

**AFRICAN DEVELOPMENT BANK**



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**Swaziland**

**LOWER USUTHU SMALLHOLDER IRRIGATION PROJECT –  
PHASE II STUDIES**

**Appraisal Report**

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**April 2009**

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### Currency Equivalents

(March 2009)

1 UA = 1.1605 Euro

1 UA = 14.747 SZL

1 Euro = 11 SZL

## ACRONYMS AND ABBREVIATIONS

ADEMU	Agricultural Development and Environmental Management Unit
AfDB	African Development Bank
AIDS	Acquired Immune Deficiency Syndrome
AWF	African Water Facility
BADEA	Arab Bank for Economic Development in Africa
CMP	Comprehensive Mitigation Plan
DBSA	Development Bank of Southern Africa
DDR	Detailed Design Review
E	Emalangueni (plural of swazi langueni SZL)
ECOSAN	Ecological Sanitation
EDF	European Development Fund
EIA	Environmental Impact Assessment
EIB	European Investment Bank
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
EU	European Union
FAO	Food and Agriculture Organisation
GDP	Gross Domestic Product
GIS	Geographical Information System
GoS	Government of Swaziland
HIV	Human Immuno Deficiency Virus
ICDF	International Cooperation Development Fund (Taiwan, Republic of China)
IFAD	International Fund for Agricultural Development
LUSIP	Lower Usuthu Smallholder Irrigation Project

MEPD	Ministry of Economic Planning and Development
MNRE	Ministry of Natural Resources and Energy
MOAC	Ministry of Agriculture and Cooperatives
MOF	Ministry of Finance
NGO	Non Government Organisation
O&M	Operation and Maintenance
PMU	Project Management Unit
SADC	Southern African Development Community
SEA	Swaziland Environmental Authority
SKPE	Swaziland Komati Project Enterprise
SNL	Swazi Nation Land
SSA	Swaziland Sugar Association
SWADE	Swaziland Water and Agricultural Development Enterprise
SZL	Swaziland Lilangeni
TOR	Terms of Reference
UNDB	United Nations Development Business
UNDP	United Nations Development Programme

## Swaziland: Lower Usuthu Smallholder Irrigation Project – Phase II (LUSIP II) Studies

### Logical framework

NARRATIVE SUMMARY HIERARCHY OF OBJECTIVE	EXPECTED RESULT	REACH	INDICATORS AND SOURCE	TARGETS AND TIMEFRAME	RISKS /MITIGATION MEASURES
<p><b><u>Sector Goal (PRSAP 2007)</u></b></p> <p>Reduction of poverty in Swaziland through the introduction of improved agricultural techniques in rural areas.</p>	<p><b><u>Impact:</u></b></p> <p>Sustainable improvement in agricultural techniques leading to a reduction of poverty amongst the rural poor of Swaziland.</p>	<p>The Government of Swaziland, the rural population of Swaziland, Donors, NGOs</p>	<p><b><u>Indicator</u></b> Prevalence of poverty in the country.</p> <p><b><u>Source</u></b> Socio-economic and poverty surveys</p>	<p>Poverty prevalence reduced from 69% in 2008 to 30% by 2015 (PRSAP target)</p>	<p><b><u>Risks</u></b> Insufficient improvements in the weak business environment of the country.</p> <p><b><u>Mitigation Measures</u></b> Support from donors to reform the legal and regulatory frameworks of the country.</p>
<p><b><u>Objectives of the Study</u></b></p> <ol style="list-style-type: none"> <li>Preparation of the feasibility studies, detailed designs and tender documents required for the implementation of the LUSIP II infrastructure investments;</li> <li>Mobilisation of funds required for the implementation of LUSIP II infrastructure investments.</li> </ol>	<p><b><u>Outcomes:</u></b></p> <ol style="list-style-type: none"> <li>Feasibility studies report, detailed designs report, proposals for funding and tender documents prepared.</li> <li>Funds mobilized through the Donor’s Conference organized under the study.</li> </ol>	<p>The Government of Swaziland, Agriculture Sector stakeholders, Water Sector stakeholders, Donors, NGOs.</p>	<p><b><u>Indicators</u></b></p> <ol style="list-style-type: none"> <li>Number of completed sub-study reports prepared and approved by all stakeholders.</li> <li>Percentage of the estimated LUSIP II investment funds mobilized.</li> </ol>	<ul style="list-style-type: none"> <li>Feasibility studies report, detailed designs report and proposals for funding prepared, 9 months from study commencement date;</li> <li>At least 80% of LUSIP II estimated funds mobilized, 10 months from study commencement date;</li> </ul>	<p><b><u>Risks</u></b> Low donor support due to current world financial crisis.</p> <p><b><u>Mitigation Measures</u></b> The Government of Swaziland improves resource mobilization strategy taking into account the current world financial climate.</p>
<p><b><u>Study Components and Activities</u></b></p> <p><i>COMPONENT 1: Feasibility Studies</i></p> <p><i>Sub-Component 1: Water Resources Development Studies</i></p> <p><b><u>Activities:</u></b></p> <ol style="list-style-type: none"> <li>Engineering feasibility studies for the extension of Irrigation System, including study validation workshops.</li> <li>Preparation of a Water Master Plan and feasibility studies for water supply and sanitation facilities, including study validation workshops.</li> </ol>	<p><b><u>Outputs</u></b></p> <ol style="list-style-type: none"> <li>Engineering feasibility study report for the extension of the main irrigation canal 51km to the south as well as secondary and tertiary systems for the irrigation of 5000ha of land.</li> <li>Water Master Plan and feasibility studies report for potable water supply and sanitation facilities, including pilot ecological sanitation units.</li> </ol>	<p>Consultants, SWADE, Agriculture Sector stakeholders, Water Sector stakeholders, NGOs.</p>	<p><b><u>Indicator</u></b></p> <ol style="list-style-type: none"> <li>Number of kilometers of south extension of main canal studied; number of hectares of irrigable land studied.</li> <li>Percentage completion of the Water Master Plan preparation; percentage completion of the feasibility study report for water supply and sanitation facilities.</li> </ol> <p><b><u>Source:</u></b> Project Progress Reports, supervision missions and evaluation reports.</p>	<ul style="list-style-type: none"> <li>51 kilometers of south extension of main canal and 5000 ha of irrigable land studied, 7 months from study commencement date;</li> <li>Irrigation engineering feasibility study validation workshops organized 8 months from study commencement date;</li> <li>Water Master Plan and water supply and sanitation feasibility report completed, 7 months from study commencement date;</li> <li>Water Master Plan and water supply and sanitation feasibility study validation workshops organized 8 months from study commencement date;</li> </ul>	<p><b><u>Risks</u></b> Lack of interest or cooperation from the study area community.</p> <p><b><u>Mitigation Measures</u></b> Ensuring study ownership by the concerned community through the chiefdom development participatory planning approach.</p>

<p><i>Sub-Component 2: Environmental and Social Development Studies</i> <u>Activities:</u> 3. Environmental and Social Impact Assessment, including study validation workshops; 4. Preparation of Chiefdom Development Plans, including study validation workshops.</p>	<p>3. Environmental and Social Impact Assessment reports and plans (ESIA, ESMP, CMP, Resettlement plan); 4. Chiefdom Development plans based on transformative participatory processes for the 3 chiefdoms in the project area.</p>	<p>Consultants, SWADE, Agriculture Sector stakeholders, Water Sector stakeholders, NGOs.</p>	<p>3. Percentage completion of the ESIA study and preparation of required reports and plans (ESIA, ESMP, CMP, Resettlement plan). 4. Number of Chiefdom development plans prepared. <u>Source:</u> As above</p>	<ul style="list-style-type: none"> <li>• ESIA reports and plans completed, 7 months from study commencement date;</li> <li>• 3 Chiefdom development plans completed, 7 months from study commencement date.</li> <li>• Validation workshops for the ESIA reports and plans as well as the Chiefdom Development plans organized, 8 months from study commencement date.</li> </ul>	<p><u>Risks</u> Lack of interest or cooperation from the study area community.</p> <p><u>Mitigation Measures</u> Ensuring study ownership by the concerned community through the chiefdom development participatory planning approach.</p>
<p><i>Sub-Component 3: Financial and Economic Analysis</i> <u>Activity:</u> 5. Preparation of an update of the Financial and Economic Analysis of LUSIP and the Proposal for Funding, including study validation workshop.</p>	<p>5. Updated Financial and Economic Analysis Report of LUSIP and the Proposal for Funding Report.</p>	<p>As above</p>	<p>5. Percentage completion of the updating of Financial and Economic Analysis Report for LUSIP; percentage completion of the Proposal for Funding Report. <u>Source:</u> As above</p>	<p>Updated Financial and Economic Analysis Report for LUSIP completed, 8 months from study commencement date; the Proposal for Funding Report completed, 10 months from study commencement date.</p>	<p>As above</p>
<p><i>COMPONENT 2: Detailed Designs and tender document preparation</i> <u>Activities:</u> 6. Preparation of detailed designs of irrigation infrastructure and water supply &amp; sanitation facilities. 7. Preparation of tender documents for irrigation infrastructure and water supply &amp; sanitation facilities.</p>	<p>6. Detailed design documents for irrigation infrastructure and potable water supply &amp; sanitation facilities, including ecosan on a pilot scale. 7. Tender documentation for irrigation infrastructure and for potable water supply &amp; sanitation facilities, including ecosan on a pilot scale.</p>	<p>As above</p>	<p>6. Percentage completion of Detailed design documents for irrigation infrastructure and water supply &amp; sanitation facilities. 7. Percentage completion of the preparation of Tender documentation for irrigation infrastructure and water supply &amp; sanitation facilities.</p>	<ul style="list-style-type: none"> <li>• Detailed design documents for irrigation infrastructure and water supply &amp; sanitation facilities completed, 10 months from study commencement date.</li> <li>• Preparation of Tender documentation for irrigation infrastructure and water supply &amp; sanitation facilities Study completed, 11 months from study commencement date.</li> </ul>	<p>As above</p>
<p><i>COMPONENT 3: PROJECT MANAGEMENT</i> <u>Activities:</u> 8. Procurement of Consultant services, supervision of studies, review and validation of reports, organization of workshops and donors' conference.</p>	<p>8. Procured Consultant Services, acquired vehicles, organized study validation work-shops and donors' conference, and approved study reports.</p>	<p>As above</p>	<p>8. Percentage completion of consultant services procurement procedure, number of study validation workshops organized; number of donor conference organized and reports approved. <u>Source:</u> As above</p>	<ul style="list-style-type: none"> <li>• Consultant services procurement procedure completed, 6 months from Grant Signature;</li> <li>• 5 study validation workshops organized, 9 months from study commencement date.</li> <li>• One donors' conference organized, 11 months from study commencement date.</li> </ul>	<p>As above</p>
<p><u>Inputs</u> <i>Funding of study:</i> AWF € 999 000 GoS € 196 000 TOTAL €1 195 000 Duration of study: 20 months.</p>	<p><i>Funding of Phase II Infrastructure:</i> Total Cost Estimate: € 32 M <u>Donor Commitments:</u> European Investment Bank: € 13.5M European Development Fund: € 3.7M AFDB: € 15M (indicative amount 2009-2013 CSP - Swaziland)</p>				

## **EXECUTIVE SUMMARY**

### **1. Origin of the study**

1.1 The Government of Swaziland (GoS) seeks funding from the African Water Facility (AWF) for the financing of preparatory activities necessary for the implementation of the second phase of the Lower Usuthu Smallholder Irrigation Project (LUSIP II). The first phase of the project (LUSIP I) in the Lowveldt of the Kingdom of Swaziland involves the construction of three dams to form an off-river storage reservoir to impound 155 million cubic metres of water that will be diverted from wet season flood flows into the Lower Usuthu River. Construction works under the LUSIP I began in 2003 and currently, the reservoir at Lubovane, constructed under this project, is filling up. The construction of the first 36 km of the Main Canal is completed and the secondary and tertiary irrigation systems to irrigate 6.500ha of land are under construction.

1.2 The infrastructure investments in LUSIP I are being carried out with the support a number of donors, including the Arab Bank for Economic Development in Africa, the European Union, the Development Bank of Southern Africa, the International Fund for Agricultural Development, the European Investment Bank and the African Development Bank Group.

1.3 The LUSIP II will extend the Main Canal southwards by 51km and develop a further 5 000 ha of Swazi Nation Land in the Matata irrigation command area. The target population of about 1 000 families, making a population of about 10 000 people, lives in this area. This population which lives on rain-fed farming is amongst the 75% of the rural population of Swaziland classified as poor<sup>1</sup>. As a strategy to boost the economic growth rate of the country and fight against poverty, the GoS has placed the improvement of agricultural productivity high in the National Development Strategy (NDS) of Swaziland (Vision 2022) as well as in the Poverty Reduction Strategy and Action Programme (PRSAP 2007).

1.4 The GoS is currently negotiating funding for the implementation of LUSIP II. This implementation can only be undertaken after the preparatory activities necessary for an efficient implementation have been carried out. The proposed study will undertake these preparatory activities, which will address all relevant issues, including engineering designs as well as economic, social and environmental concerns.

### **2. The Study**

2.1 The proposed study consists of two main phases: i) the feasibility studies, which include the water engineering investigations and preliminary designs, the updating of the Environmental Impact Assessment, the Chiefdom Development studies and the updating of the Financial and Economic Analysis of LUSIP and ii) the detailed designs of the 51km extension of the Main Canal South and the secondary and tertiary irrigation systems to irrigate 5000ha of land, including typical on-farm layout designs; the detailed design of a potable water supply scheme and sanitation facilities, including ecological sanitation on a pilot scale, for the target population. The second phase of the study also includes the preparation of tender documentation for the implementation of the Phase II infrastructure.

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<sup>1</sup> Swaziland: CSP 2009 – 2013, §2.1.23

2.2 For technical and financial efficiency in the implementation of the study, both the feasibility study and the detailed design components will be carried out by one consulting firm to be recruited and supervised by the Implementing Agency, the Swaziland Water and Agricultural Development Enterprise (SWADE), in accordance with the terms of reference annexed to this appraisal report. SWADE is a parastatal enterprise setup by the GoS for the implementation of projects of this nature and it is currently the implementing agency for LUSIP I. The Project Management Unit setup by SWADE under LUSIP I will be responsible for the implementation of LUSIP II, as well as for this proposed study.

2.3 The objectives of the study are the following: i) the preparation of the feasibility studies, detailed designs and tender documents required for the implementation of the LUSIP II infrastructure investments and ii) the mobilisation of funds required for the implementation of LUSIP II infrastructure investments. The achievement of these outcomes will be measured against a set of indicators identified in the Logical Framework Analysis Matrix.

2.4 The main cost of the study is related to the services of a consulting firm that will be procured for the implementation of the study. The acquisition of these services shall be processed and a contract awarded, through competition, following International Short-Listing (ISL) procedures, utilizing the quality and cost-based selection (QCBS) process.

### **3. Conclusions and recommendations**

3.1 Based on a comprehensive assessment and an appraisal of the funding request for the “Lower Usuthu Smallholder Irrigation Project – Phase II Studies” in terms of relevance, effectiveness and sustainability, as well as the recipients capacity and credibility, a grant of €999 000 is hereby recommended. The Grant from the AWF for this 20 month study, including 8 months for the activities leading to Grant Effectiveness and for the procurement of the services of a consulting firm, will assist the GoS to implement its strategy of extending irrigated agriculture into rural areas, in order to improve the living conditions and reduce the prevalence of poverty amongst the poor.

3.2 The Government of Swaziland (GoS) will pay all taxes and duties incurred on the implementation of this study. The GoS will equally supply vehicles, pay running costs, provide office space and equipment and pay all operating expenditures of the project management unit. This contribution in kind from the GoS is estimated at € 196 000 or 16 % of the cost of the study. The study will enable the GoS to mobilize funds for infrastructure investments envisaged for LUSIP II through a donors’ conference to be organized at the end of the study. The lessons learnt from carrying out the study as well as the innovative approaches introduced will be used for scaling out and for improving the implementation of similar projects elsewhere in the region.

# **1. BACKGROUND**

## **1.1 Origin of the Study**

1.1.1 The Lower Usuthu Smallholder Irrigation Project (LUSIP) in the Lowveldt of the Kingdom of Swaziland which started in April 2003 involves the construction of three dams to form an off-river storage reservoir to impound 155 million cubic metres of water that will be diverted from wet season flood flows into the Lower Usuthu River for the irrigation of a total area of 11 500 ha of land. A number of studies have been undertaken for this project, including Pre-feasibility studies in 1996, detailed feasibility studies in 1997/1998 and an Environmental Impact Assessment (EIA) in 1999/2000.

1.1.2 A phased development of the area was proposed during the preparation of the first phase of the project: an area of 6 500ha is to be developed in Phase I of the project; a further 5 000 ha of land will be developed in Phase II by extending the Main Canal South by 51 km and providing additional secondary and tertiary irrigation systems as well as mobilizing the beneficiary community. The objective of the LUSIP project is to alleviate poverty in the project area by transforming the existing subsistence farming into commercial farming of irrigated lands producing cash crops (principally sugarcane). Phase I of LUSIP has about 2,600 beneficiary households (about 20,000 people) and Phase II will directly benefit a further 1 000 families (about 10,000 people).

1.1.3 The LUSIP project comprises four main components: i) Upstream Works (including 3 dams) and Distribution System, ii) Downstream Development, iii) Environmental Mitigation, and iv) Project Management. The total cost of the project is estimated at UA 85.39 million. The first phase of the project is being funded with an African Development Bank (AFDB) Group Loan of UA 9.31 million as well as funding from other development partners: - Arab Bank for Economic Development in Africa (BADEA) (UA 8.05 million); European Union (EU) (UA 8.27 million); Development Bank of Southern Africa (DBSA) (UA 10.61 million); International Fund for Agricultural Development (IFAD) (UA 13.15 million); European Investment Bank (EIB) (UA 18.67 million); GoS (UA 13.79 million) and the Beneficiaries (UA 3.54 million). The GoS and some of these development partners have expressed their readiness to support the second phase of the project which is now estimated to cost about 32 million euros (UA 27.5 million).

1.1.4 Currently, the following main water infrastructure for LUSIP-I is complete and operational: (i) the Weir, Intake and Sand Trap; (ii) Feeder Canal; (iii) Mhlatuzane, Golome and South Saddle Dams and the Spillway (Lubovane Reservoir is now filling up); (iv) 36 km of the Main Canal; and (v) the first 800 ha of secondary and tertiary delivery systems. In connection with the construction of the main infrastructure, 147 homesteads have been resettled and the affected parties compensated; over 700 graves, one church and one school have been relocated. Twenty three farmer associations covering 2190 ha have been formed. Two chiefdom development plans for Phase I have been completed; i.e. they have been endorsed by their respective chiefs. The development of potable water and sanitation facilities in the Phase I area will begin this year (2009).

1.1.5 The funds requested from the African Water Facility (AWF) will serve in the undertaking of the feasibility studies for Phase II as well as for the preparation of the detailed designs and tender documents for the required irrigation infrastructure and the water supply and sanitation scheme.

## 1.2 Sectoral Priorities

1.2.1 Although a middle income country, Swaziland continues to face a number of development challenges including, extreme poverty (48% prevalence)<sup>2</sup>, high income inequality, a high HIV/AIDS prevalence rate and high unemployment. The country has seen economic growth weakened over the past decade. The poor growth performance in recent years is attributable amongst others to the underperformance of the agricultural sector<sup>3</sup>. The improvement of agricultural productivity has been given a high priority in the National Development Strategy (NDS) of Swaziland (Vision 2022) as well as in the Poverty Reduction Strategy and Action Programme (PRSAP 2007).

1.2.2 The strategies the GoS intends to pursue to halve the number of people suffering from hunger by 2015 and to achieve food security and adequate nutrition for all Swazis by the year 2022 include: (i) modernise agriculture and reduce the dependence on rain-fed farming in order to increase and safeguard production; (ii) improve efficiency and equity in land tenure in order to maximise land use and food production; (iii) eliminate the restrictions on women accessing credit and inhibiting their ability to take farming decisions and (iv) improve access to water resources for cultivation through water harvesting and securing water rights.

1.2.3 The objectives of the LUSIP project, within which this study is to be undertaken, are in line with these GoS policies. Also, the project is in line with the five guiding principles of development co-operation, which should be mainstreamed into all aspects of assistance. These are: (i) the effect on poverty reduction; (ii) support for institutional development and capacity strengthening; (iii) gender equality; (iv) sustainable management of environmental and natural resources use; and (v) enhancement of economic, social, political, and cultural rights.

1.2.4 Swaziland has not yet developed a formal integrated water resources management (IWRM) plan. However, efforts are made in designing projects in line with IWRM principles. The design adopted for LUSIP has been holistic: domestic and livestock water use has been factored into the general approach, although the main impetus is to provide water for irrigation. As concerns water supply and sanitation which are equally prioritized in the PRSAP 2007, LUSIP has set as one of its targets, the provision of potable water and sanitation facilities to all homesteads in the project area.

1.2.5 The country has also made progress in the trans-boundary water resources management (TWRM) area of water governance by establishing river basin authorities for all river basins in the country as well as joining all regional river basin organisations of its shared rivers, including the Joint Rivers Commission which monitors the implementation of the Interim Tripartite Agreement on Water resources between South Africa, Mozambique and Swaziland on the use of the water in the Usuthu River.

1.2.6 The proposed study falls within the priority area of intervention of the AWF entitled “Investments to meet water needs – Project Preparation”. The project will also introduce aspects of innovation in this sector in Swaziland, namely ecological sanitation, drip irrigation, chiefdom development planning participatory approaches as well as sustainable livelihood approaches to community development, all of which are expected to enhance beneficiary ownership of the project and improve agricultural productivity and as such have an impact on the reduction of poverty in the rural areas of the Kingdom of Swaziland.

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<sup>2</sup> Swaziland CSP 2009 – 2013, §2.5

<sup>3</sup> Swaziland CSP 2009 – 2013, 2.1.5

### **1.3 Problem Definition**

1.3.1 Almost 70% of the total population of Swaziland still suffers from food insecurity<sup>4</sup>. As a response to this difficulty, the Government has set a goal to halve the number of people suffering from hunger by 2015 and to achieve food security and adequate nutrition for all Swazis by the year 2022.

1.3.2 Access to potable water supply in Swaziland as a whole was 70% in 2007 and the sanitation coverage was 57% in the same year<sup>5</sup>. In the project area of LUSIP II, the population has no access to potable water supply and there are equally no improved sanitation facilities. Water for human consumption is obtained from nearby streams and where available, simple pits serve as sanitation facilities.

1.3.3 The most vulnerable group is made up of those households in rain-fed subsistence agriculture where the poverty level is similar to the 75% prevalent in rural Swaziland<sup>6</sup>. These are households with the largest number of dependants and most of these dependants are children and the elderly. According to the 2002 Agricultural Census, 56 per cent of the households never have enough to eat and about 15 per cent never produce enough maize (the staple food).

1.3.4 The basic causes of food insecurity in Swaziland include:

- unfavourable climatic conditions, including prolonged droughts;
- inadequate access to water resources and rights for irrigation;
- lack of environmental management, deforestation, desertification, overgrazing and land degradation due to exceeding the carrying capacity of communal grazing lands;

1.3.5 The lessons learnt from the implementation of LUSIP I have highlighted the importance of undertaking this proposed study, which will be particularly beneficial to the project in addressing the aspects of community mobilization and project ownership which have adversely affected the implementation of LUSIP I. More information on the lessons learnt and the social and institutional situation in the project area is found in Annex 6, §7.

### **1.4 Beneficiaries and Stakeholders**

1.4.1 The GoS is the main beneficiary of this study, as it will use its outcomes for the mobilisation of funds for investment in infrastructure to be developed in LUSIP phase II. Other beneficiaries of the study include Consultants, SWADE, Water and Agriculture sector stakeholders and Non Government Organisations (NGOs) working in the social development sectors in Swaziland.

1.4.2 The main donor stakeholders of the LUSIP project include the European Investment Bank which has committed funds for Phase II infrastructure and the ABD Group which has equally earmarked funds for LUSIP II in its 2009 – 2013 Country Strategy Paper for Swaziland.

1.4.3 The target population of the LUSIP II project is the approximately 10,000 poor rural people living in three chiefdoms, located within the boundaries of the Swazi Nation Land to be developed under Phase II of LUSIP, in the Matata irrigation command area. Amongst the smallholder sugarcane farmers in the LUSIP area, there are about 20% female farm holders who

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<sup>4</sup> Swaziland: 2002 Agricultural Census.

<sup>5</sup> Swaziland CSP 2009 – 20013, § 3.1.6

<sup>6</sup> Swaziland CSP 2009 – 20013, § 2.1.23

will be equally and fairly represented in all project support services. Also, women farmers who are not already organized in production groups will be assisted to do so under the proposed study. The chiefdom development plans to be prepared under the proposed study will ensure an equitable allocation of the benefits of the outputs of the LUSIP project.

## **2. THE STUDY**

### **2.1 Impacts**

2.1.1 The sector goals, as expressed in the Swaziland 2007 PRSAP, include the reduction of poverty in Swaziland through the introduction of improved agricultural techniques in rural areas. The proposed study will assist the GoS in securing financing for the physical implementation of LUSIP Phase II and thereby in making progress towards the attainment of its sector goals.

### **2.2 Outcomes**

2.2.1 The objectives of the study are the following: i) the preparation of documents required for the implementation of the LUSIP II infrastructure investments – these documents include the feasibility studies reports, the detailed designs, the proposal for funding and the tender documents and ii) the mobilisation of funds required for the implementation of LUSIP II infrastructure investments – this will be done mainly through the organization of a donors' conference at the end of the study.

2.2.2 The achievement of these outcomes will be measured against a set of indicators identified in the Logical Framework Matrix.

### **2.3 Outputs**

2.3.1 The 8 major outputs of the study, arranged under 3 components and 3 sub-components, are the following:

#### ***Component 1: Feasibility Studies***

- *Sub-Component 1: Water Resources Development Studies*
  - *Output 1:* Engineering feasibility study report for the extension of the main irrigation canal 51km to the south as well as secondary and tertiary systems for the irrigation of 5000ha of land.
  - *Output 2:* Water Master Plan and feasibility studies report for potable water supply and sanitation facilities, including pilot ecological sanitation units.
- *Sub-Component 2:*
  - *Output 3:* Environmental and Social Impact Assessment (ESIA) reports and plans (ESIA, Environment and Social Management Plan (ESMP), Comprehensive Mitigation Plan (CMP), Resettlement plan).
  - *Output 4:* Chiefdom Development plans based on transformative participatory processes for the 3 chiefdoms in the project area.
- *Sub-Component 3:*
  - *Output 5:* Updated Financial and Economic Analyses Report of LUSIP and the Proposal for Funding Report.

#### ***Component 2: Detailed Designs and Tender Document Preparation***

- *Output 6:* Detailed design documents for irrigation infrastructure and potable water supply and sanitation facilities, including ecological sanitation on a pilot scale.

- *Output 7:* Tender documentation for irrigation infrastructure and for potable water supply and sanitation facilities, including ecological sanitation on a pilot scale.

**Component 3:**

- *Output 8:* Project Management Results (Procured Consultant Services, acquired vehicles, organized study validation work-shops and donors’ conference and approved study reports).

**2.4 Activities**

2.4.1 These outputs will be attained through the performance of the activities organised into 3 components and described briefly below. For technical and financial efficiency in the implementation of the study, both of its components will be undertaken by one consulting firm, in accordance with the terms of reference found in Annex 5, which require the validation of the reports of all the sub-components of the study at workshops to be organised by the consulting firm and the Implementing Agency. The specific outputs of each activity that will collectively contribute to the achievement of the outcomes of the Study are summarised in the following paragraphs:

**2.4.2 Component 1: Feasibility Studies**

*2.4.2.1 Sub-Component 1: Water Resources Development Studies*

*Activity 1: Engineering feasibility studies for the extension of the irrigation System:*

This activity comprises the undertaking of the engineering feasibility studies which include the preparation of preliminary designs and cost estimates for the extension of the Main Canal South by 51 km and the development of secondary and tertiary irrigation systems to irrigate approximately 5000ha of land, as well as the preparation of typical on-farm designs for the different types of farmland identified. The activity involves topographical and geotechnical surveys for the setting out of the irrigation systems and the evaluation of the volumes of work. Soil field investigations will also be carried out in order to determine suitable areas of land for irrigation. The irrigation system design team will work in close coordination with the chiefdom development planning team for the final selection of areas of land to be irrigated. The terms of reference for this sub-study, which include the training to be provided to the beneficiaries and other stakeholders, are detailed in Annex 5, section 2.1.1.

*Activity 2: Preparation of a Water Master Plan and feasibility studies for water supply and sanitation facilities:*

*Activity 2a. Preparation of the Water Master Plan and Water Supply Scheme:*

The water master plan which is required for the evaluation and the management of the quantities of water needed for each component of the project (irrigated agriculture, homestead gardens, livestock water, environmental, trans-boundary/catchment and potable water supply) as well as for providing details of the institutional arrangements and the infrastructure needed for planning purposes, will be prepared under this sub-study. The Consultant will also carry out feasibility studies and preliminary designs for a potable water supply scheme which will consist of standpipes serving clusters of homesteads and located within 200m of these. The water will be obtained from irrigation pipelines and treated using slow sand filters or any other efficient method to be determined by the Consultant.

*Activity 2b. Feasibility studies for Sanitation facilities:*

Under this sub-study, the Consultant will carry out the feasibility studies and preliminary designs for sanitation facilities to be developed under LUSIP II. These will consist of ventilated improved latrines (VIP) to be provided to each homestead in the project area as well as a pilot scale ecological sanitation scheme.

Terms of Reference for Activity 2 sub-study are provided in Annex 5, section 2.1.2, which includes requirements for beneficiary training.

*2.4.2.2 Sub-Component 2: Environmental and Social Development Studies*

*Activity 3: Environmental and Social Impact Assessment (ESIA)*

An Environmental Impact Assessment (EIA) was carried out previously for the entire LUSIP project in 2000. Given the implementation of Phase I and the resultant impacts and in the light of climate change risks, it has been considered necessary to update the EIA of 2000 and prepare an ESIA report taking into account the lessons learnt in Phase I and building-in climate-resilience measures, so as to improve the design of Phase II. The ESIA requirements and rules of the different donors of the project will be examined by the consulting firm undertaking the studies, to ensure that the studies are carried out to the highest requirements, thereby satisfying the needs of all the donors. The consulting firm will produce an Environmental and Social Management Plan (ESMP), a corresponding Comprehensive Mitigation Plan (CMP) and a Resettlement Plan as components of the ESIA report. The terms of reference for this sub-study are detailed in Annex 5, section 2.2.1.

*Activity 4: Chiefdom Development Planning*

The Chiefdom Development Planning procedure will be used to develop a new vision for the chiefdoms based on the commercialization of agriculture, which underpins the changes that will take place in the communities. This procedure emphasizes “training for transformation” principles in order to prepare the communities for the changes envisaged and assist them in analyzing a number of key issues in relation to the proposed intervention as well as provide a basis for informed community participation and decision making. Training for transformation is founded on gender and social equity, which is an important issue to be addressed in the development of the chiefdoms. The resource-use plans that will be prepared through this participative development planning procedure will be used by the irrigation specialists to prepare the detailed designs of the secondary and tertiary irrigation systems and by the water and sanitation engineers to prepare the Water Master Plan and design the facilities to be constructed. The process involves the following activities:

*Activity 4a. Community Mobilization:*

This is the start-up phase in which institutional and stakeholder analysis is undertaken and communication is stimulated within the communities to establish communication channels. The necessary decision making structures are also mobilized and are capacitated to undertake the planning and decision making processes that follow.

*Activity 4b. Community Analysis*

This activity seeks an in-depth understanding of the community and it is based on data and information collection and analysis. The communities will be in the forefront in the collection of this data in order to promote community ownership of the project. Base data and maps of the area are used at this stage to stimulate thought and discussion and to indicate the interface between social and physical community resources so as to enable optimal decision making.

#### *Activity 4c. Community Planning*

At this stage, all the information collected and analysed is synthesized with the participation of the community to prepare resource-use and action plans for chiefdom development. To ensure effective implementation of the plans, the capacity of stakeholders is evaluated and external support requirements identified. Terms of Reference for this sub-study are detailed in Annex 5, section 2.2.2.

#### *2.4.2.3 Sub-Component 3: Financial and Economic Analysis*

##### *Activity 5: Preparation of an update of the Financial and Economic Analysis of LUSIP and the Proposal for Funding*

A financial and economic analysis report was prepared for the LUSIP in 2001, justifying the sustainability and the viability of the project and enabling the mobilisation of funds for LUSIP I. This report was further reviewed in 2005 and will have to be updated under this study and a proposal for funding prepared as well, in order to facilitate the mobilisation of funds by the GoS for the financing of the infrastructure investments envisaged for LUSIP II. This sub-study will demonstrate the financial and economic viability of the project, taking into account current institutional, environmental and climatic, social, technical, economic and financial constraints. The terms reference for this activity are given in Annex 5, section 2.3.

#### *2.4.3 Component 2: Detailed Designs and tender document preparation*

##### *Activity 6: Preparation of detailed designs of irrigation infrastructure and water supply and sanitation facilities.*

Based on feasibility studies component and taking into account the contributions and the views expressed by stakeholders in the workshops envisaged for the validation of each sub-study, the Consultant will prepare detailed design documents for the irrigation infrastructure and water supply and sanitation facilities to be developed in LUSIP II. The Consultant will equally prepare more accurate cost estimates for the construction of the infrastructure and facilities, under this activity.

##### *Activity 7: Preparation of tender documents for irrigation infrastructure and water supply and sanitation facilities*

Based on the indicative amount of funds mobilized during the donors' conference envisaged towards the end of the study and any other resources the GoS can mobilize, the Consultant will finalise the preparation of the tender documents required for the construction of the irrigation infrastructure and water supply and sanitation facilities.

The terms reference for this component are given in Annex 5, section 2.4.

#### *2.4.4 Component 3: Project Management*

##### *Activity 8: Project Management Tasks*

Under this activity, the following major tasks will be carried out by the Project Management Unit (PMU): i) the procurement of the services of a consulting firm for all the sub-studies; ii) the acquisition of vehicles and office equipment; iii) organisation of Study Validation Workshops and Donors' Conference; iv) preparation of quarterly progress reports; and v) the review and approval of all study reports prepared by the consulting firm.

## **2.5 Risks**

2.5.1 A number of explicit and implicit assumptions linking the lower to the higher objectives

of the study will determine the level of attainment of its objectives. It is necessary that these risks be evaluated during the undertaking of the study and the implementation of the LUSIP II and adequate mitigation measures adopted at each stage.

2.5.2 At the output level, a lack of interest by the population or poor cooperation by the beneficiary communities is a major risk, following the lessons learnt from Phase I. This risk will be mitigated by ensuring the effective participation and ownership of the study outputs by the communities through the adoption of the chiefdom development participatory planning procedure.

## 2.6 Costs and Financing

2.6.1 The total cost of the project is estimated at € 1 195 000 to be financed by an AWF grant of €999.000 and a GoS contribution of € 196.000. The detailed cost estimates, summarized in Table 2.1 by study components, are shown in Annex 3. The costs are based on estimates made from similar studies being undertaken currently in Southern Africa, with a 10% allowance for physical and price escalation contingencies.

*Table 2.1 – Estimated Costs by study components (Amounts in € - excluding taxes and duties)*

Study Components	Sub-components	AWF Funds	GoS Funds	Total
<b>Component 1: Feasibility Studies</b>	<b>Sub-Component 1:</b> Water Resources Development Studies ( <i>irrigation, potable water and sanitation</i> ).	409 810	-	409 810
	<b>Sub-Component 2:</b> Environmental and Social Development Studies (ESIA & Chiefdom Planning)	327 973	-	327 973
	<b>Sub-Component 3:</b> Financial and Economic Analysis	35 200	-	35 200
<i>Sub-total: Component 1</i>		<b>772 983</b>	-	<b>772 983</b>
<b>Component 2: Detailed Designs and Tender Documents Preparation</b>		<b>134 700</b>	-	<b>134 700</b>
<b>Component 3: Project Management</b>		-	178 239	178 239
<i>Sub-total: Entire Study</i>		<b>907 683</b>	<b>178 239</b>	<b>1 085 921</b>
Contingencies, 10% (physical 6%; financial 4%)		90 768	17 824	108 592
<b>Total (Rounded up)</b>		<b>999 000</b>	<b>196 000</b>	<b>1 195 000</b>
<b>Percentages</b>		<b>84%</b>	<b>16%</b>	<b>100%</b>

2.6.2 The financing of this study will be in accordance with the above table. The Government of Swaziland (GoS) will pay all taxes and duties incurred on the implementation of the study. The GoS will equally supply vehicles, pay running costs, provide office space and equipment and operating expenditures of the project management unit. This contribution in kind from the GoS is estimated at € 196 000 or 16 % of the cost of the study. The remainder of the costs of the study (84%) will be financed by the Grant from the AWF.

## 3. PROJECT IMPLEMENTATION

### 3.1 Recipient

3.1.1 The Recipient of the project is the Ministry of Finance of the Kingdom of Swaziland which has designated the parastatal enterprise, *Swaziland Water and Agricultural Development Enterprise* (SWADE), as the Executing Agency. SWADE which operates under the oversight of the Ministry of Agriculture and Cooperatives is currently implementing a number of similar projects in the sector, including the Lower Usuthu Smallholder Irrigation Project Phase I and has sufficient experience, technical, financial and managerial capacity to enable it implement this

study efficiently. SWADE will receive funding from the AWF through the Ministry of Finance, manage the funds, recruit a consulting firm and administer the consultancy contract.

### 3.2 Implementation arrangements and capacity

3.2.1 The SWADE organigramme for the implementation of the LUSIP project is presented in Annex 1. As indicated in this organigramme, the Ministry of Agriculture and Cooperatives of the GoS provides overall oversight on SWADE's activities which are controlled directly by the SWADE Board. The enterprise is headed by a Chief Executive Officer who supervises the various teams that work with the enterprise. The SWADE Board will play the role of the steering committee in the implementation of the proposed study. Stakeholder workshops will also be organised to validate the reports of all the sub-studies envisaged.

3.2.2 The Project Management Unit (PMU) setup within SWADE for the implementation of LUSIP Phase I has been coordinating the project's activities since April 2003. The PMU, which is headed by a Project Director, will supervise the proposed study as well as the implementation of LUSIP Phase II infrastructure investment activities. The PMU is financed by the European Development Fund and has sufficient funds to operate until the end of March 2011.

3.2.3 For technical and financial efficiency in the implementation of the study, both the feasibility study and the detailed design components will be carried out by one consulting firm whose services will be procured by SWADE under this study. The provisional terms of reference for the study are included in Annex 5. The different engineering designs, environmental and social studies will be carried out by experts with the qualifications specified in the terms of reference.

### 3.3 Performance Plan

3.3.1 The performance indicators shown in Table 3.1 will be used in monitoring the attainment of the outputs and outcomes of the study.

*Table 3.1: Performance Plan*

Outputs	Indicators	Targets and Timeframe
1. Engineering feasibility study report for the extension of the main irrigation canal 51km to the south as well as secondary and tertiary systems for the irrigation of 5000ha of land. 2. Water Master Plan and feasibility study report for potable water supply and sanitation facilities, including pilot ecological sanitation units.	1. Number of kilometers of south extension of main canal studied; number of hectares of irrigable land studied. 2. Percentage completion of the Water Master Plan preparation; percentage completion of the feasibility study report for water supply and sanitation facilities.	<ul style="list-style-type: none"> <li>• 51 kilometers of south extension of main canal and 5000 ha of irrigable land studied, 7 months from study commencement date;</li> <li>• Irrigation engineering feasibility study validation workshops organized 8 months from study commencement date;</li> <li>• Water Master Plan and water supply and sanitation feasibility report completed, 7 months from study commencement date;</li> <li>• Water Master Plan and water supply and sanitation feasibility report feasibility study validation workshops organized 8 months from study commencement date;</li> </ul>
3. Environmental and Social Impact Assessment reports and plans (ESIA, ESMP, CMP, Resettlement plan); 4. Chiefdom Development plans based on transformative	3. Percentage completion of the ESIA study and preparation of required reports and plans (ESIA, ESMP, CMP, Resettlement plan). 4. Number of Chiefdom	<ul style="list-style-type: none"> <li>• ESIA reports and plans completed, 7 months from study commencement date;</li> <li>• 3 Chiefdom development plans completed, 7 months from study commencement date.</li> <li>• Validation workshops for the ESIA reports and plans as well as the Chiefdom Development plans organized, 8 months</li> </ul>

participatory processes for the 3 chiefdoms in the project area.	development plans prepared.	from study commencement date.
5. Updated Financial and Economic Analysis Report of LUSIP and the Proposal for Funding Report.	5. Percentage completion of the updating of Financial and Economic Analysis Report for LUSIP; percentage completion of the Proposal for Funding Report.	Updated Financial and Economic Analysis Report for LUSIP completed, 8 months from study commencement date; the Proposal for Funding Report completed, 10 months from study commencement date.
6. Detailed design documents for irrigation infrastructure and potable water supply & sanitation facilities, including ecosan on a pilot scale. 7. Tender documentation for irrigation infrastructure and for potable water supply & sanitation facilities, including ecosan on a pilot scale.	6. Percentage completion of Detailed design documents for irrigation infrastructure and water supply & sanitation facilities. 7. Percentage completion of the preparation of Tender documentation for irrigation infrastructure and water supply & sanitation facilities.	<ul style="list-style-type: none"> <li>• Detailed design documents for irrigation infrastructure and water supply &amp; sanitation facilities completed, 10 months from study commencement date.</li> <li>• Preparation of Tender documentation for irrigation infrastructure and water supply &amp; sanitation facilities Study completed, 11 months from study commencement date.</li> </ul>
8. Procured Consultant Services, acquired vehicles, organized study validation work-shops and donors' conference, and approved study reports.	8. Percentage completion of consultant services procurement procedure, number of study validation workshops organized; number of donor conferences organized and reports approved.	<ul style="list-style-type: none"> <li>• Consultant services procurement procedure completed, 6 months from Grant Signature;</li> <li>• 5 study validation workshops organized, 9 months from study commencement date.</li> <li>• One donors' conference organized, 11 months from study commencement date.</li> </ul>

*NB: a period of 8 months from Grant Signature to study commencement date is assumed.*

The percentage attainment of these performance targets will be evaluated during implementation and details provided in the quarterly project progress reports.

### **3.4 Implementation Schedule**

3.4.1 This study is expected to have a total duration of 20 months from Grant Signature to the approval of all study reports and tender documentation. The period of about 8 months from the signature of the Grant Agreement to the first disbursement will be used by the Executing Agency for carrying out all activities leading to Grant Effectiveness and for the procurement of the services of a consulting firm.

3.4.2 *Timing of Procurement Activities:* Upon approval of the Grant, the Executing Agency will: i) prepare and advertise for expressions of interest; ii) prepare shortlists of consultants for the different studies and designs; iii) prepare Requests for Proposals and obtain approvals from the African Water Facility (AWF). The consulting firms will be allowed 42 days from the date of issue of the Request for Proposals to submit their proposals. A period of two weeks will be allowed for the review of the proposals and approval by the Tender Board and the same amount of time for approval by the AWF; and a further two weeks for the letter of acceptance to be issued. The consulting firm will be expected to begin work within two weeks of this acceptance.

3.4.3 *Timing of implementation:* the Executing Agency will expect inception reports and work plans from the consulting firm for approval within two weeks of commencement of the study activities. After the approval of consulting firm's plan of work, methods and tools, the timing for the starting and the completion of the different activities will be in accordance with the implementation schedule (Table 3.2.) The detailed Implementation Schedule is presented in Annex 2.

Table 3.2: Implementation Schedule Summary

Activity	Duration in months																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Procurement of Consultancy Services and Activities leading up to grant effectiveness	■																				
<b>Compo1: Feasibility Studies</b>																					
Sub-Compo1: Water Resources Development Studies								■	■	■	■	■	■	■	■						
Activity1. Irrigation Engineering Feasibility Studies								■	■	■	■	■	■	■	■						
Activity2: Water and Sanitation Feasibility Studies									■	■	■	■	■	■	■						
Sub-Compo2: Environmental and Social Development Studies								■	■	■	■	■	■	■	■						
Actv3. ESIA Studies									■	■	■	■	■	■	■						
Actv4. Chiefdom Development Planning Studies								■	■	■	■	■	■	■	■						
Sub-Compo 3: Actv5. Financial & Economic Analysis																■	■	■	■	■	
<b>Compo. 2: Detailed Designs and Tender Preparation</b>																					
Activ. 6a: Detailed Designs																■	■	■	■	■	
Activ. 6b: Tenders preparing																		■	■	■	
Compo. 3: Project Management	■																				

### 3.5 Procurement Arrangements

3.5.1 All acquisition of consultancy services financed by AWF shall be in accordance with the AWF's Operational Procedures and the Bank's Rules and Procedures for the Use of Consultants, using the relevant Bank Request for Proposals Documents. Procurement arrangements are divided into categories and summarized in Table 3.3, based on the cost estimate details given in Annex 3.

Table 3.3: Procurement Arrangements

Procurement Categories	Short-list (€ - Excluding taxes)	Non-AWF** Funded (€)	Total (€ - Excluding taxes)
<b>1. Goods</b>			
1.1 Vehicles		60 000	60 000
1.2 Office equipment		45 000	45 000
<b>2. Consultancy Services</b>			
2.1 Feasibility Studies, Detailed Designs and Tender Documents	998 451 (998 451)		998 451 (998 451)
<b>3. Miscellaneous</b>			
3.1 Vehicle running cost		27 000	27 000
3.2 Operating expenditure		17 500	17 500
3.3 Office Space		30 000	30 062
3.4 Preparation of reports		5 500	5 500
3.5 Organization of Donors' Conferences		11 000	11 000
<b>Total Cost of Study (rounded up)</b>	<b>999 000</b>	<b>196 000</b>	<b>1 195 000</b>
<b>Total AWF Grant (rounded up)</b>	<b>(999 000)</b>	<b>-</b>	<b>(999 000)</b>

The figures in brackets represent the amounts financed by the AWF.

\*\* Funded by the GoS.

3.5.2 **Goods.** Contracts for goods comprising three vehicles amounting to € 60 000 and office equipment amounting to € 45 000 funded by the GoS shall be procured using GoS procurement procedures.

3.5.3 **Consultancy Services.** Acquisition of consulting services from a firm shall be processed and a contract awarded, through competition, following International Short-Listing (ISL) procedures. One such contract comprising feasibility studies and detailed designs and tender document preparation amounting to € 999 000 shall be procured utilizing the quality and cost-based selection (QCBS) process. The Specific Procurement Notice (SPN) for this contract shall be advertised in the *United Nations Development Business (UNDB) Online* and on the Bank's Website in addition to one newspaper of national circulation in the Recipient's country, the official gazette or an electronic portal with free access.

3.5.4 **Miscellaneous:** Miscellaneous expenditures falling under vehicle running cost amounting to € 27 000; operating expenditures amounting to €17 500; office space amounting to € 30 000; preparation of reports amounting to € 5 500; and organization of a Donors' Conference amounting to € 11 000, all funded by the GoS, will be procured using GoS procurement procedures.

### 3.6 Procurement Review Procedures

3.6.1 **Prior Review:** The contract for consultancy services envisaged for this study will be subject to prior review by the AWF. The following documents are subject to review and approval by the AWF before promulgation, under prior review: The Specific Procurement Notice (SPN); the request for proposals document; the reports on evaluation of consulting firms' proposals, including recommendations for contract award, as well as the draft contract, if this has been amended from the drafts included in the request for proposals document.

3.6.2 **Post Review:** No procurement of goods or services subject to post-review by the AWF is envisaged under the study.

3.6.3 **Executing Agency:** The Executing Agency, SWADE, will be responsible for the procurement of goods and consulting services. The resources, capacity, expertise and experience of SWADE are adequate to carry out the procurement. This is based on its performance in the implementation of LUSIP Phase I as indicated in section 3. 2.

3.6.4 **Procurement Plan:** The Recipient shall prepare and submit a Procurement Plan acceptable to the AWF before Grant Signature, and setting forth: (a) the particular contract for the consulting services during the life of the project; (b) the proposed mode of procurement; and (c) the related AWF review procedures (prior or post review). The Recipient shall update the Procurement Plan annually or as needed throughout the duration of the project. Any revisions proposed to the Procurement Plan shall be furnished to the AWF for its prior approval. The Recipient shall implement the Procurement Plan in the manner in which it has been approved by the AWF.

### 3.7 Accounting and Auditing

3.7.1 Specific accounting arrangements and requirements for the Recipient to open a Special Account with a local Bank acceptable to AWF from which all eligible payments will be made, will be included in the Grant Agreement that will be prepared by the legal services of the Bank and signed with the Recipient. The account will allow installments in Euro and will be administered by the Executing Agency, SWADE.

3.7.2 The AWF will recruit and retain an auditor to perform ex-post evaluation or supporting documents review and audit the project in the interest of fast tracking the implementation of the Project activities. The independent auditor will review and certify at predetermined intervals, statements of expenditure and supporting documents, to ensure that funds have been utilized in accordance with the Grant Agreement. The AWF will incur the costs of such audits and these will not be included in the Grant.

### 3.8 Disbursement Arrangements and Expenditure Schedule

3.8.1 Proceeds from the AWF grant shall be deposited into a Special Foreign Currency Account (FCA) to be opened in a commercial bank in Swaziland and managed by the PMU. The opening of the Special Account will be a condition precedent to first disbursement of the AWF grant.

3.8.2 The PMU will pay the invoices of the consulting firm recruited for the implementation of the studies, in accordance with the terms of the contract signed with the firm.

3.8.3 The expected Expenditure Schedule for the total grant amount of € 999 000 is shown in Table 3.4 below. The grant is to be disbursed in two tranches.

*Table 3.4 Expenditure schedule (€ – excluding taxes)*

<b>Study Components</b>	<b>1<sup>st</sup> Tranche</b>	<b>2<sup>nd</sup> Tranche</b>	<b>Total</b>
<b>Component 1:</b> Feasibility Studies	467 655	382 626	850 281
<b>Component 2:</b> Detailed Designs and Tender Documents	81 494	66 677	148 171
<b>Component 3:</b> Project Management.	-	-	
<b>Total (Rounded up)</b>	<b>550 000</b>	<b>449 000</b>	<b>999 000</b>

### 3.9 Progress Monitoring and Reporting

3.9.1 The Consulting firm shall issue monthly progress reports in a format to be agreed with SWADE, taking into consideration the information needs of all stakeholders. The reports shall cover progress made in comparison to planned actions, show proposed corrective action to address deviations. The Consultant shall further report on the key indicators stated in the Performance Plan.

3.9.2 The Recipient shall, based on the monthly reports and on other relevant data sources, submit quarterly progress reports to the African Water Facility in a form to be agreed with the Facility. The reports shall cover progress in the implementation of procurements and all other activities of the study including financial aspects. Progress of implementation shall underscore the level of outputs attained, using the indicators in the performance plan, as well as the planned levels to be attained for the subsequent quarter. Any problems encountered shall be presented and planned measures to address them explained. The schedule performance shall show the level of input activity attained as against that planned for the quarter and hence demonstrate whether there are delays.

3.9.3 The financial progress shall be presented in the form of a comparison between the budget and both cumulative and current expenditures. Variance should be explained and proposed corrective action taken to address them should be provided. The form of statement of expenditure in quarterly reports will of necessity be more simplified than for the end of year and/or final statement and should be agreed prior to the commencement of the implementation of

the study.

3.9.4 The Reports shall clearly indicate the level of attainment of the results as shown in the Logical Framework Analysis matrix for the reporting period concerned.

## **4. PROJECT BENEFITS**

### **4.1 Effectiveness and Efficiency**

4.1.1 In order to ensure the attainment of the objectives of the LUSIP II project, the water resources mobilised for irrigated agriculture will be directly managed by the Irrigation Districts which are community-based organizations formed by water users within a designated area. The Lower Usuthu Irrigation District will engage a Water Service Provider to manage the distribution of irrigation water and potable water within the LUSIP area and to collect fees. Fees collected will be used to fund the operation and maintenance of the LUSIP irrigation system by the Irrigation District as well as the maintenance and operation of the bulk water infrastructure by the Usuthu River Basin Authority.

4.1.2 The project also includes activities geared towards the dissemination of lessons learned and good practices such as the study validation workshops, donor conferences planned and participation in the knowledge management networks of the International Fund for Agricultural Development (IFAD). The use of an existing PMU which is funded by other donors also improves the efficiency of this study due to the reduction in the human resources to be mobilised and the associated costs.

### **4.2 Viability**

4.2.1 The LUSIP II project is expected to bring net benefits to the rural poor of the semi-arid Lowveldt of Swaziland, including: i) crop diversification for greater food security; ii) a reduced reliance on rain-fed agriculture which is prone to failure in times of droughts; iii) a reduction in water and nutrition related diseases due to the greater water supply and sanitation coverage to be provided; and iv) increased revenues per hectare cultivated due to greater yields resulting from the improved farming techniques to be introduced.

4.2.2 The proposed sub-studies are designed for an effective investigation of all the factors influencing the viability of the project and the recommendation of measures to be adopted in the implementation of the project by the Implementing Agency and the Recipient. These recommendations will include the ESMP and the CMP to be developed as well as the policy and regulatory improvements to be proposed under the Environment and Social Development studies. Under the Water Resources Development Studies, the beneficiaries and technicians in the project area will equally be trained on the operation, maintenance and management arrangements for the irrigation system and the potable water and sanitation facilities to be developed in the chiefdoms.

### **4.3 Sustainability**

4.3.1 The beneficiaries will be encouraged to form associations to enable them obtain micro credits and carry out their agricultural activities efficiently. The current framework for the management of water resources in Swaziland was established by the Water Act of 2002 which provides for regulation by a National Water Authority. Also, for each of the river basins in Swaziland there is a River Basin Authority which has the responsibility for the allocation of water resources and the monitoring of water usage in the river basin.

4.3.2 All of the land to be irrigated under LUSIP is Swazi Nation Land (SNL) which is held in trust by the King on behalf of the Nation. In practice, allocation of land is done by the chiefs with the assistance of their inner councils. Under this study, the chiefs will be assisted with land allocation issues by promoting the Chieftdom Development Plans which are geared towards ensuring gender and social equity. The occupants of SNL do not have title to the land that they are on, but are issued a document called the “Chief’s Letter” which authorizes them to use the land.<sup>7</sup>

4.3.3 The study will equally take comprehensive measures to resettle the people displaced from lands to be irrigated. Under the Environment and Social Development sub-study, an Entitlement Framework will be agreed with the affected communities and used in the preparation of the comprehensive mitigation plan and the Resettlement Plan.

4.3.4 The LUSIP II project will be designed based on the environmentally sound techniques to be elaborated in this study. SWADE will, in the course of the training and mentoring it gives to farmer groups, give advice on the responsible use of fertilizers and pesticides. In addition, in the growing of the main export crop, sugarcane, the farmers receive support from technical assistance teams from the Sugar Mill, which carefully monitor that agricultural chemicals are applied correctly. For other crops, the extension teams of the Ministry of Agriculture give support to the farmers<sup>8</sup>. Overall monitoring of soil and water quality is the responsibility of the Swaziland Environmental Authority.

4.3.5 While it is recognised that gender inequalities persist in Swazi society, some measures have been taken recently to ensure an equitable access to women and vulnerable groups to productive resources, including water and land. These measures include the adoption of the Convention on the Elimination of All Forms of Discrimination Against Women and a constitution that protects women’s rights in key areas such as land allocation, maternal rights and participation in political decision making<sup>9</sup>. Lessons learnt so far from the participatory chieftdom planning procedure of LUSIP I show some improvements in the social and gender equity situation in resource allocation in the project area.

## **5. CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 Conclusions**

5.1.1 The reduction of poverty and the improvement of living conditions in rural areas through the development of water resources and sanitation are high on the development agenda of the Government of Swaziland. The Government is making some progress in the achievement of these goals in the semi-arid Lowveldt of Swaziland through the implementation of the first phase of the Lower Usuthu Smallholder Irrigation Project.

5.1.2 The implementation of the second phase of the project will be facilitated by the undertaking of this proposed study, necessary for the mobilization of resources from a number of donors including the European Investment Bank and the European Development Fund, EDF10.

### **5.2 Recommendations**

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<sup>7</sup> See more details in Annex 6.

<sup>8</sup> See Annex 6 for more information on support to farmers

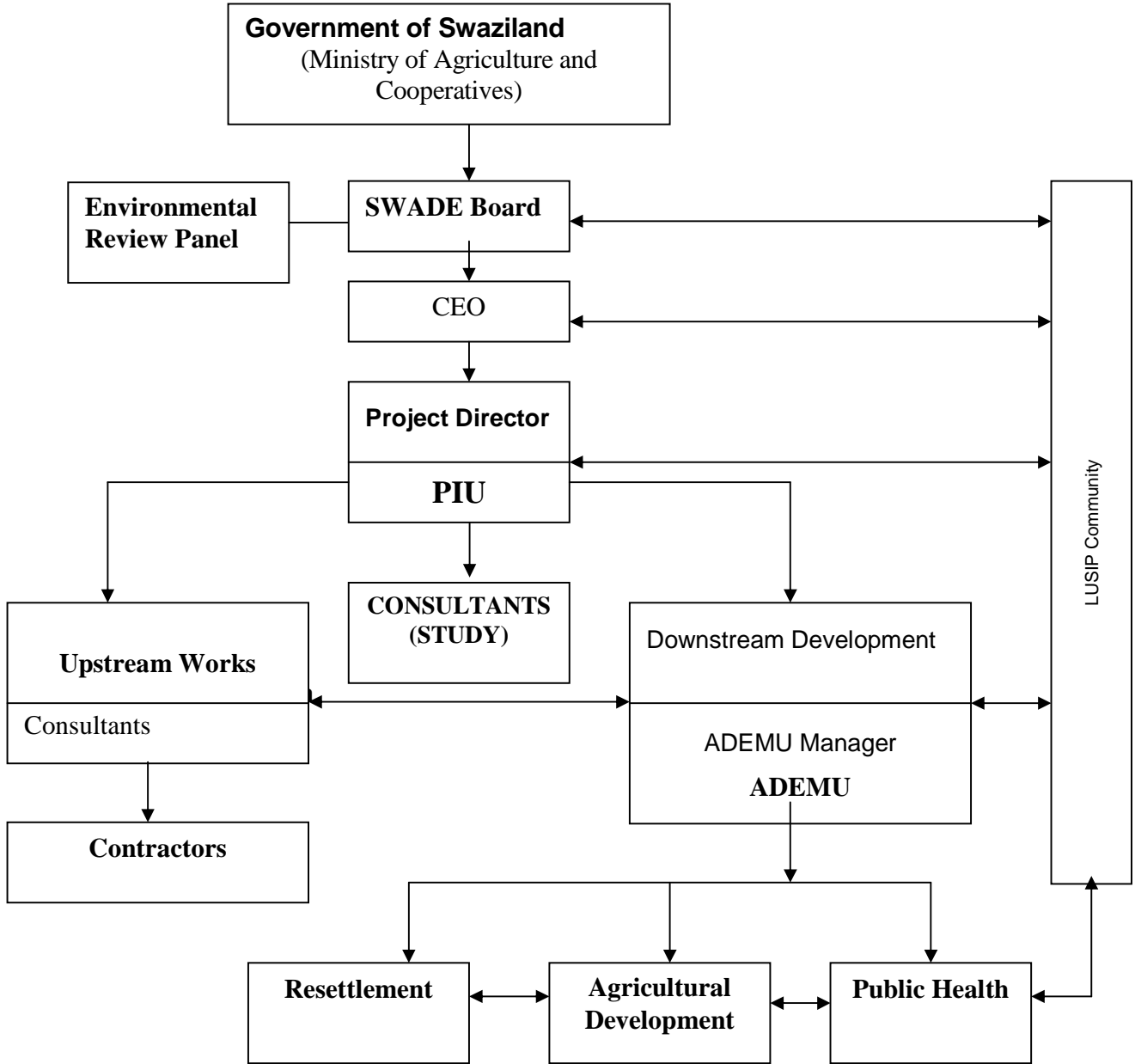
<sup>9</sup> Swaziland: CSP 2009 – 2013, § 2.1.25

5.2.1 Based upon a critical assessment of the relevance, effectiveness, and sustainability of the project, as well as the capacity and the credibility of the Recipient, it is recommended that the AWF approve a grant not exceeding € 999,000 to finance the activities detailed in Section 2.4 of this report.

5.2.2 The first disbursement will be made subject to the opening of a Special Account with a local bank acceptable to the AWF, to receive the proceeds of the Grant and make eligible payments under the project (§ 3.7.1).

**Annex 1: LUSIP Organigramme**

**LUSIP II PROJECT ORGANIGRAMME**



**Annex 2: Activity Schedule**  
**Detailed Activity Schedule: LUSIP II Studies**

Activity	Duration in months																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
<i>Procurement of Consultancy Services and Activities leading up to grant effectiveness</i>	■																				
<b>Compo1: Feasibility Studies</b>																					
<b>Sub-Compo1: Water Resources Development Studies</b>																					
<b>Actv1. Irrigation Eng. Studies</b>																					
Topographic surveys									■	■	■	■	■								
Geotechnical surveys									■	■	■	■	■								
Preliminary Designs & costing										■	■	■	■	■	■						
Feasibility Studies Report											■	■	■	■	■	■					
Beneficiary training											■	■	■	■	■						
<b>Actv2. Water/Sanitat° Studies</b>																					
Identification of sites											■	■	■	■							
Master Plan Preparation										■	■	■	■	■	■						
Preliminary design & costing of WSS scheme, including ecosan														■	■	■					
Beneficiary training																	■	■	■	■	■
Report Validation Workshop (Water Resources Development Studies)																	■	■			
<b>Sub-Compo2: Environmental and Social Development Studies</b>																					
<b>Actv3. ESIA Studies</b>																					
ESIA field work									■	■	■	■	■	■							
ESIA Draft reports preparation												■	■	■	■	■					
Final ESIA, ESMP & CMP reports																	■	■	■	■	■
<b>Actv4. Chiefdom Development Planning Studies</b>																					
Scoping									■	■	■	■	■								
Plan I preparation										■	■	■	■	■							
Plan II preparation												■	■	■	■						
Final report preparation																	■	■	■	■	■
Reports Validation Workshop (Environmental and Social Development Studies)																	■	■			
<b>Sub-Compo 3: Actv5. Financial &amp; Economic Analysis</b>																					
Updating Financial & Economic Analysis & Report																	■	■	■	■	■
Proposal for funding																		■	■		
<b>Compo. 2: Detailed Designs and Tender Preparation</b>																					
Activ. 6a: Detailed Designs																	■	■	■	■	■
Activ. 6b: Tenders preparing																		■	■	■	■
<b>Compo. 3: Project Management</b>																					
Strengthening of PMU	■	■																			
Procurement of consultants		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Acquisition of Vehicles		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Review & approval of reports																	■	■	■	■	■
Donors' Conference & Report																			■	■	■
Project Completion report																			■	■	■
Supervision/Coordination	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

### Annex 3: Cost Estimates

#### LUSIP PHASE II STUDIES - Detailed Costs Estimates (Excluding taxes)

MM = Man-Months; LS=Lump Sum; TM=Team-Months					1 € = 11 SZL			
Cost Item N°	Project Components and Activity Cost Items	Donor	Units	Q'ty	Unit Price		Amount	
					SZL	€	SZL	€
	<b>Component 1: Feasibility Studies</b>							
	<b>Sub-Component 1: Water Resources Development Studies</b>							
	<b>Activity 1: Irrigation Engineering Feasibility Studies</b>							
1	Water Resources Engineer (Study Leader)	AWF	MM	5,0	143 000	13 000	715 000	65 000
2	Irrigation Engineer	AWF	MM	3,0	121 000	11 000	363 000	33 000
3	Agricultural Engineer	AWF	MM	2,0	121 000	11 000	242 000	22 000
4	Geotechnical Engineer	AWF	MM	2,0	121 000	11 000	242 000	22 000
5	Hydraulic Engineer	AWF	MM	3,0	121 000	11 000	363 000	33 000
6	National Technicians (Surveyors, Planners, CAD Draftsmen etc)	AWF	MM	6,0	55 000	5 000	330 000	30 000
7	National Topographic Survey Team (topographers, relevant technicians)	AWF	TM	3,0	88 000	8 000	264 000	24 000
8	Geotechnical and Soil field investigations	AWF	LS	1,0	330 000	30 000	330 000	30 000
9	Setting out of Main Canal (Painted concrete posts on both sides of the right of way or other method)	AWF	km	51,0	7 767	706	396 110	36 010
	<b>Activity 2: Water Supply and Sanitation Studies</b>							
10	Water Supply Engineer	AWF	MM	2,0	121 000	11 000	242 000	22 000
11	Sanitation Engineer	AWF	MM	2,0	121 000	11 000	242 000	22 000
12	International travel	AWF	U	6,0	33 000	3 000	198 000	18 000
13	Local travel	AWF	LS	1,0	55 000	5 000	55 000	5 000
14	Accommodation	AWF	MM	19,0	13 200	1 200	250 800	22 800
15	per diems	AWF	LS	1,0	110 000	10 000	110 000	10 000
16	Preparation of reports	AWF	LS	1,0	55 000	5 000	55 000	5 000
17	Study Validation Workshops	AWF	LS	1,0	110 000	10 000	110 000	10 000
	<b>Sub-total Sub-Component 1</b>	<b>AWF</b>					4 507 910	<b>409 810</b>
	<b>Sub-Component 2: Environmental and Social Development Studies</b>							
	<b>Activity 3: Environmental and Social Impact Assessment</b>							
18	Environmental and Social Impact Assessment Specialist	AWF	MM	3,0	154 000	14 000	462 000	42 000

19	Short term specialists (ecologist, botanist, zoologist, environmental economist, public health specialist)	AWF	MM	4,0	121 000	11 000	484 000	44 000
	<b>Activity 4: Chiefdom Development Planning Studies</b>							
20	Land and Water Management Specialist	AWF	MM	3,0	121 000	11 000	363 000	33 000
21	Social Impact Assessment Specialist	AWF	MM	2,0	121 000	11 000	242 000	22 000
22	National Social facilitators (1 for each of the 3 chiefdoms for 12 months)	AWF	MM	36,0	17 500	1 591	630 000	57 273
23	Agricultural specialist	AWF	MM	1,0	121 000	11 000	121 000	11 000
24	Short term specialists (resettlement specialist, agricultural economist, soil scientist, archeologist)	AWF	MM	5,0	121 000	11 000	605 000	55 000
25	International travel	AWF	U	6,0	33 000	3 000	198 000	18 000
26	Local travel	AWF	LS	1,0	82 500	7 500	82 500	7 500
27	Accommodation	AWF	MM	11,0	13 200	1 200	145 200	13 200
28	per diems	AWF	LS	1,0	110 000	10 000	110 000	10 000
29	Preparation of reports	AWF	LS	1,0	55 000	5 000	55 000	5 000
30	Study Validation Workshops	AWF	LS	1,0	110 000	10 000	110 000	10 000
	<b>Sub-total Sub-Component 2</b>	<b>AWF</b>					3 607 700	327 973
	<b>Sub-Component 3: Financial &amp; Economic Viability Study Update</b>							
	<b>Activity 5: Financial &amp; Economic Analysis Update</b>							
31	Agricultural Economist	AWF	MM	2,0	121 000	11 000	242 000	22 000
32	International travel	AWF	U	1,0	33 000	3 000	33 000	3 000
33	Local travel	AWF	LS	1,0	11 000	1 000	11 000	1 000
34	Accommodation	AWF	LS	1,0	13 200	1 200	13 200	1 200
35	per diems	AWF	LS	1,0	11 000	1 000	11 000	1 000
36	Preparation of reports and the proposal for funding	AWF	LS	1,0	22 000	2 000	22 000	2 000
37	Study Validation Workshops	AWF	LS	1,0	55 000	5 000	55 000	5 000
	<b>Sub-total Component 3</b>	<b>AWF</b>					387 200	35 200
	Contingency (6% physical; 4% price)		%	10,0			850 281	77 298
	<b>SUB-TOTAL COMPONENT 1</b>						<b>9 353 091</b>	<b>850 281</b>
	<b>Component 2: Detailed Designs and Tender document preparation</b>							
	<b>Activity 6: Detailed Designs and Tender Document Preparation</b>							
38	Water Resources Engineer (Study Leader)	AWF	MM	2,0	154 000	14 000	308 000	28000
39	Irrigation Engineer	AWF	MM	1,0	121 000	11 000	121 000	11 000
40	Hydraulic Engineer	AWF	MM	1,0	121 000	11 000	121 000	11 000

41	National Technicians (Surveyors, Planners, CAD Draftsmen etc)	AWF	MM	2,0	55 000	5 000	110 000	10 000
42	National Topographic Survey Team (topographers, relevant technicians)	AWF	TM	1,0	88 000	8 000	88 000	8 000
43	Water Supply Engineer	AWF	MM	1,0	121 000	11 000	121 000	11 000
44	Sanitation Engineer	AWF	MM	1,0	121 000	11 000	121 000	11 000
45	International travel	AWF	U	5,0	33 000	3 000	165 000	15 000
46	Local travel	AWF	LS	1,0	55 000	5 000	55 000	5 000
47	Accommodation	AWF	MM	6,0	13 200	1 200	79 200	7 200
48	per diems	AWF	LS	1,0	110 000	10 000	110 000	10 000
49	Preparation of final reports and tender documents	AWF	LS	1,0	82 500	7 500	82 500	7 500
	Contingency (6% physical; 4% price)	AWF	%	10,0			148 170	13 470
	<b>SUB-TOTAL COMPONENT 2</b>						1 629 870	148 170
	<b>Total AWF Funds (rounded up)</b>						<b>10 982 961</b>	<b>999 000</b>
	<b>Component 3: Project Management</b>							
50	Acquisition of vehicles	GoS	U	3,0	200 000	18 182	600 000	54 545
51	Running costs (per vehicle-month)	GoS	VM	36,0	7 500	682	270 000	24 545
52	Operating Expenditure (12 months)	GoS	LS	1,0	175 000	15 909	175 000	15 909
53	Office equipment	GoS	LS	1,0	450 000	40 909	450 000	40 909
54	Office Space and Project Infrastructure	GoS	LS	1,0	300 624	27 329	300 624	27 329
55	Preparation of reports	GoS	LS	1,0	55 000	5 000	55 000	5 000
56	Donors' Conference	GoS	LS	1,0	110 000	10 000	110 000	10 000
	Contingency (6% physical; 4% price)	GoS	LS	10,0			196 062	17 824
	<b>Sub-total Component 3</b>	<b>GoS</b>					<b>2 156 687</b>	<b>196 062</b>
	<b>GRAND TOTAL (Rounded up)</b>						<b>13 139 648</b>	<b>1 195 000</b>

#### Annex 4: Map of Project Area (Pg 1/2)

#### Map of Swaziland



#### Disclaimer

*This map was provided by the African Development Bank exclusively for the use of the readers of the report to which it is attached. The names used and the borders shown do not imply on the part of the Bank and its members any judgment concerning the legal status of a territory nor any approval or acceptance of these borders.*



## **Annex 5: Terms of Reference**

### **Lower Usuthu Smallholder Irrigation Project (LUSIP) Phase II – Studies**

#### **1. Introduction**

The Lower Usuthu Smallholder Irrigation Project (LUSIP) in the Lowveld of the Kingdom of Swaziland involves the construction of three dams to form an off-river storage reservoir to impound 155 million cubic metres of water that will be diverted from wet season flood flows in the Lower Usuthu River. A main canal and distribution system is being constructed below the dam, together with on-farm works, to irrigate a net 11 500 ha. The project was the subject of pre-feasibility study in 1996, a detailed feasibility study in 1997/1998 and an environmental impact assessment (EIA) in 1999/2000. A phased development was proposed: Phase I of the project would develop a net area of 6 500 ha; Phase II will develop a further 5 000 ha. The objective of the project is to alleviate poverty in the project area by transforming the existing subsistence farmers into commercial farmers of irrigated lands producing cash crops (principally sugarcane). Phase I of LUSIP has about 2,600 beneficiary households (about 20,000 people) and Phase II will directly benefit a further 1000 households (about 10,000 people).

The first phase of 6500 hectares is due to be completed in 2011 while the second phase of 5000ha is due to commence construction in 2010. One of the key lessons learnt from phase one of the LUSIP project is that it is essential to ensure that the target community is sufficiently mobilized and informed about the project to input in an informed way into the bulk water delivery systems. It is also important the community decision makers understand the decisions that they are making and are able to communicate these decisions to the broader community as the project rolls out.

The Government of Swaziland has identified the development of the smallholder agricultural sector as a main element in its policy of poverty alleviation in rural areas. The major constraint for the development of resources is the lack of irrigation water, as the dry season run-of-river flows have already been fully allocated to existing farmers. LUSIP will address this constraint by creating an off-river storage reservoir that will provide irrigation water for 6500 ha at the end of Phase I and a total of 11500ha upon completion of Phase II.

Currently, the following main water infrastructure for LUSIP-I is complete and operational: (i) Weir, intake and sand trap; (ii) Feeder Canal; (iii) Mhlatuzane, Golome and South Saddle Dams and the Spillway (Lubovane Reservoir is now filling up); (iv) Main Canal South; (v) First 800 ha. of tertiary delivery systems. In connection with the construction of the main infrastructure, 147 homesteads have been resettled, over 700 graves have been relocated and one church and one school have been relocated. Twenty three farmer associations covering 2190 ha have been formed and it is planned to irrigate some 900 ha. in 2009. Two chiefdom development plans have been completed; i.e. they have been endorsed by their respective chiefs. Development of potable water and sanitation will begin this year in the phase I area.

Phase II of LUSIP involves the irrigation of a further 5000 ha of land by extending the Main Canal South by 51 km and by providing additional secondary and tertiary irrigation systems as well as mobilizing the beneficiary community. These studies for Phase II, which are comprised of the updating of the earlier feasibility studies and preparing detailed designs and tender documents, are expected to begin by the end of 2009.

#### **2. Organisation of the Studies**

These studies have been organized into two components and three sub-components. The reports of each sub-study have to be validated by stakeholders in workshops to be organized by the consulting firm and the Implementing Agency. The tender documents will be finalized by the Consultant on the basis of the

amount of funds mobilized for investments during the donors' conference to be organized towards the end of the study. The contents and the requirements for each component and sub-component are outlined below:

## **2.1 Component 1: Feasibility Studies**

### ***Sub-component 1: Water Resources Development Feasibility Studies***

This sub-component of the study is made up of two activities: i) Irrigation Engineering Feasibility Studies and ii) Water Supply and Sanitation Development Feasibility Studies.

#### ***2.1.1 Irrigation Engineering Feasibility Studies***

##### **Background**

The following infrastructure was developed under Phase I of the project:

- The weir, intake and Sandtrap, located on the Usuthu River at Bulungapoort.
- The Feeder Canal which transfers the water from the Usuthu river to the Lubovane Reservoir
- The Lubovane reservoir which is made up of the Mhlathuzane, Golome and the South Saddle Dams as well as the main canal south off-take and the spillway
- The Main Canal South (21 km) and St Phillips Canal (15 km) for primary distribution of the water
- The Secondary and Tertiary Distribution System has been constructed for the irrigation of the first 800ha (part of Phase 1a). Phase1b is out for tender and it is expected the award of this Contract will possibly be sometime in April/ May 2009.

All the infrastructure above has been designed to accommodate the future developments of the 5000ha in the Matata Block in Phase II. The necessary arrangements for the start of the updating of the feasibility studies and the detailed design of Phase II are now being put in place and these studies are part of these preparations.

##### *Scope of the irrigation engineering feasibility studies:*

Under this activity, the Consultant will be responsible for the updating of the feasibility studies carried out in 1997/1998, with a focus on the infrastructural works for Phase II, are as follows:

The infrastructural works for Phase II are:

- Extension of the Main Canal South or Pipeline (51km long, 4.39 cumec initial capacity)
- Secondary and tertiary canals/ pipelines to serve 5 000 ha of land to be irrigated.

The updating of these feasibility studies has to take into account the current institutional, environmental, social, cultural, economic and financial constraints as well as provide built-in climate-resilience in the technical designs on the basis of an analysis of climate change risks in the region.

Throughout its activities, the Consultant will be supervised and monitored by the Project Management Unit based in SWADE. The Consultant shall work in close co-operation with the Agricultural Development and Environmental Management Unit (ADEMU) of LUSIP which will coordinate environmental, resettlement, land development and institutional development tasks, amongst others. The Consultant will also coordinate with project beneficiaries as represented by the Lubovane Block Planning Committee, GoS agencies and other LUSIP stakeholders.

The Consultant's team will be led by an internationally recruited Team Leader, who will report to the Project Director based in the PMU of SWADE. The Team Leader will be supported by a team of internationally/regionally/nationally recruited (key staff) engineers, including a hydraulic engineer, an

irrigation engineer, a geotechnical engineer, an agricultural engineer as well as national technicians (surveyors, planners...) and a national topographic surveys team and required support staff.

Furthermore, in an effort to ensure that during the execution of the studies, the provision for the transfer of technology, namely the aspects of project management and control, are maximized to the benefit of SWADE, the Consultant will provide on-the-job training wherever appropriate.

The Consultant shall perform and provide all services necessary to achieve the objectives in full and to the satisfaction of the Supervisor in accordance with these Terms of Reference.

#### *The Irrigation Engineering Feasibility Studies and Deliverables*

Under this sub-study, the Consultant shall carry out in-depth feasibility studies, exploring all alternatives and undertaking technical, economic, social, environmental and institutional analysis, as well as factoring in climate change risks, in order to determine the optimal option for the project. In this light, the consultant will carry out the following activities and produce the deliverables hereunder:

- Review all available reports and data.
- Identify and undertake a topographical survey of the proposed route(s) to be used for the design development (51km of the Main Canal South and secondary and tertiary irrigation systems of a total of 5000ha of land to be selected from the project area), producing contour and all other required topographic drawings.
- Prepare and undertake a geotechnical investigation programme (drilling for foundation areas, canal/ pipeline alignments, borrow areas, construction materials, laboratory testing etc), evaluate results, and make recommendations on geotechnical parameters, design any foundation works including drilling and grouting. Prepare a comprehensive geotechnical report for use in the detailed design and construction.
- Submit design assumptions to SWADE for approval before proceeding to detailed design work. This report should present all alternatives considered, making a technical and economic comparison between the alternatives and propose the option which is technically, economically, socially, environmentally and institutionally optimal.
- Set out the alignment of the proposed Main Canal/Pipeline on the ground using 20cm diameter 2m long painted concrete columns planted at 250m intervals on both sides of the right of way of the 51 km Main Canal South or a bulldozer trace or an alternative method to be agreed with SWADE.
- Formulate for the Tertiary Delivery System (TDS) acceptable pumping head regimes for delivery of water to farm-edge. This will necessitate locating the balancing dams relative to the identified farmers' association blocks of land.
- Prepare typical on-farm layout designs for the different types of farmland identified.
- Assist the ADEMU in developing land acquisition and resettlement programs relative to the proposed civil infrastructure implementation.
- Prepare an initial analysis showing the costs of investments, costs for operation and maintenance and the basic cost of a cubic metre of water.
- *Determination of tariffs:* the Consultant will propose a tariffs structure taking into account the socio-economic constraints evaluated in this sub-study as well as in the other sub-studies and this should include an analysis showing the level of cost recovery under normal conditions of operation of the systems.
- Train local technicians and engineers, within the provisions of knowledge transfer, in all relevant aspects of the design, operation and maintenance of the irrigation system
- Train representatives of the beneficiaries on issues related to the optimal use of water and the operation and maintenance of the farm-level infrastructure to be developed in phase II according to the approved designs.
- Determine the importance and the probability of all risks, including climate change and variability risks associated with the development of the proposed infrastructure and propose measures to limit these risks. Demonstrate that the proposed project is feasible on technical,

economic, socio-cultural, environmental and financial grounds, in coordination with the other sub-studies of the study.

- The Consultant shall organize a study validation workshop and present the preliminary designs and the draft feasibility report to all stakeholders and later prepare the Detailed Design Report, incorporating comments from the stakeholders.
- Preparation of the Study Validation Workshop report.
- Preparation of the final feasibility study report, incorporating all the above deliverables.

### **2.1.2 Water and Sanitation feasibility Studies**

*Background:* Access to potable water supply in Swaziland as a whole was 70% in 2007 and the sanitation coverage was 57% in the same year. In the project area of LUSIP II, the population has no access to potable water supply and there are equally no improved sanitation facilities. Water for human consumption is obtained from nearby streams and where available, simple pits serve as sanitation facilities.

LUSIP Phase II is a Government of Swaziland initiative aimed at developing both land and water resources with an ultimate aim of reducing poverty within the project area communities. The program has made provision for increasing access to safe drinking water and sanitation facilities to the affected communities. LUSIP Phase II also intends to provide potable water and sanitation to all project area homesteads.

#### **Justification**

The Government of Swaziland has an overall goal of providing access to potable water and sanitation to communities in Swaziland by the year 2015 in alignment with the millennium development goals. SWADE is assisting the central government attain this objective. Approximately 1,000 households will benefit from phase II of LUSIP.

#### *Scope of the Water and Sanitation Feasibility Studies.*

A Water Master Plan, required for the evaluation and the management of the quantities of water needed for each component of the project (irrigated agriculture, homestead gardens, livestock water, environmental, Trans boundary/catchment and potable water supply) as well as for providing details of the institutional arrangements and the infrastructure needed, for planning purposes, to achieve the various objectives of the project, will be prepared under this sub-study by the Consultant in order to inform the various water related designs and plans to be prepared.

A potable water supply and sanitation scheme for the LUSIP Phase II will equally be prepared by the Consultant, to establish water supply and sanitation options for communities in the Project Area. This exercise will be preceded by an in-depth evaluation of the water supply and sanitation facilities provided to homesteads in LUSIP Phase I and intensive community consultations to establish community needs and preferences for water supply and sanitation.

The consultant will carry out a survey to determine the behaviour and the habits of the population as concerns potable water supply and sanitation matters, and in particular:

- For potable water supply, the present per capita consumption rates, the present cost per m<sup>3</sup> and possible rates that could be payable based on the community's means. Particular attention should be paid to the situation of vulnerable groups.
- Define the present users and the technical, financial and institutional management systems in place. He will equally identify and analyse the roles of all the stakeholders in the area and propose measures to improve the overall water and sanitation management. The Consultant will update the current gender disaggregated population and the population growth rate and determine the requirements within a project horizon of 2022.
- For hygiene and sanitation, determine the population's sensibility and sanitation-consciousness in the context of the current difficulties. This should highlight the population's attitude to faecal contamination and their understanding of the linkage between water and health in the light of recurrent diseases and HIV/AIDS. The consultant will equally determine the feasibility of a pilot

scale ecological sanitation scheme in the project area.

- Determine the importance and the probability of all risks associated with the development of the proposed infrastructure and propose measures to limit these risks. Demonstrate that the proposed project is feasible on technical, economic, socio-cultural, environmental and financial grounds.

Consultations will also seek to establish views from other stakeholders within the Government of Swaziland and other service providers, including non-governmental organizations. In a demand and alternatives analysis, different options for water supply and sanitation will be explored and presented to the community. The feasibility studies required in this sub-component of the study will be carried out in accordance with the findings and the recommendations of the other components of the study, which include: the preparation of the Chiefdom Development Plans, preparation of the ESIA, the irrigation engineering studies and the financial & economic analysis of the project. The different sub-studies and the feasibility studies shall be validated by the stakeholders before the detailed designs and tender documents are finalized by the Consultant.

The team of professionals for this sub-study will include suitably qualified and experienced i) water supply engineer, ii) sanitation engineer) iii) hydrologist iv) surveyors & CAD draftsmen and other social facilitators and environmental experts whose input would be obtained as required from the other concurrent sub-studies being undertaken by the Consultant.

Some of these experts in this team will contribute as outlined below:

- The water supply engineer shall assist with planning, design and coordination of this sub-study.
- The sanitation specialist will explore various options for the provision of sanitation facilities to the community and will propose as well a suitable type of ecological sanitation facility for the pilot scheme.
- The social facilitators and environmental experts will assist with the carrying out of the community and stakeholder consultations. The Social Facilitators shall be familiar with Swazi culture and fluent in Si Swati and or Zulu.

#### *The Water and Sanitation Feasibility Studies and Deliverables*

Under this sub-study, the Consultant shall carry out an in-depth feasibility study, which will be validated by all stakeholders in a workshop, exploring all alternatives and undertaking technical, economic, social, environmental and institutional analysis to determine the optimal option for the project. In this light the consultant will carry out the following activities and produce the deliverables hereunder:

- Review all available water and sanitation reports and data.
- Submit design assumptions in a feasibility report to SWADE for approval before proceeding to detailed design work. This feasibility report should present all alternatives considered, making a technical and economic comparison between the alternatives and propose the option which is technically, economically, socially, environmentally and institutionally optimal.
- Develop a complete Water Master Plan, for the purpose outlined in the “scope” of this sub-study.
- Determine the importance and the probability of all risks, including climate change and variability risks associated with the development of the proposed facilities and propose measures to limit these risks. Demonstrate that the proposed project component is feasible on technical, economic, socio-cultural, environmental and financial grounds, in coordination with the other sub-studies of the study.
- Prepare an analysis showing the costs of investments, costs for operation and maintenance and the basic cost of a cubic metre of water.
- *Determination of tariffs:* the Consultant will propose a tariffs structure taking into account the socio-economic constraints evaluated in this sub-study as well as in the other sub-studies and this should include an analysis showing the level of cost recovery under normal conditions of operation of the systems.
- Train representatives of the beneficiaries on issues related to the sustainable use and the operation & maintenance of the water and sanitation facilities to be developed in phase II according to the approved designs.

- Prepare a programme, including and evaluation of resources required, for the continuous and sustainable training of the population on water, hygiene and sanitation matters.
- The Consultant shall organize a feasibility study validation workshop and present the preliminary Design Report to all stakeholders and later finalize the Design Report, incorporating comments from the stakeholders.
- Within the framework of knowledge transfer, train local technicians and engineers involved in the study, in all relevant aspects of the design, operation and maintenance of the water supply and sanitation facilities to be developed.
- Train beneficiary committee members on issues related to the management and the operation and maintenance of the water and sanitation facilities to be developed in phase II according to the approved designs.
- The Consultant shall organize a study validation workshop and present the preliminary designs and the draft feasibility report to all stakeholders and later prepare the Detailed Design Report, incorporating comments from the stakeholders.
- Preparation of the final feasibility study report, incorporating all the above deliverables.

## **2.2 Sub-Component 2: Environmental and Social Development Studies**

### **2.2.1 Environmental and Social Impact Assessment**

#### **2.2.1.1 Background:**

A detailed EIA was undertaken in the LUSIP project area in the year 2000 by Vikakis International S.A. The Consultant is referred to the EIA report and the Comprehensive Mitigation Plan (CMP) prepared in April 2000. The Technical Annexes prepared under the said EIA study, to which the Consultant is equally referred, present detailed investigations and analysis of the following components:

- A. Institutional Analysis and Consultations with Interested and Affected Parties (IAPs);
- B. Analysis of Engineering Impacts of the LUSIP project;
- C. Hydrological Analysis of Basins and catchments;
- D. Socio-Economic Analysis;
- E. Investigation of the Vegetation of the project Area;
- F. Investigation of the Fauna of the project Area;
- G. Health Assessment of the Project Area;
- H. Analysis of the Livestock of the Project Area;
- I. Waste Analysis and Management;
- J. Integrated Pest Analysis and Management;
- K. Archeological Investigations;
- L. Environmental Economic Analysis including Costing of the CMP and the Environmental Monitoring System.

Further reference material obtainable from SWADE includes:

#### **a. Environment**

SWADE. 2005. Lower Usuthu Smallholder Irrigation Project. Comprehensive mitigation plan for the construction phase

SWADE. 2006. Lower Usuthu Smallholder Irrigation Project. Comprehensive mitigation plan for resettlement.

SWADE. 2007. Lower Usuthu Smallholder Irrigation Project. Comprehensive mitigation plan for the development phase.

A Socio-Economic Study of Rural Communities in the Southern Lowveld (MOAC, 1999).

#### **b. Agriculture**

Golder Associates Pty Ltd. August 2006. Lower Usuthu Smallholder Irrigation Project. Feasibility study into the establishment of an agribusiness market information system for Swaziland.

Golder Associates Pty Ltd. January 2006. Lower Usuthu Smallholder Irrigation Project. Policy initiatives to improve the viability of new sugar cane farmers.  
GRM International. November 2005. Lower Usuthu Smallholder Irrigation Project. Water pricing.  
Stewart Scott/Irritech/SBC. 2003. Lower Usuthu soil survey. Final soil survey report.  
SWADE. March 2007. Lower Usuthu Smallholder Irrigation Project. Comprehensive mitigation plan for the development phase.

### *c. Irrigation*

Coyne & Bellier Ltd. May 2005. Lower Usuthu Smallholder Irrigation Project. Final design & engineering supervision. Design review - main report.  
DHV Consultants BV. November 2005. Lower Usuthu Smallholder Irrigation Project. Water institutional framework document.  
Dlamini Scott Stewart Ltd. November 2005. Lower Usuthu Smallholder Irrigation Project. Discussion paper on N1 soils. Specific irrigation requirements for sugar production.  
Golder Associates Pty Ltd. August 2006. Lower Usuthu Smallholder Irrigation Project. Feasibility study into the establishment of an agribusiness market information system for Swaziland.  
Golder Associates Pty Ltd. January 2006. Lower Usuthu Smallholder Irrigation Project. Policy initiatives to improve the viability of new sugar cane farmers.  
GRM International. November 2005. Lower Usuthu Smallholder Irrigation Project. Water pricing.  
Stewart Scott/Irritech/SBC. 2003. Lower Usuthu soil survey. Final soil survey report.  
SWADE. March 2007. Lower Usuthu Smallholder Irrigation Project. Comprehensive mitigation plan for the development phase.

*d. Engineering:* Pre-feasibility Studies: LUSIP Project (Booker Tate, 1996);  
Feasibility Study (GFA-Agrar, 1998).

### *e. General*

Agrotech,. June 2006. Country Environmental Profile for Swaziland

#### **2.2.1.2 Objective**

The Environmental and Social Impact Assessment (ESIA -updated) will provide decision-makers in the Government of Swaziland and potential funding agencies with sufficient information to justify, **on environmental grounds, the acceptance, modification or rejection of LUSIP Phase II for financing and implementation.** It will also provide the basis for ensuring that environmental issues are taken into account in project implementation.

#### **2.2.1.3. Scope and undertaking of the ESIA Study**

This ESIA study involves mainly the updating, by the Consultant, of the EIA Report of 2000 and all its components as outlined in Section 2.2.1.1 above, in the light of changes that have occurred since the preparation of the report and bring more into focus, the area to be developed in LUSIP II. This updating exercise will be based on field work and the review of the documentation listed above, as well as on the updated feasibility studies to be undertaken by the Consultant under the “Water Resources Development” sub-study of this study. Risks related to climate change and variability will also be taken into account as outlined below:

##### *Climate Risk Management and Adaptation*

The Consultant will investigate climate change risks and propose management and adaptation strategies. He/she will review data related to climate change and analyse related risks as well as propose mitigation measures to be built into the design of the infrastructure of LUSIP II for climate-resilience. All available climate related data in the project area as well as data from various climate-monitoring institutions shall be obtained and appropriate extrapolations made. This information will be used to determine the trend and the expected climate related risks that the proposed infrastructure will be exposed to, due to climate

change. The possible impacts of these risks on the operating efficiency of the systems to be developed will also be analysed and mitigation measures proposed.

The Consultant could proceed as follows:

1. Analyse data variation and evolution over time;
2. Determine the risks related to the resources and the investments;
3. Draw-up mitigation measures, including costing and
4. Propose monitoring and evaluation mechanisms, including the costing.

The data to analyse includes:

- Changes in rainfall patterns (durations, frequency, intensity) and lengths of dry periods (droughts);
- Temperature variability, noting the extremes: evapotranspiration rates and the frequency and intensity of frosts (damage to crops);
- Frequency and magnitude of floods (surface runoff flow rates and velocities);
- Changes in vegetation cover and the rate of erosion (sediment loads, silting...);
- Changes in the physical, chemical and bacteriological quality of river and other waters;
- Changes in the depths of the water-tables in the area;
- Changes in the flow rates of rivers and other water courses;
- Changes in the rate of outbreaks of water vector borne diseases and other health indices;
- Climate related changes in ecosystems and biodiversity.

In addition to proposing measures to climate-proof the infrastructure to be developed in LUSIP II, the Consultant will also propose a coping strategy for the populations in order to enable them adapt to the impacts of climate change and climate variability and extremes.

#### **2.2.1.4 Results**

The ESIA Study will deliver updates on the following:

- Overview of the project, its geographical area and the applicable legislative and institutional framework;
- Description of the proposed LUSIP II project, updating the description of the project relevant components, plans, maps, figures and tables;
- Identifying the policy, legal and administrative framework relevant to the project;
- Indication of the project alternatives: Presenting and analysing alternatives to the proposed project, including the “without project” option, by identifying and comparing the alternatives on the basis of technical, economic, environmental and social criteria;
- Updating of the assessment of the potential significant environmental and social impacts of the project alternatives;
- For the selected alternative (Engineering and Financial Feasibility Studies components of the study), identifying and assessing potential importance of beneficial and adverse environmental and social, direct and indirect, short and long-term, temporary and permanent impacts, on the basis of a rigorous method;
- Update the mitigation/enhancement measures to prevent, minimise, mitigate, or compensate for adverse impacts or to enhance the project environmental and social benefits, including responsibilities and associated costs. Recommendations for proposed measures to be included in farm development environmental management plans to mitigate negative impacts and optimize positive ones;
- Addressing potential cumulative effects taking into account other initiatives planned in the study area;
- Developing an environmental and social monitoring program, including indicators, institutional responsibilities and associated costs;
- Updating the Resettlement plan (according to the AfDB rules or equivalent);
- Updating the consultations carried out with primary and secondary stakeholders in order to update their views on and preoccupations about the project. .
- Updating the EIA Report into the ESIA Report according to the generic contents presented in Appendix 1.
- Preparing an Environmental and Social Management Plan (ESMP) according to the generic contents presented in Appendix 2. This management plan shall be presented as a distinct document from the ESIA Report.

- Updating the Comprehensive Mitigation Plan (CMP) based on the ESMP and the climate change risk management and adaptation strategy developed.
- Organisation of Study Validation Workshops and preparation of Workshop Reports.
- Limitations of the study: The consultants should underline all the major limitations, weaknesses and uncertainties of the study.
- Conclusions: summarise the key results of the ESIA, the recommendations (referring to the draft ESMP to be attached) and the assessment of the residual impacts.

### 2.2.1.5 Organisation of the ESIA Study

The consultant who will undertake the study will be identified following a restricted call for proposals. The Swaziland Water and Agricultural Development Enterprise (SWADE) will be the responsible for overseeing the implementation of the study. The consultant will also maintain regular communication with the Swaziland Environmental Authority (SEA) throughout the course of the study. At least two workshops will be organised by the consultant in order to ensure adequate discussion with all stakeholders (the Swaziland Sugar Association, the Ministry of Finance, the Ministry of Agriculture and Cooperatives, the Ministry of Natural Resources and Energy, the private sector (Ubombo Sugar), Chiefs and other representatives from the affected communities). The first workshop will focus on the significance of potential environmental and social impacts, and the second on mitigation measures. In addition the consultant will facilitate arrangements for a public hearing should this be required by the SEA.

To note:

- Communicate continuously with the Swaziland Environmental Authority (SEA) and SWADE;
- Workshop 1: on the significance of potential environmental impacts;
- Workshop 2: on the mitigation measures.

### 2.2.1.6 Environmental and Social Impact Assessment Requirements

The consultant will examine the ESIA rules and requirements of all the donors of the project and carry out the study in accordance with the highest requirements and thus ensure that the needs of all donors are satisfied. The following regulations and guidelines should be considered:

- The African Development Bank (AFDB) IESIA Guidelines (2003); the AFDB ESA Procedure (2001); the AFDB Gender Policy (2001); the AFDB Involuntary Resettlement Policy (2003);
- Government of Swaziland: Swaziland Environment Authority Act, 1992;
- Minister of Natural Resources and Energy of Swaziland/Swaziland Environment;
- Swaziland Environment Authority (SEA): The Environmental Audit, Assessment and review Regulations, 1996;
- Commission of the European Communities, Directorate-General for Development: Sectoral Environmental Assessment Sourcebook, 1993;
- Commission of the European Communities, Directorate-General for Development: Environmental procedures and methodology governing Lomé IV development co-operation projects, 1993;

Requirement 1: the project requires an environmental and social impact assessment (ESIA);  
 Requirement 2: a Comprehensive Mitigation Plan (CMP);  
 Requirement 3: The Swaziland Environmental Authority may also require a public hearing.

### 2.2.1.7 The Consultant's Team

It is proposed that the ESIA study should be undertaken by a core team consisting of a land and water management specialist/team leader, a social impact assessment specialist and an environmental impact assessment specialist for a four month period in Swaziland. The indicative inputs from short-term specialists have been assessed as follows: hydrologist (1 month), resettlement specialist (2 months),

gender specialist (1 month); livestock systems/rangeland ecologist (1 month), environmental economist (1 month), botanist (0.5 month), zoologist (0.5 month), public health specialist (0.5 month) and archaeologist (0.5 month).

#### **2.2.1.8 Schedule**

The study will be completed over a period of six months. This is split into two phases: the first phase is for the ESIA field work and submission of the draft updated study report to be completed within four months; second phase is for the holding of a public review and/or a public hearing as required by the Swaziland Environmental Authority and should be completed over an additional 2 month period, including the finalization of the report and all its components. The format and number of copies of reports to be produced at each stage will be agreed with SWADE.

#### **2.2.1.9 The Study Area**

The study area will consist of the Matata Block and the adjacent areas that will be impacted due to construction work and relocation of households and livestock. The study area will also include the areas affected upstream and downstream of the site on the Usuthu River and the Ubombo Ranches sugar factory. The boundaries of the area are also shown in the plans prepared under LUSIP-I (EIA Report – 2000).

#### **2.2.1.10. Institutional Needs to Implement the Mitigation Measures**

Review the authority and capacity of institutions at local, regional and national level, and recommend any necessary steps to strengthen or expand them so that the management and monitoring plans in the environmental and social assessment can be implemented. The institutions that may need to be considered include proposed project management structures, Ubombo Sugar, the Tinkhundla, local leaders, farmers' associations, health services and traditional health workers, the SEA, agriculture extension services and the Forestry Department of MOAC. It may also be necessary to consider strengthening the awareness of the importance of environmental issues and the conservation of natural resources at the local level (community, chief, tinkhundla).

#### **2.2.1.11 Environmental Monitoring**

- Define indicators and develop a detailed plan to monitor the implementation of mitigation measures as well as the environmental and social impacts of the project during construction and operation.
- Define threshold values that indicate the eventually necessity to change the project strategy, for example on surface water quality or the emergence of water related diseases.
- Define the factors and beneficiaries of mitigation measures and the respective responsibilities in the monitoring programme.
- Include in the plan an estimate of the capital and operating costs and a description of other inputs, such as training and institutional strengthening, needed to carry it out.

#### **2.2.1.12 Inter-Agency and NGO/Public Involvement**

Demonstrate the extent to which enter-agency and NGO/public views were consulted. This should include reference to the Supervising Authority, the Environmental Authority, the Ministry of Natural Resources, other donors, NGOs working in the area and the affected population.

#### **2.2.1.13. Presentation of the proposal**

The proposal must include an understanding of the Terms of Reference for the entire study and a brief description of the general approach to the whole ESIA in accordance with these ToR, highlighting the proposed methodologies for updating information on all the issues of the ESIA.

The proposed budget breakdown should include provision for i) fees, ii) transport, iii) stationery, documentation and reports.

#### **2.2.1.14. Appendices**

*NB: the contents of the reports are presented here in outline: details can be obtained from the relevant AFDB guidelines and procedure documents.*

##### **Appendix 1. AFDB Standard format for the ESIA report**

The following text appears on the front cover of the report:

*This report is financed by the African Water Facility and is presented by the (name of consultant) for the ... (National Institution) and the African Water Facility. It does not necessarily reflect the opinion of the ... or the African water Facility.*

The typical contents of an ESIA Report are presented hereafter. It shall be noted that the presentation of the Report may be adapted pending on the nature and specific requirements of the project.

#### **Executive Summary**

This section shall present in a non-technical language a concise summary of the ESIA Report with a particular attention on the processes and procedures used; baseline conditions; the alternatives considered; mitigation/enhancement measures; monitoring program; consultations with stakeholders; capabilities of environmental and social units and actions to strengthen those capacities; and cost implications.

#### **Introduction**

The Introduction shall indicate the purpose of the ESIA, present an overview of the proposed project to be assessed, as well as the project's purpose and needs.

##### **i. Policy, Legal and Administrative Framework**

This chapter concerns the policy, legal and administrative framework within which the ESIA is carried out.

##### **ii. Project Description and Justification**

The first part of this chapter shall describe the proposed project and its geographic, ecological, social, economic and temporal context...

##### **iii. Description of the Project Environment**

This chapter shall first determine the limits of the study area that shall be defined in order to encompass all project direct and indirect impacts. The description and analysis of the physical, biological and human conditions shall address relevant environmental and social issues within this area, including any changes anticipated before project implementation. Maps, figures and tables shall be included in this chapter to better illustrate the various environmental and social components.

##### **iv. Project Alternatives**

This part of the ESIA Report consists in analysing the various feasible alternatives of the project, including the "without project" option.

##### **v. Potential Impacts and Mitigation/Enhancement Measures**

This chapter presents a detailed analysis of beneficial and adverse impacts of various components of the selected project alternative on the physical, biological and human (social, cultural and economic) environments.

##### **vi. Environmental Hazard Management**

Whenever relevant, this chapter shall describe the security measures and propose a preliminary contingency plan for the construction and operation phases of the project (possible contingency situations, major actions to properly react to accidents, responsibilities and means of communications).

##### **vii. Environmental and Social Monitoring Program**

The first section of this chapter shall describe the surveillance measures aiming at ensuring that the proposed mitigation and enhancement measures are effectively implemented during the implementation phase.

##### **viii. Public Consultations**

This chapter shall summarise the actions undertaken to consult the groups affected by the project, as well as other concerned key stakeholders including Civil Society Organisations. The detailed record of the consultation meetings shall be presented in annex to the ESIA Report.

**ix. Conclusion**

The Conclusion shall specify the environmental and social acceptability of the project, taking into account the impacts and measures identified during the assessment process. It shall also identify any other condition or external requirement for ensuring the success of the project.

**x. Annexes**

- List of the professionals and organisations having contributed to the preparation of the ESIA Report.
- List of consulted documents, including project-related reports.
- Baseline data referred to in the Report.
- Record of consultation meetings with primary and secondary stakeholders.

**Appendix 2: CONTENTS OF AN ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)**

An Environmental and Social Management Plan (ESMP) is required for all Category 1 and 2 projects financed by the AFDB. The purpose of the ESMP is to define and reach an agreement with the project sponsor concerning mitigation/enhancement, monitoring, consultative and institutional strengthening measures to be undertaken during project implementation and operations. The ESMP shall be incorporated in the loan documents signed between the Borrower and the Bank.

The following components constitute the minimal contents of an ESMP:

**a. General Information**

Project Number; Starting date of implementation; Project completion date; Date of operation; Period covered by the plan.

**b. Objectives of the ESMP**

This section shall specify that the ESMP aims to bring the project into compliance with applicable national environmental and social legal requirements and the African Development Bank's and other donors' environmental and social policies.

**c. Context**

The ESMP shall briefly describe project activities and major environmental and social components that will likely be affected positively or negatively by the project

**d. Beneficial and Adverse Impacts**

This section shall focus on beneficial impacts that can be enhanced to improve the project environmental and social performance as well as on adverse impacts that require mitigation measures to be minimised or compensated.

**e. Enhancement and Mitigation Program**

This section shall propose feasible and cost effective measures to address the impacts previously defined, in order to accrue project benefits (enhancement measures) or to reduce potentially adverse environmental and social impacts to acceptable levels (mitigation measures). Each measure shall be described in detail, providing all technical information required for its implementation (design, equipment description and operating procedures, as appropriate).

**f. Monitoring Program**

A monitoring program aims to ensure that mitigation and enhancement measures are implemented, that they generate intended results and that they are modified, ceased or replaced when inappropriate. Moreover, it allows assessing compliance with national environmental and social policies and standards as well as with the Bank's policies and guidelines. A monitoring program shall include two parts: surveillance and monitoring activities.

**g. Consultations**

The implementation and monitoring of some mitigation or enhancement measures may require that consultative mechanisms be used.

**h. Complementary Initiatives**

The ESMP shall integrate or at least refer to all initiatives that are proposed to improve the project environmental or social performance.

**i. Responsibilities and Institutional Arrangements**

The implementation of enhancement and mitigation measures as well as the completion of the monitoring program requires to clearly establish responsibilities among the various organizations involved in project implementation and operation.

**j. Estimated Cost**

This section estimates the capital and recurrent cost associated with the various proposed measures (enhancement and mitigation), the monitoring program, consultations, complementary initiatives and institutional arrangements. Although financing for implementing the ESMP shall be part of project financing, it might not always be possible.

**k. Implementation Schedule and Reporting**

The ESMP shall include an implementation schedule taking into account all activities related to the proposed measures (enhancement and mitigation), the monitoring program, consultations, complementary initiatives and institutional arrangements.

**l. Technical appendices**

The consultant shall include the following appendices in the report:

- Input into the logical framework planning matrix of the proposed project design – intervention logic, indicators, assumptions and preconditions.
- Maps of the project area and other illustrative information not incorporated into the main report.
- Other technical information and data, as required.
- Records of stakeholder engagement.
- Draft ESMP (Environmental & Social Management Plan)
- etc.

**m. Other appendices**

The consultant shall include the following appendices in the report:

- Study methodology/work plan (2–4 pages).
- Consultants' Itinerary (1–2 pages).
- List of stakeholders consulted or engaged (1–2 pages).
- List of documentation consulted (1–2 pages).
- *Curricula vitae* of the consultants (1 page per person).
- ToR

### 2.2.2 Chiefdom Development Planning Sub-study

One of the key lessons learnt from the implementation of Phase I of the LUSIP is that it is essential to ensure that the target community is sufficiently mobilized and informed about the project so that it can provide input in an informed way into planning and design of the bulk water delivery systems to be developed. It is also important for the community decision makers to understand the decisions that they are making and are able to communicate these decisions to the broader community as the project rolls out. Based on the information to be gathered during the initial scoping phase of this sub-study, a participatory chiefdom development planning exercise will be undertaken in each of the 3 chiefdoms to be affected by Phase II of the LUSIP. This exercise should, wherever appropriate, mirror the process that has taken place in phase 1 of LUSIP, taking on board lessons learnt and should have as its output spatial plans showing the integration of development activities in each of the 3 chiefdoms, underpinned by the vision that each chiefdom has for its development. These spatial plans will be produced to a scale and a format to be agreed with SWADE and the plans will be used by the irrigation specialists to prepare the detailed designs of the tertiary irrigation system.

Information required for the preparation of the Chiefdom Development Planning reports and plans will be obtained by the social, environmental and technical teams of the Consultant as they undertake the study globally. The specific activities required to achieve the goals of this sub-study are elaborated hereunder.

#### 2.2.2.1 Activities to be undertaken in the Chiefdom Development Planning Sub-study.

A number of activities will need to be undertaken to inform and complete the scoping phase of the work and include the following.

1. Social scoping
2. Environmental scoping
3. Agricultural reconnaissance
4. Social mobilization/participation
5. Gender analysis & gender equality (AFDB Guidelines)
6. Beneficiary training and Health issues
7. Displacement of populations' assets and compensation (AFDB Guidelines)
8. Bulk water supply endorsement workshop
9. Organisation of Study Validation Workshops and preparation of workshop reports.

#### 2.2.2.2. Social scoping

The social scoping activity should be undertaken to indicate the social landscape of the communities involved with LUSIP phase two and should determine the following social information.

- a) The boundary of phase two. The boundary of the project area should be determined and mapped. This boundary mapping should set the bounds for all further activity in LUSIP
- b) Chiefdom evaluation. Within the boundary of the project the area of influence of each chief should be determined and mapped. The Isigozis within each section should also be indicated on the map.
- c) Homestead evaluation. Within the boundary of each chiefdom, an estimate should be made as to the number and approximate location of the different homesteads. Areas that are currently used for rain fed agriculture should also be determined. Where any community land use plans are available or resettlement has occurred out of the arable area this should also be noted and included in the evaluation

#### 2.2.2.3 Environmental scoping

An environmental scoping exercise should be undertaken to evaluate if any significant changes have taken place in the project area since the original EIA was undertaken. Any significant changes should be noted in a report which will help guide the bulk water planning process. Lessons learnt from phase 1

regarding voluntary and involuntary resettlement should be used to evaluate the resettlement impact for phase 2.

*Some of these Lessons learnt include:*

- a) It should be ensured that the process starts as early as possible with careful survey of those affected and their assets;
- b) It should be ensured that a clear compensation framework is agreed with the interested and affected community members well in advance of the relocation;
- c) It should be ensured that the affected people are given as much notice of their relocation as possible and be thoroughly acquainted to the area to which they are moving;
- d) The affected people must be given as many options regarding their new homes as possible;
- e) There must be an independent dispute resolution mechanism.

#### **2.2.2.4 Agricultural scoping**

The agricultural scoping exercise should consist of the following key activities:

- a) Soil suitability evaluation. Based on the reconnaissance soil survey that has been done already for phase 2 a map should be produced showing the best contiguous unencumbered areas for irrigation development. This exercise should be largely a desk top exercise but may need some field verification.
- b) Based on the development assumptions for phase 1 regarding crop choice, irrigation method and financial viability the most financially viable areas should be identified. Where this evaluation skews the available irrigation land between the different chiefdoms in the project area, an optimization exercise should be carried out. This optimization exercise should as far as possible “allocate” viable irrigation land equally between the different chiefdoms.

#### **2.2.2.5 Social Mobilization**

The social mobilization exercise should be aimed at ensuring that community decision makers are informed of the development process and are sufficiently organized at this stage to make input into the process. The exercise should comprise three main activities.

- a) Information dissemination. An information dissemination campaign should be organized to alert the community and its leaders of the planning and development process. This should be done through traditional information portals (using lessons learnt in phase 1) and community meetings
- b) Traditional leadership transformation training. The traditional leaders are the most important decision makers at this stage of the decision making process. They should therefore be taken through transformation training. This training should allow them to develop a vision of their chiefdom after the project is complete.
- c) Community transformation training. This training aims to identify non traditional leadership in the community. The outcome of this training should be an interim chiefdom development committee. Also the Consultant will train the communities on the concepts and implications of engaging in irrigated commercial farming and their future role in the project and on how they will manage their future farming enterprises for optimum profitability and sustainability.

#### **2.2.2.6 Bulk water supply endorsement workshop**

All decisions pertaining to the detailed design of the bulk water supply should be discussed and agreed at a workshop held with all community leaders. These decisions will then allow detailed design to be completed.

#### **2.2.2.7 Chiefdom Development Planning activities to be undertaken**

A recognized participatory planning methodology should be used for coming up with the chiefdom plans. It should focus on the lowest homogenous groupings in the community for community problem solving, decision making and planning. The main difference between the activities undertaken at this stage and

activities undertaken during the scoping phase is that during the chiefdom planning phase the main actors are the entire community and not just community leadership.

The outcome of this phase should be a plan endorsed by the traditional leadership that clearly articulates the future development plans of the chiefdom.

The process could entail the following stages, but the consultant must explain clearly the methodology most familiar to him/her

**a) Entire community mobilization.**

This should be a start up phase, in preparation for future development. In this phase the institutional and stakeholder analysis should be done which entails finding out what institutions and stakeholders exist in that particular chiefdom. During the community mobilization stage, communication should be stimulated with the communities and communication channels are established. Expected outputs of this phase include; a common project goal that should be agreed by all stakeholders, communications structures identified and partnerships with all stakeholders established. The key outcome of this stage is the establishment of a Chiefdom development committee which should work with the traditional authority and take the planning process forward

**b) Community Analysis**

This stage seeks an in depth understanding of the community. It is centered on data and information gathering. The communities are in the forefront in the collection of this data to promote ownership of the data by the community. Outputs of this stage include; resource maps highlighting the status quo, Social data that includes vulnerable groups, baseline data and performance indicators.

**c) Community Planning**

At this stage all the information gathered in the analysis stage is synthesized with the community. This is followed by the development of action plans by the community. The communities define indicators of success and the impact of the interventions on their livelihoods. The roles of the different stakeholders and partners are identified. Use of community resources and capacity is evaluated and external support is identified. The outputs of this stage include; land use plans, water supply plans, environmental management plans, public health plans and livelihood improvement plans.

**d) Participatory Monitoring and Evaluation**

Community plans are a basis for monitoring to track progress and identify opportunities and challenges. Evaluation tracks impacts and effects of the projects. The community to be involved in the monitoring evaluation exercises. Communities also engage in self evaluation and reviews.

**2.2.2.8 Suggested Methodology**

Participatory planning process should be defined as an iterative, staged process and should involve the devolution and joint analysis of implications of findings from the various studies, as these are completed. Should not be a separate, parallel project.

Key issues include:

Definition of participatory planning process

How to manage expectations

How to follow-up on the PRA process afterwards?

A step-wise approach could be considered, e.g.: Step 1 Presenting and explaining program to communities, lessons learnt from phase 1, basic information gathering. Step 2: Presentation and discussion of result from other studies. Step 3: Development of Chiefdom development plan with focus on water issues

- Synthesize lessons learnt from phase 1 (incl. land tenure arrangements, social organization of maintenance and governance of irrigation water system as well as domestic water, Lessons learnt re social equity and gender equity, environmental concerns, Lessons learnt re: displacement and associated issues, Drinking water and sanitation, Cropping systems and input/output market access)
- Development of methodology for participatory rural appraisals in three chiefdoms, incl. training the team. Depending on the number and size of Izigods one could consider e.g. a 2- max. 3 day PRA exercise per Izigod/group of Izigods. (Time estimate depends on the number of PRAs to be carried out, but nothing impedes a parallel approach. Suggestion 2 months, incl. preparation, definition of methodology analysis and write up)
- Both men and women should participate
- Gender analysis should be included as a theme to be covered
- A main section of the first day of the PRA exercise should be dedicated to presenting and explaining the program to the community, thereby clarifying also the scope of possible interventions to avoid building unrealistic expectation. Will ensure focus on water related matters (Domestic, agriculture and environmental).

#### Specifically re: community mobilization / organisation

Need to define the purpose of organization first

Need to understand current level and way of local social organization, and if any existing local organization can be used or built on

Identification of ways of managing operation of system and ensuring equitable use of water, while limiting free-riding

#### **2.2.2.9 Specifically on Gender issues:**

- Ensure both male and female participation from diverse social groups (young, old, landholder, landless, subsistence farmer, cash-crop farmer, extra-farm income etc.), and adequate representation of both female and male perspectives
- Of key importance are: 1) access to and control of resources, division of work and responsibilities
- Gender issues in relation to choice of crops, farming systems and diversification, e.g. female crops/animals – male crops/animals,
- Tenure system: land not private property, but access/tenure to land and water resources is still a relevant gender issue, e.g. when chief allocates land is it to the couple or only to the (male) individual, what determines land allocation?
- Drinking water & sanitation vs. agricultural water: For whom is this an issue?

#### **2.2.2.10 Timeframe**

The scoping exercise should take three months to complete. (Project month 3) Thereafter the chiefdom planning exercise should commence. The chiefdoms should be planned sequentially with the first plan being ready after three months (Project month 6) and the final plan being ready after six months (Project month 9)

### **2.3 Sub-Component 3: Financial and Economic Analysis (FEA)**

#### **2.3.1 Background**

A review of the Financial and Economic Viability of the Lower Usuthu Smallholder Irrigation Project (LUSIP) was undertaken by the UGL Consortium in 2005. This review followed an appraisal of the project carried out in 2001 for phase I. In phase II of the project, water supply and sanitation developments are envisaged and their financial and economic costs and benefits are to be integrated into the financial and economic models of the project. This FEA should be an update of the Financial and Economic Viability of the Lower Usuthu Smallholder Irrigation Project (LUSIP) undertaken by the UGL Consortium in 2005 and should be carried out in accordance with the relevant rules and procedures for the financial and economic analysis of development projects.

#### **2.3.2 Objectives**

The objectives of this component of the study include the preparation of a Proposal for Funding document based on the financial and economic viability of the project, taking into account the costs and benefits of all infrastructure and facilities to be developed under the project. The updated FEA Report and the Proposals for Funding will form the base documents required for the mobilization of funds for the infrastructure investment costs of the project through Donors' Conferences and other approaches envisaged.

#### **2.3.3 Scope of the Study**

Under this study, which is essentially the updating of the FEA of 2005, an analysis and assessment of the economic and financial costs and benefits of all irrigation and water & sanitation infrastructure to be developed will be undertaken. The analysis will be carried out in conjunction and iteratively with the first two components of this studies in order to determine the financial and economic costs associated with the operation and maintenance of the infrastructure, the break-even unit costs of supplying irrigation and potable water to the population, taking into account their ability to pay and all other social and environmental costs and constraints. The study will equally elaborate on cost recovery measures and propose an equitable tariffs structure for the operation and maintenance of the developments.

#### **2.3.4 Undertaking the Financial and Economic Analysis (FEA)**

The analysis will be carried out in an iterative manner with the water development and environmental & social development components of the study, taking into account all the alternatives considered in these components as well as the recommendations from the various stakeholder workshops and consultations and providing input that will enable the selection of options that are environmentally, socially, economically and financially optimal. In the light of work already done in the FEA of the agricultural component of LUSIP, the consultant will carry out the following tasks:

- (i) review the financial and economic returns of the LUSIP project in light of developments in key variables, including cost and production factors;
- (ii) review the trends in and forecasts for the international market price of sugar, and illustrate the effects of (world market) price variation on economic viability;
- (iii) illustrate the effects of exchange rate variations on the economic viability of sugar production;
- (iv) explore the possibility of identifying and valuing the project's indirect benefits, and
- (v) consider the option of studying a wider range of agricultural development and processing options.

To carry out this review of the viability of LUSIP in the light of current cost estimates and projected returns the consultant will specifically:

- Liaise with the Project Director, PMU and Design Engineers to obtain the latest cost-estimates for the design options under consideration.
- Review the previous LUSIP studies regarding financial and economic analysis, particularly regarding the returns to agricultural production
- Update the financial and economic prices for crop budget and farm models

- Review the trends in and forecasts for the international market price of sugar
- Rework the financial and economic analysis using latest available information and taking account of various appropriate options of infrastructure design and command area size and layout
- Other relevant activities as requested by the Project Director. These might include specification of further studies to consider a wider range of agricultural development and processing options, and also development of indirect benefits, in order to seek improved returns.

### **2.3.5 Results and Deliverables**

Under this study of the LUSIP II, the consultant will:

- Prepare a Financial and Economic Analysis technical report detailing all the analysis and assumptions made as well as specifying the financial and economic net present values, internal rates of return for selected scenarios and the results of sensitivity analysis carried out using key variables;
- Prepare a Proposal for Funding Report which presents detailed cost estimates of the alternative adopted after all the consultations as well as a summary of the social, economic, financial, institutional, technical and environmental sustainability arguments advanced in order to obtain donors' support for phase II of the LUSIP.
- Organize a stakeholder workshop and make a debriefing presentation to project management and stakeholders;
- An Input Report  
The input report is a brief listing of the items set out below, to be submitted before departure at the end of an input. The report should be submitted to either the Team Leader or Project Director as advised by the Project Director
  1. Dates of Assignment;
  2. Dates of travel (international and local) and locations visited;
  3. Meetings attended and the names and designations of those involved, main topics discussed and main points of agreement or disagreement;
  4. Any training sessions or seminars attended;
  5. The items of the Expert's Terms of Reference which have been completed and proposals for the completion of any outstanding items;
  6. Papers, reports, maps, drawings, computer disks and other technical output, together with the details of their distribution;
  7. A directory of paper and computer files, indicating their contents and previous location.

### **2.3.6 Required expertise**

The consultant should have in his team expert with an advanced degree in Agricultural Economics and at least 10 years relevant working experience in developing countries. Familiarity with the Sugar sector in Southern Africa is essential and an understanding of the socio-economics of smallholder production in Swaziland would be advantageous.

### **2.3.7 Schedule**

The project will require a total of 2 man-months of input from the consultant's expert, spread over the entire duration of the global study. In order to ensure that documents are available for the donors' conference to be organized by project month 10 for the mobilization of funds, the FEA Report and the Proposals for Funding should be ready by this time.

### **2.3.8 Reference documents**

The reference documents for this component of the study include the Financial and Economic Viability of the Lower Usuthu Smallholder Irrigation Project (LUSIP) Report prepared by the UGL Consortium in 2005, obtainable from SWADE.

## 2.4 Component 2: Detailed Designs and tender preparation

### 2.4.1 Detailed Designs and tender preparation for the irrigation systems:

The Consultant will proceed to the detailed design of the irrigation infrastructure to be developed, taking into account the observations made by stakeholders in the study validation workshops organized to validate the different sub-studies of the feasibility study, as well as the comments from SWADE on the design assumptions made by the Consultant. Under this component, the consultant will prepare the following deliverables for the irrigation system:

- Develop a detailed design comprising two key components –
  - ~ The main canal/ pipeline extension, delivering water to the command area.
  - ~ The secondary/tertiary and distribution system (TDS) delivering water to farm-edge
- The detail design will address optimization of the water conveyance route system; including comparison between canal vs pipeline and combinations thereof all starting from the existing off-take point located on the newly completed Main Canal South and St Phillips intersection and sizing of the proposed components.
- Prepare an analysis showing the costs of investments, costs for operation and maintenance and the basic cost of a cubic metre of water.
- Prepare detailed design and complete tender documents for all works. A complete set of tender documents, including an Engineer's Estimate, will be prepared for each contract package. As part of this section the Consultant shall produce a works construction sequence/ methodology in sufficient detail for use by others in the Contractors tender evaluations.
- *Cost Estimates*: the cost estimates will be dated and should indicate the part of expenditure to be carried out in local currency as well as the part to be carried in foreign currency (€). The Consultant shall give precise information on the source of the unit prices used in the preparation of the cost estimates (e.g. cost of recent works, official information provided by suppliers and contractors).
- Prepare working drawings for issue to the prospective contractors.
- Prepare a detailed draft Design Report for Phase II works for submission no later than 4 months after commencement of the services. The Design Report will be finalized and submitted not later than two months after the stakeholder validation workshop, taking into account comments from all stakeholders.
- Propose modalities for the implementation of the works (types of contracts/contractors, force account etc.) which should be technically, economically and socially optimal. Depending of the mode proposed, the Consultant should indicate the supervision requirements for the efficient implantation of the works.

During the course of the design studies, account shall be taken of the findings of the other components of the study going on concurrently; these include the preparation of Chiefdom Development Plans, preparation of the ESIA, the water and sanitation studies and the financial & economic analysis of the project. These designs shall be finalized only after the findings and recommendations of the above sub-components have been validated by all the stakeholders of the project. All designs will be carried out in accordance with current Swazi and South African standards and practices. Particular attention should be given to the Comprehensive Mitigation Plans previously prepared for LUSIP Phase I as well as those to be elaborated in Phase II.

### 2.4.2 Detailed Designs and tender documents preparation for the water and sanitation facilities

Detailed designs and tender documents will be prepared for the water supply and sanitation options and levels of coverage agreed for Phase II with SWADE. For the sanitation aspect of this sub-study, a pilot ecological sanitation scheme of a size and content to be agreed with SWADE will also be designed in detail, with particular attention being paid to the handling and storage of wastes before use. The location of this ecological sanitation pilot scheme will be selected as part of the consultation process with the

community. The beneficiary community for the pilot area will equally be identified and trained in the operation and maintenance of the pilot facility with particular emphasis on the handling and using of the wastes safely and profitably. Specifications and infrastructure for the pilot scheme will be detailed as well in the tender documents. The Consultant will liaise closely with the SWADE which will equally be supervising the other concurrent sub-study teams as indicated above. The Consultant will prepare a detailed draft Design Report for Phase II facilities for submission and approval by the Rural Water Supply Branch or other professional organizations. The Design Report will be finalized and submitted after the stakeholder validation workshop of the feasibility studies report, taking into account comments from all stakeholders. The Consultant will produce the following deliverables:

- The detailed designs addressing the optimization of the operation and maintenance for a greater sustainability of the facilities to be developed as well as giving details of the facilities to be developed.
- Prepare detailed designs and complete tender documents for all facilities to be developed in accordance with the coverage rates agreed for phase II areas. A complete set of tender documents (including an Engineer's Estimate) will be prepared for each contract package. As part of this sub-study, the Consultant shall produce a works construction sequence/ methodology in sufficient detail for use by others in the Contractors' tender evaluations.
- *Cost Estimates*: the cost estimates will be dated and should indicate the part of expenditure to be carried out in local currency (SZL) as well as the part to be carried in foreign currency (€). The Consultant shall give precise information on the source of the unit prices used in the preparation of the cost estimates (e.g. cost of recent works, official information provided by suppliers and contractors...).
- Propose modalities for the implementation of the works (types of contracts/contractors, force account etc.) which should be technically, economically and socially optimal. Depending of the mode proposed, the Consultant should indicate the supervision requirements for the efficient implantation of the works.
- Prepare working drawings for issue to the prospective contractors.
- Detailed design and tender documents for a pilot ecological sanitation scheme covering a cluster of homesteads to be selected and agreed with SWADE, and based on the validated feasibility studies report.

## Annex 6: More information on the situation in the LUSIP Area

### 1. Problem Definition

#### i) Land Yields

The main crop grown under commercial conditions by small growers in Swaziland currently is sugar cane. Yields of sugarcane vary mainly as a result of differing soil conditions. Currently a good sugar yield is considered to be in the range of 110-120 tons per hectare. Smallholder farmers in the Komati Downstream Development Project have consistently achieved average yields of around 100 tons per hectare with a range from 80-130 tons per hectare. This is above the national average of 97 tons per hectare. All calculations that are included in the business plans of the new growers estimate a yield of 100 tons per hectare. No sugarcane is permitted to be grown without irrigation.

#### ii) Land Productivity

The other crop that is grown on a large scale commercial basis is maize. This is sold as both green maize (fresh) and grain. Yields vary but business plans drawn up for commercial maize production indicates a grain equivalent yield of 8 tons per hectare. Without irrigation maize yields are 1.5-2.0 tonnes/ha. Other crops that could be considered in the crop mix include cabbage, beans, peppers, sorghum, Lucerne, spinach, tomato, pineapples, cotton, and cassava. Yields of these crops vary according to the management intensity of their production.

The current revenue achieved per hectare varies according to a number of factors. To give some idea however of the revenues that can be expected by a shareholder of a sugarcane farm at LUSIP one can look at the following table:

Table 1.

Year	1	2	3	4	5	6	7	8	9	10
Cash Flow (E/shareholder/annum)	6586	5657	4736	3826	2924	3462	11803	10930	10660	9636

Source: Kusalangeni business plan September 2008; 1€=11E.

This is a farmers association with 30 members farming sugarcane on 57hectares of land. They have received a 70% grant for their farm development costs and have taken out a loan for the balance. The increase in revenue in year 7 indicates that year that their loan is re-paid. It is expected that in any given cropping scenario this would be the minimum cash flow received by each member.

#### iii) Water supply and sanitation situation

The water supply and sanitation will target all 10,000 beneficiaries of phase 2 of the LUSIP project. The participatory planning of the water and sanitation supply program will take place during the Chiefdom development planning process. The targeted facilities will be community standpipes for potable water supply serving clusters of homesteads within a distance of 200m of the homestead. The source of water will be where appropriate will be the major water conveyance systems bringing bulk water from the reservoir to the planned irrigated fields. Sanitation facilities will be VIP latrines at each homestead. All households in the defined project area are to benefit.

The water master plan will detail the quantities of water needed for each component of the project (irrigated agriculture, homestead gardens, livestock water, environmental, Trans boundary/catchment and potable) along with the infrastructure and institutional arrangements needed to achieve the varied project objectives.

Currently the population does not have access to treated water and there are no developed facilities for livestock. In the project area people carry water from the nearest stream. There is no survey of actually used sanitation facilities in Phase II but in Phase I homesteads normally use simple pits. For Phase I (and probably Phase II) Ventilated Pit Latrines (VIPs) are planned.

Water for human consumption obtained from the irrigation pipelines is normally stored in a storage tank and treated using a slow sand filter installed at the point of delivery. Payment for potable water would be organized by the Water Service provider contracted for this purpose.

Often community based potable water schemes fail because the capacity to run them is not present in the target community. The irrigation component will require a water service provider who will need the capacity to distribute, account, bill and maintain infrastructure that can distribute 140-150 million cubic metres of water annually. Adding the potable water component to this poses very few technical issues. The benefit is that one gets the capacity where it is needed and much of the fixed cost of the water provider is divided by a bigger base benefiting the cost of both potable and irrigation water.

#### iv) Chiefdom development

There has currently been no external mobilization process in the target communities. However they are neighbours to the phase 1 communities so therefore have begun to appreciate some of the issues they will be facing when phase 2 gets underway. Currently the traditional structure in the community lays the foundation for any organization and mobilization. Apart from that there are a number of community based interest groups in the community focusing on aspects such as health, youth, woman health etc. It will be these interest groups in conjunction with the traditional structure which will be identified during the resource and social mapping exercise and will be mobilized into the Chiefdom development committees as the planning progresses.

The holistic planning embedded in the chieftaincy development planning process clearly articulates the benefits and responsibilities that the project brings to the target community. As the community itself undertakes this planning they are aware of the health benefit that the potable water brings. It is hoped that the emphasis on the participatory planning will ensure the sustainable use of the potable water provided to the community.

LUSIP phase 1 is pioneering the chiefdom development planning approach. It has now been recognized as a planning tool by a number of Ministries in Swaziland.

#### v) Property rights and transformation

At present the access to and control of resources is skewed in favour of men under traditional Swazi law and custom. The chiefdom planning process begins with the setting up a new vision for the chiefdom taking into account the commercialization of agriculture which underpins the change that will take place. As part of the facilitation process in setting up the vision there is a strong emphasis on Training for Transformation. This training has as its foundation gender and social equity. Experience from phase 1 has shown that as a result of this approach, women are strongly represented in all planning committees and make up a good number of the executive on many of the farmers associations.

### 2. Other Donors

Under the current Loan Agreement with European Investment Bank € 13.5 million is available for infrastructure. Under EDF 10, € 3.7 million is available for the PMU and construction supervision. No other donors are committed so far. However, BADEA has expressed interest and it is expected that AfDB will participate.

### 3. Irrigation system information

- Water is supplied from the main canal system to small earth dams via pipelines. Each earth dam supplies one or more farmers' associations. Due to the nature of the terrain, not many areas are suitable for surface irrigation and normally water will be pumped from the small earth dam outlet to a sprinkler or drip system.
- The source of power for pumping is electricity. A rural electricity grid serves the project area.

- Photographs are being sent separately by e-mail. Feeder canal has bed width of 2.00 m and 1:1.5 side-slopes. Longitudinal slope is 3:10,000.

#### 4. Institutional support to farmers

There is a good range of development finance institutions providing loans to farmers associations at the KDDP and LUSIP phase 1. Recently this has been augmented by some private sector banks. There are also a number of existing and emerging micro finance institutions who can supply smaller loans to individual households.

A number of services providers provide technical support to the farmers. These are the Government extension staff, SWADE, Swaziland Sugar Association and the mills. The mill staff primarily concentrate on issues of sustainable cane supply especially cane quality, harvesting and logistics. The mill also provides a support role in ensuring phyto sanitary conditions are met and in the supply of good quality seed cane.

The mill is the only buyer of cane. Cane price is determined through a division of proceeds agreed between all millers and growers in the country and is regulated through an act of parliament.

#### 5. Crop diversification

An important part of the development of a farmers association is the development of their individual farm plan. This farm plan takes into account the natural resource base that the individual farmers association has and facilitates the planning of a range of enterprises to be grown on the farm. This planning takes issues such as market size, technical requirements of the crop, climate etc into account in making the final decision as what to grow.

Some of the land from the project will be specifically set aside as homestead gardens this will ensure the following results which will add to the project impact:

- a. Increase in labor opportunities available to the homestead to compensate for the decrease in labor opportunities as land is converted from subsistence farming to irrigated sugar cane
- b. The homestead gardens will mitigate two of the bigger risks identified at LUSIP that being reliance on sugar cane as the main crop through the diversification of crops on the homestead garden and decrease in food security as sugar cane is planted on subsistence maize lands
- c. The homestead gardens should enhance the cash flow of the homestead especially in the early days when the main enterprise is paying off the development loan

#### 6. Beneficiary Training.

The principal vehicle for beneficiary training will be the chiefdom development planning study. Within this sub-study the community will be introduced to the scope and nature of the total project and will be informed as to the details of the other studies. The community will also be introduced to the concepts and implications of engaging in irrigated commercial farming and their future role in the project.

#### 7. *Lessons Learnt from Phase I:*

Please give details of issues encountered in carrying out the different studies, designs and implementation of LUSIP I in the following areas:

- a. Technical issues:

From a technical perspective there are a couple of lessons learnt.

- i. The soil survey needs to be as accurate as possible due to the patchy nature of the soils in the project area. The classification of soils should also be clear in that any soil that is classified as irrigable but with some limitations those limitations should clearly be listed. The reason for this is the soils information folds into the planning process which in some instances is driven from both a technical and social perspective. Ideally the soil survey should be done in conjunction with the chiefdom development planning process to ensure the social and technical imperatives are met.
  - ii. Support infrastructure such as roads, bridges and electricity should be incorporated into an infrastructure master plan
  - iii. The determination of areas to be irrigated should be based on a number of factors such as soils, pumping head, distance from the water source and distance from the mill. Using GIS to model this is a good decision making tool.
  - iv. The development of a multi cropping farming system needs to be underpinned by a robust diversification strategy.
- b. Social and environmental matters:
  - i. Cross chiefdom development does not work
  - ii. Dictating land holding size per household does not work
  - iii. The chiefdom development planning process is an excellent tool for community based planning
  - iv. Training for Transformation is the key tool to be used to prepare the community for the change that they will be facing.
  - v. Livestock development is a crucial part of the overall development
- c. Procurement Issues:
  - i. Need to carefully follow the financing institution rules and procedures to avoid delays;
  - ii. Allow ample time to allow for evaluation and financing institution “no objection”.
- d. Financial and economic matters:
  - i. Sugar cane as the anchor crop should be the benchmark in financial decision making. At the same time other higher value crops should be encouraged but unrealistic financial returns should not be used in financial decision making
  - ii. The role of homestead gardens is important in boosting the income to farmers
  - iii. The business plan is an important decision making tool used by the farmers associations. The process of developing the business plan needs to be highly participatory.
- e. Institutional issues:
  - i. The role of the traditional authority is crucial for timely project implementation. A special program of support needs to be provided for this
- f. Resettlement issues:
  - i. It should be ensured that the process starts as early as possible with careful survey of those affected and their assets;
  - ii. It should be ensured that a clear compensation framework is agreed with the interested and affected community members well in advance of the relocation;

- iii. It should be ensured that the affected people are given as much notice of their relocation as possible and be thoroughly acquainted to the area to which they are moving;
- iv. The affected people must be given as many options regarding their new homes as possible;
- v. There must be an independent dispute resolution mechanism.