

RED SEA-DEAD SEA WATER CONVEYANCE STUDY Update June 2010

BACKGROUND

The Dead Sea is a site of environmental, economic, cultural and touristic importance. However, due to upstream water diversions in the catchment, and industrial activities on the Dead Sea, its level has fallen significantly in recent years, and is currently falling at a rate of around 1 metre per year.

A Scheme – the Red Sea-Dead Sea Water Conveyance - has been proposed to construct a pipe or tunnel to transport water from the Red Sea to the Dead Sea, a desalination plant to provide drinking water for the region, and a hydropower plant to take advantage of the more than 400-meter difference in elevation between the Dead Sea and the Red Sea.

The aim of this Scheme is to halt the decline of the Dead Sea level and also to provide drinking water for the people of Jordan, Israel and the Palestinian Authority.

The World Bank is currently assisting the Government of Israel, the Government of Jordan and the Palestinian Authority (the Beneficiary Parties) in undertaking a Study Program on the Scheme. This Study Program began in June 2008 and now consists of 5 studies:

- A Feasibility Study into the Scheme;
- An Environmental and Social Assessment of the Scheme;
- A Study of Alternatives to the Scheme;
- A Red Sea Modelling Study; and
- A Dead Sea Modelling Study

The studies are inter-related and are together referred to as ‘the Study Program’

This fact sheet is made available as part of the ongoing consultation activities for the Study Program. A series of consultation meetings in Jordan, Israel and the Palestinian Authority will be held during the months June – September 2010, and also in 2011 once the draft reports have been issued. Details of these meetings are presented in this leaflet, and will also be announced in the local media.

DETAILS OF THE PROPOSED SCHEME

The Feasibility Study is examining a number of proposals for the Scheme, together with other parameters that would affect its design. These include among others: topography, geology, seismicity, logistics, engineering, ecological and social issues and cost. This study is being conducted by an international team lead by Coyne & Bellier (France).

A set of proposals for the various components of the Scheme have been made. These are as follows:

1. A sea water intake in the Gulf of Aqaba/Eilat at the site of the disused Aqaba Thermal Power Station, just south of Aqaba’s Main Port. The exact location and details of this intake will be determined using results from the Red Sea Modelling Study.

2. A water conveyance from Aqaba to Ghor Fifa. This conveyance could take one of three forms:

- A gravity tunnel from Aqaba to a desalination plant at either Ghor Fifa or in the hills above Ghweiba.
- A pumped conveyance (pipeline or tunnel) for 5 kilometers from the intake site, followed by a gravity tunnel, which would include 2 long open canal sections, descending to a desalination plant at either Ghor Fifa or in the hills above Ghweiba.
- A pumped conveyance beginning with a tunnel around Aqaba to a site close to Aqaba Airport, followed by a pipeline laid in the Wadi Araba to Gharandal. A gravity pipeline would then take the water via a desalination plant near Bir Mathkour to Ghor Fifa.

3. A desalination plant at one of 3 locations:

- Along the pipeline route near Bir Mathkour;
- On the tunnel route in the hills above Ghweiba; and

- On the plain to the west of Ghor Fifa.

4. A hydropower plant at a proposed site west of Ghor Fifa.

5. A freshwater pipeline from Ghor Fifa to Amman, passing through the Tafila Governorate towards Hasa, and north along the route of the Desert Highway/Disi pipeline, to Abu Alanda.

6. A pipeline may also cross into Israel from Ghor Fifa to provide water to areas in Israel and the Palestinian Authority, but the details and locations of these components are yet to be selected.

7. A combination of seawater and reject brine from the desalination plant will then be discharged into the Dead Sea at a location which will be determined using information from the Dead Sea Modelling Study. The preliminary supposition is that this will be close to the north of the Lissan Peninsula.

Specific locations for all the above elements will be examined more closely in the remainder of the Study Program. The Scheme Overview Map below, shows an overview of the proposals.

FEASIBILITY STUDY SCHEDULE

A draft Sub-Studies Report will be submitted by the Feasibility Study Team to the Beneficiary Parties in June 2010. This report will include results from the technical Sub-Studies being

conducted as part of the Feasibility Study, and will provide detailed descriptions about the options concerning the type, configuration and location of the intake, pump station, conveyances, desalination plant and hydropower plant, and will present preliminary designs. The report will also include assessments on important issues including; geology, seismology, hydrology, geotechnics, and hydrogeology. The Preliminary Draft Feasibility Study Report is due in January 2011. The World Bank will place all these reports on the Study Program website- www.worldbank.org/rds.

ENVIRONMENTAL AND SOCIAL IMPACTS

The environmental and social impacts related to the Scheme are currently being studied by three teams.

The **Red Sea Modelling Study** is being conducted by an international team lead by Thetis (Italy) together with experts from Jordan and Israel, and was commissioned in February 2010. Interim reports are due starting in July 2010 and the Final Report will be issued in July 2011. This Study will look at the impacts of the Scheme on the physical, chemical and biological make up of the Red Sea, including the important concerns over possible impacts on the coral reefs and marine life.

The **Dead Sea Modelling Study** is being conducted by an international team led by

Tahal (Israel) together with experts from Jordan, Israel and the United States, and was commissioned in February 2010. This Study will look at the impacts of the Scheme on the Dead Sea and its surroundings, including the important questions of how the water quality of the Dead Sea will be affected. Interim reports will be issued starting in July 2010 and a Final Report will be issued in July 2011.

The **Environmental and Social Assessment Study** is being conducted by an international team lead by Environmental Resources Management (United Kingdom). This study will use the data and analysis provided in the Feasibility Study's Sub-Studies Report, together with information from the Red Sea and Dead Sea Modelling Studies, and will produce a full Preliminary Draft Environmental and Social Assessment (ESA) Report in January 2011.

Initial assessments relating to archaeology, ecology, social issues, and regional impacts from the proposed Scheme's components have been conducted and discussed in an Interim Assessment Report (IAR) which is available on the Study Program website (www.worldbank.org/rds). However, updated information on the latest design of the Scheme, and also the results of the Sub-Studies and the Red Sea and Dead Sea Modelling Studies were not available at the time of the IAR.

KEY ISSUES IDENTIFIED AND/OR UNDER EXAMINATION

Based on the information available, social and environmental issues identified to date include:

- The presence of fragile coral reefs in the Red Sea;
- Social issues arising from establishment of large scale construction camps;
- Important ecological areas in the Wadi Araba;
- The decrease of the Dead Sea water level;
- Mixing of Red Sea and Dead Sea waters;
- Archaeological, historical and cultural sites;
- Special risks (*e.g.* leakage or seismic events).

Means to mitigate potential negative social and environmental impacts will be detailed in an Environmental and Social Management Plan to be included with the ESA Report.

STUDY OF ALTERNATIVES

In 2010, a study was commissioned to evaluate and compare strategic alternatives to preserve the decline of the Dead Sea and augment the supply of water to Jordan, Israel and Palestinian Authority. A team of 3 individual experts, hired by the World Bank on the recommendation of the Beneficiary Parties, is carrying out this study. The team is reviewing the following alternatives:

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- No action
 - Lower Jordan River options;
 - Water transfer options (*e.g.* from the Mediterranean Sea, Turkey and Iraq);
 - Desalination options;
 - Technical and water conservation options;
 - Combination of alternatives.

These alternatives will be examined, and the technical and economic feasibility addressed, as well as their comparative economic and social impacts. The final report from this study is due in December 2010.

STAKEHOLDER CONSULTATION PLAN

A series of consultations at national, technical and local levels were held in 2007 and 2008, with a view to gathering opinions and concerns as an input into the Study Program. A report on the results of these consultations is available on the Study Program website: www.worldbank.org/rds

During 2010, a second round of consultations is being held. The purpose of these will be to inform interested parties on the progress of the Study Program, and conclusions to date, and to discuss remaining or additional concerns.

Five public meetings will be held in June in: Amman (13th June), Aqaba (14th June), Eilat (15th June), Jerusalem (16th June), and Ramallah (20th June).

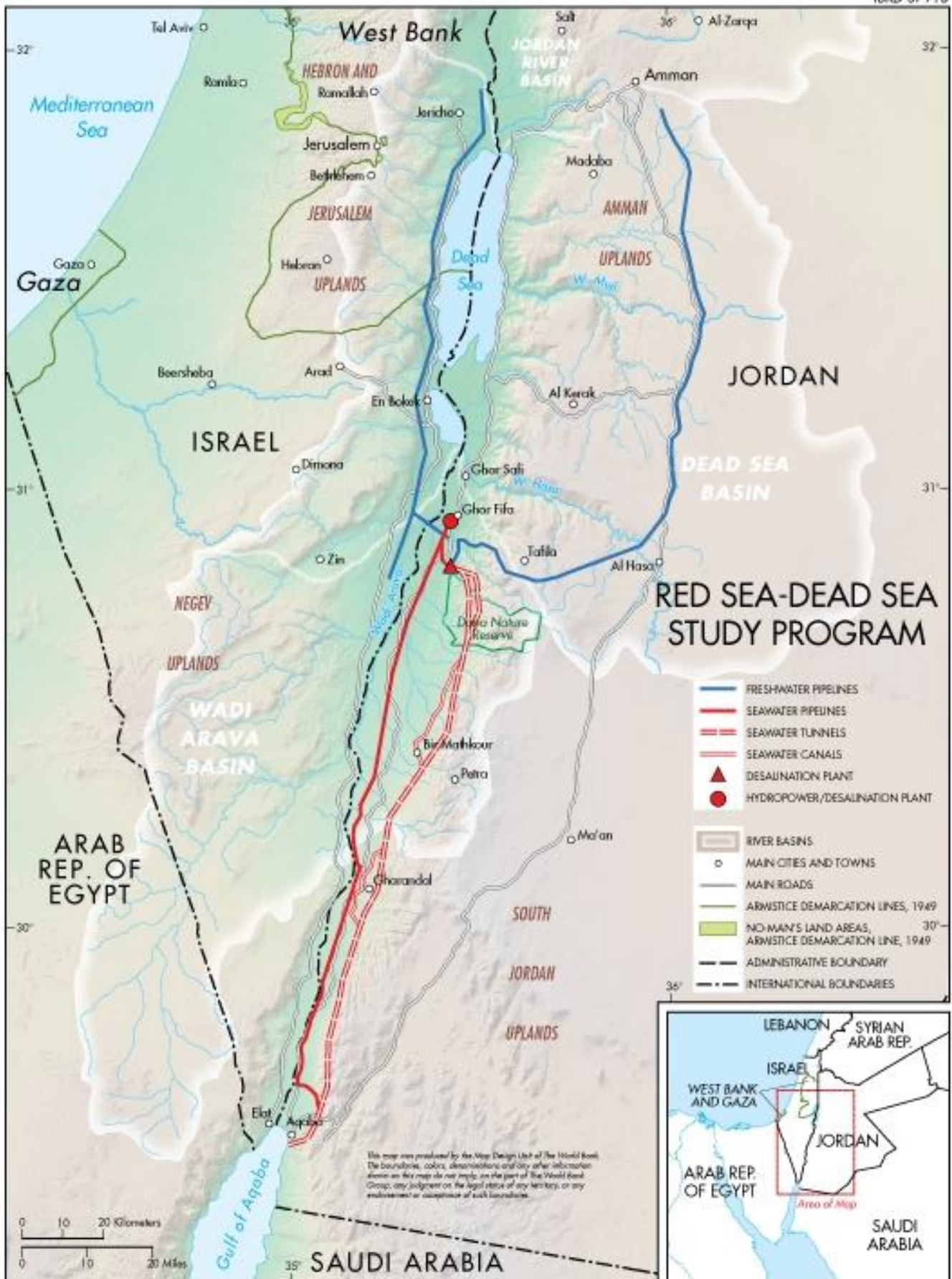
In addition, a series of local level consultations will be held in the Scheme area, including:

- Jordan - villages in the Wadi Araba and Southern Ghors, and villages in the Tafila Governorate;
- Israel – communities in the Arava valley, and the Dead Sea Basin; and
- Palestinian Authority – communities along the Dead Sea shore and the Jericho area.

These local level consultation meetings will be advertised locally, and will likely be held between July and October 2010. You will have an opportunity to ask any questions about the Study Program or the information in this leaflet at these meetings. The final reports will take into account stakeholders' concerns.

The Study Team welcomes your feedback on these issues and any other concerns. The ESA Report will outline measures to enhance the potential positive benefits, and minimise the potential negative impacts of the proposed Scheme.

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Map Showing Main Elements of Scheme