, in particular, it will be necessary to understand whether or not this kind of water use would be economically viable and sustainable.

Last year, a number of **geotechnical investigations** were carried, including boreholes (illustrated in the photo below), trial pits and seismic surveys. The purpose of the surveys is to classify the geology at the proposed dam site and the depth of good rock on which the dam foundations can be constructed. These investigations also assisted in the identification of possible sources for materials to use during dam construction. The geotechnical investigations have been completed and, for the most part, disturbed areas are recovering well, as verified during an audit by an independent Environmental Control Officer.







An **aerial survey** has also been carried out to provide detailed mapping of the land which is likely to be affected by the Foxwood Dam (land where the dam would be constructed, land that the dam will inundate and land affected by the water supply pipeline from the dam to the existing storage dam).

We should like to sincerely thank land owners and representatives of the municipality for their cooperation and assistance which facilitated the smooth undertaking of these investigations.

Apart from field investigations, the technical team has also been busy. The **hydrology** of the Koonap River catchment upstream of the Foxwood Dam site has been reviewed to determine the likely amount of water that will be available to be stored in the dam (approximately 7 - 17 million m³ per year depending on the size of the dam). The review of the hydrology also considered how much water must be left in the river to maintain or improve ecological conditions of the river. Environmental investigations have determined that the Koonap River downstream of the dam site has a Present Ecological Status, rated C, for which a particular volume and flow regime of water is required (meaning that this water will not be impounded in the dam).



An example of earthfill/rockfill dam structure and spillway, looking up the Koonap River valley. The existing Adelaide Dam can be seen in the foreground on the right.



A view upstream towards a typical Concrete Gravity Dam structure with central spillway

Now that the main geotechnical and hydrological studies have been completed, it is possible for the engineers to develop options for **dam structures**. The main purpose of this investigation is to identify the size and type of dam that would result in the most cost effective supply of water. This requires engineering designs and estimating the cost of constructing such a dam. This work is ongoing.

As the dam design progresses, the feasibility study will increasingly assess non-technical aspects of the project. This includes investigating the **institutional**, **legal and financial** requirements to construct and operate a major dam as well as assessing **economic impact** that a dam of this size may have on the local and regional economies.

A development of this nature and size will require environmental authorization from the Department of Environmental Affairs. Therefore, the Department of Water Affairs has invited tenders for an Environmental Impact Assessment (EIA), inclusive of further Public Participation. The appointment of an Environmental Assessment Practitioner (EAP) is expected in **the next six** months. At this time, stakeholders will be informed of the commencement of the EIA as well as the handover of stakeholder engagement activities from the technical team to the EAP's team.

Please direct all comments and further queries to the Stakeholder Communication Coordinator. Stakeholder Communication Coordinator ACER (Africa) Environmental Management Consultants , on behalf of ARUP Contact: Bongi Shinga or Nothando Mkhize, Tel: 086 010 4958 (the cost of a local call) Fax: 035 340 2232, e-mail: foxwood@acerafrica.co.za

