

SOCIAL IMPACT ASSESSMENT

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Department:
Water Affairs
REPUBLIC OF SOUTH AFRICA

Department of Water Affairs

Private Bag X313
Pretoria
0001

Prepared by:



EOH Coastal & Environmental Services

EAST LONDON
16 Tyrell Road
Berea

East London 5241
P.O Box 8145
Nahoon, 5210

*Also in Cape Town, Grahamstown, Port Elizabeth, Johannesburg
and Maputo*

www.cesnet.co.za

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1 INTRODUCTION

1.1 Introduction and Project overview

This report presents the Social Impact Assessment (SIA) study that is part of the Environmental, Impact Assessment (EIA) process for the proposed Lusikisiki Regional Water Supply Scheme (LRWSS) proposed by the Department of Water Affairs (DWA).

The Study Area comprises the region between Lusikisiki (up to about 15 km inland) and the coast, extending from the Mzimvubu River in the south-west to the Msikaba River in the north-east, as shown on Figure 1.1. The proposed LRWSS dam site is situated north-west of the town of Lusikisiki (Figure 1.1) in two Local Municipalities within the O.R. Tambo District Municipality (ORTDM) in the Eastern Cape Province of South Africa, namely the Ingquza Hill Local Municipality (IHLM) and to a lesser degree, Port St Johns Local Municipality (PSJLM).

The proposed project, which includes the associated pipeline reticulation, will directly affect fourteen wards in the IHLM which include ward no: 4; 12; 13; 14; 15; 16; 17; 18; 19; 20; 21; 22; 23 and 24 and five wards in the PSJLM: 13, 14, 15, 19 and 20 (Figure 1.2). For the purposes of this study engagement and impact assessment was restricted to these areas and has been named the project area.

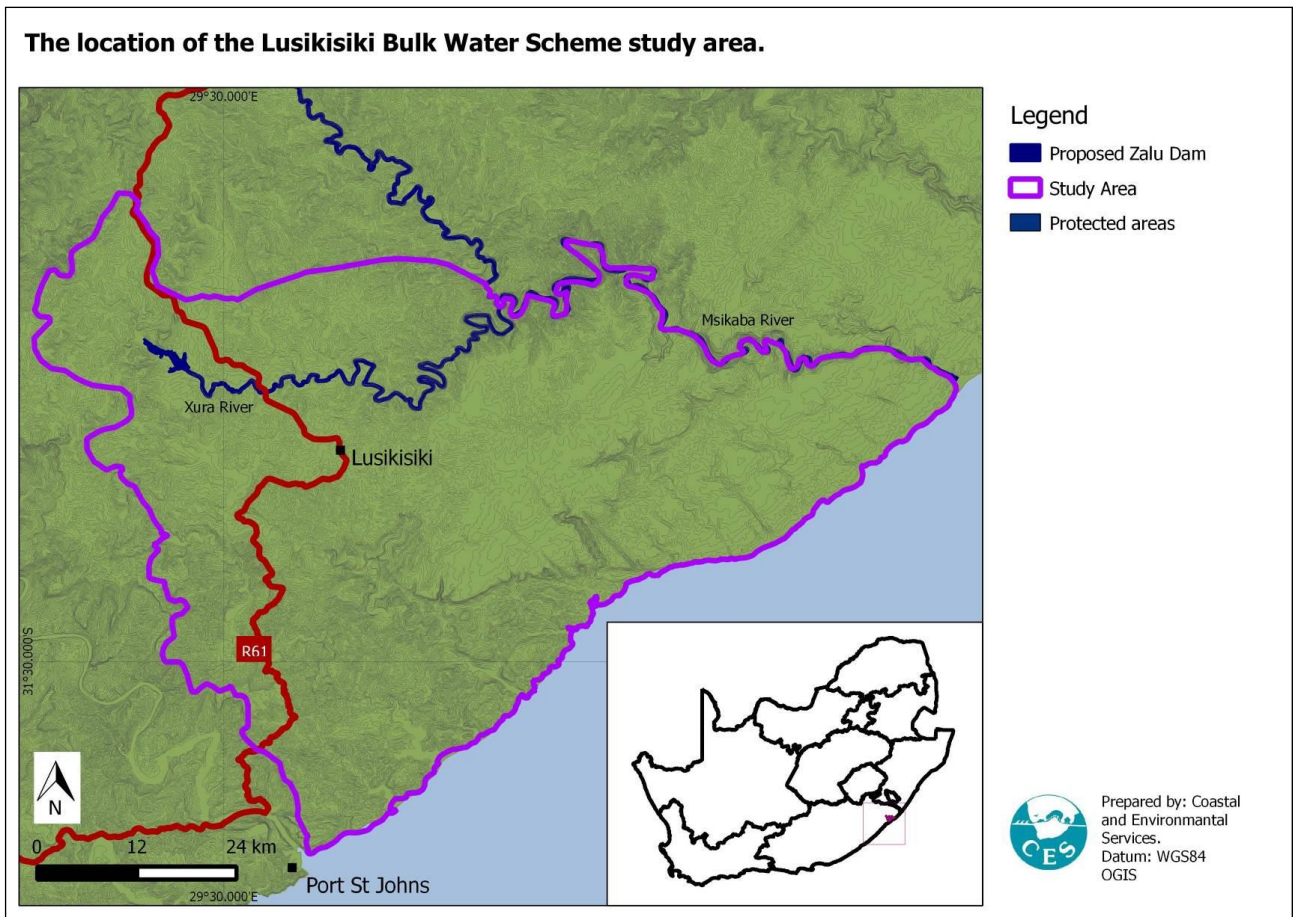


Figure 1.1: Location of the proposed Lusikisiki Regional Water Supply Scheme

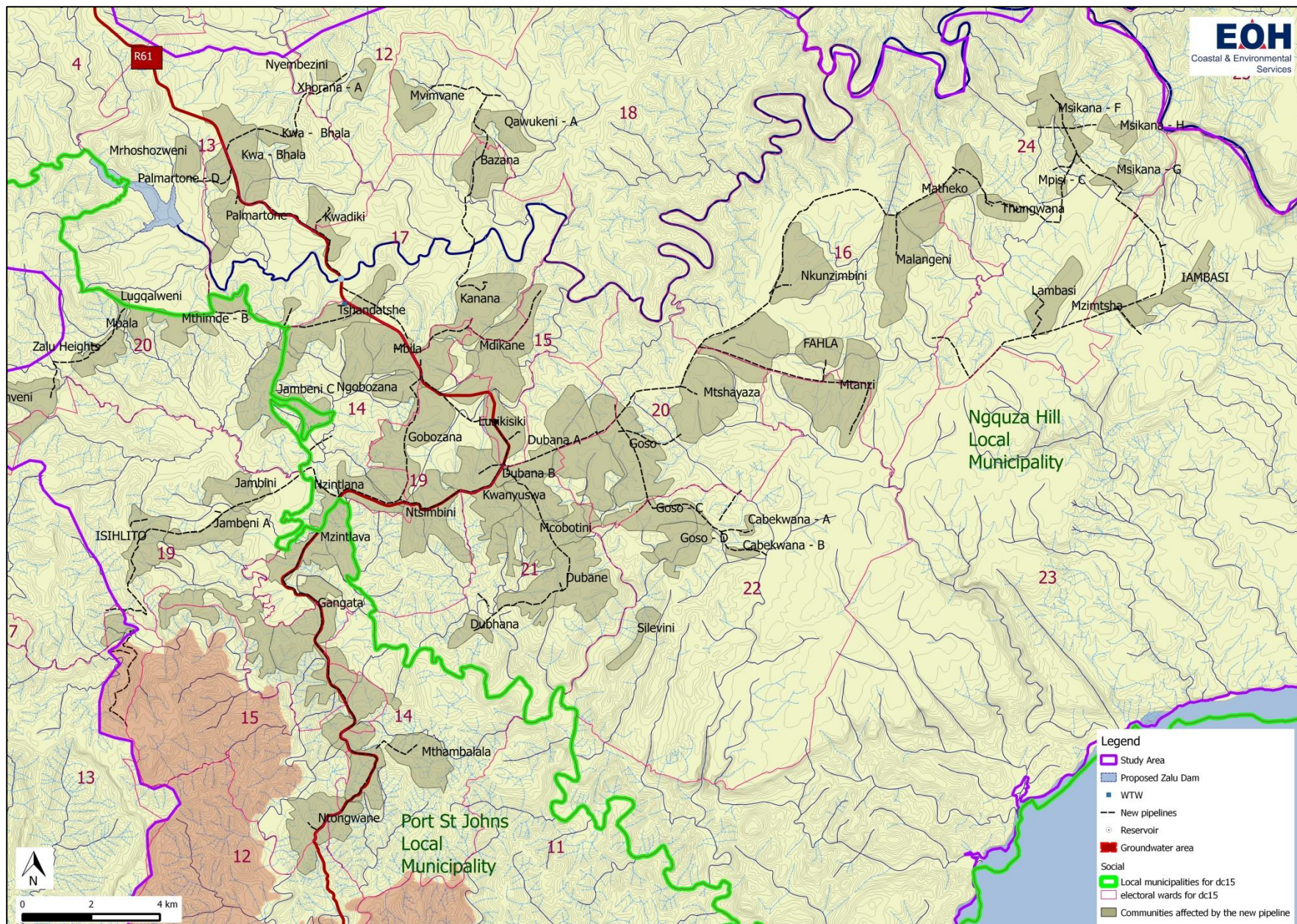


Figure 1.2 Affected villages (in darker shading) and the associated ward number in the Ingquza Hill and Port St John Local Municipalities.

The proposed project consists of the following activities:

The Zalu Dam and inundation area – The dam will consist of an earth core rockfill dam with a full supply level of 612 masl (the dam wall will be approximately 35 m high). It is anticipated that the dam will yield 6.95million m³/annum, at 1:100 year assurance of supply. The domestic requirement is 5.4 million m³/annum in 2040, the irrigation requirements 1.45 million m³/annum (including 10% losses) and the 1:1 year ecological flow requirement is 8 m³/s for a period of three days per year. It is anticipated that the release for domestic use will be sufficient for the maintenance of ecological requirements (MJ Trümpelmann, 2014). The area that will be inundated as a result of the proposed Zalu Dam is approximately 143.47 hectares in size. No resettlement will be required.

Borrow pits for dam construction - The results from the pre-feasibility study (MJ Trümpelmann, 2014) show that sufficient construction materials are available for a rockfill dam in close proximity to the proposed construction site. Residual dolerite clay is available in a borrow area downstream of the dam wall. This material is sufficient for a central earthfill core for a rockfill dam.

Two rockfill quarries with unweathered dolerite 10 km upstream of the proposed dam wall, were identified. These sources are located below the full supply level of the dam. Both sources are covered with moderately to completely weathered shales. The moderately weathered shales can be used in the shells of a rockfill dam.

At the centreline of the dam on the right bank a horizontal layer of unweathered dolerite was encountered at a level of approximately 611 masl. This can be used for an approach channel floor for a side channel spillway. Some of the excavated materials can be used for the shells of the rockfill dam.

Abstraction weir – An abstraction weir will be constructed approximately 5 km downstream from the proposed Zalu Dam in close proximity to the R61 road north of Lusikisiki.

Reticulation of raw water to the existing treatment works – A pipeline will be constructed from the abstraction weir to the existing water treatment works on the outskirts of Lusikisiki. The location of this route will be provided in the EIR Phase as it is not finalised at this stage. In addition to this it is anticipated that the water treatment works will be upgraded to cater for the increase in capacity required.

Reticulation of treated water to various reservoirs and communities – Potable water will be transferred from the water treatment works to a number of reservoirs via a combination of existing and new pipelines. Existing pipelines may require upgrading. The location of new pipelines is shown in dotted lines on Figure 1.1 above.

1.2 Study Terms of Reference and Approach to the Study

The SIA has been drafted in accordance with the South African Environmental Impact Assessment (EIA) regulatory requirements, as guided by Chapter 5 of the National Environmental Management Act (NEMA) (107 of 1998, as amended in 2010). By assessing the Project-Affected Communities (PACs), the report sketches the area's socio-economic environment and analysis the potential socio-economic impacts of the project on these PACs. In so-doing, it provides guidelines for limiting or mitigating negative impacts and optimising expected benefits. This report is based largely on primary data gathered by means of qualitative focus group discussions, meetings and key individual interviews held during March and August 2014. Data has also been supplemented with an analysis of the South African Household Census Data of 2011, as well as secondary literature sources.

According to the International Association of Impact Assessments (IAIA), an SIA can be defined as:

“[...] the processes of analysing, monitoring and managing the intended and unintended social consequences, both positive and negative, of planned interventions (policies, programs, plans, projects) and any social change processes invoked by those interventions.” (IAIA, 2012:1).

Foremost, it is important to draw a distinction between the scope of work for the SIA and that of the general Public Participation Process (PPP), the latter being an integral part of the EIA process. Whereas the PPP aims to notify and involve all stakeholders and Interested and Affected Parties (I&APs) who might be affected by the project, the SIA is a specialist study aimed largely at providing a broad overview of the most relevant social impacts and issues in the area. It is unfeasible to consult every affected landowner, stakeholder or I&AP during the SIA process, for which purposes the PPP has been initiated. Issues and concerns raised during the PPP are included for incorporated into the SIA.

The Terms of Reference (ToR) for this SIA, as defined by the scoping report of the EIA process, are as follows:

1. Describe the local socio-economic environment that will be directly affected as a result of the project;
2. Ensure that the study deals with the issues raised during scoping;
3. Assess the significance of potential economic and social impacts and benefits on the local populace and the Local Municipality and O R Tambo District Municipality;
4. Assess the local social infrastructure (health, education, markets, community);
5. Describe the formal and informal governing structures;
6. Identify income and expenditure trends;
7. Describe landownership
8. Identify project-related impacts and provide recommendations for mitigating negative impacts and optimising positive impacts.

Through the SIA process, communities and stakeholders are also assisted to identify their own development needs, ensuring that positive outcomes are maximised and possible negative impacts on such communities are minimised. What is also important to note is that an SIA should also analyse impacts that occur as a result of past activities, in other words, taking a holistic and cumulative view.

1.3 The Social Impact Assessment Specialist

Mr Lungisa Bosman and Ms Nande Suka were consultants involved in the data collection of this SIA.

Mr Bosman is a social scientist involved in socio-economic baseline studies, SIAs, Social Management Plans and Resettlement Action Plans (RAPs). His academic qualifications and accomplishments include a B. Soc. Sc. (Public Administration) obtained from the University of Cape Town in South Africa, as well as a Post Graduate Diploma in Organisation and Management also obtained from UCT. At EOH CES, some of the projects which he has been involved in include various RAPs in Malawi and Mozambique, as well as SIAs in South Arica, Mozambique and Malawi. Most of these projects have been conducted in accordance with the IFC Performance Standards.

Ms Nande Suka, Environmental Consultant, holds a B.Sc. degree with majors in Botany and Zoology (2010) and B.Sc. Honours in Terrestrial Botany (2011), both obtained at the Nelson Mandela Metropolitan University in Port Elizabeth. Her academic focus was in the broad field of Environmental Management and with great interest in impact assessments, environmental planning and conservation.

Dr Greer Hawley, Principal Consultant, has a BSc degree in Botany and Zoology and a BSc Honours in Botany from the University of Cape Town. She completed her PhD thesis (Microbiology) at Rhodes University. Greer was involved by reviewing, researching and writing the Social Impact Assessment report.

1.4 Background information

1.4.1 Feasibility Study for Augmentation of the Lusikisiki Regional Water Supply Scheme (2014)

A feasibility study of the proposed LRWSS and its likely impacts on the regional economics was prepared by Urban-Econ Development Economist in February 2014 (Department of Water Affairs, Report no. P WMA 12/T60/00/4611, 2014). The study included economic modelling in order to predict the direct, indirect and induced economic effects that are likely to be realised over a three year construction phase of different elements of the project and a 46 year operation phase in terms of maintenance and refurbishments. For the purposes of this report, the sum of the activities in each phase (dam construction, pipeline reticulation, upgrade of the water treatment works and refurbishment of the pump station) is presented. The most important outcomes of the economic modelling show that a significant amount of jobs will be created directly and indirectly during construction and operation (Table 2.1). It is estimated that 80% of the direct employment opportunities (approximately 900 jobs) created during construction will be sourced locally.

Table 2.1 Direct, indirect and induced economic effect of the construction and operation of the proposed Zalu Dam and supporting infrastructure (at 7.2 million m³/annum)

	Over a 3 year construction phase:	Total over a 46 year operation phase
The job creation potential	5220	6088
Spend on worker income	R444,78 million	R500 million

1.4.2 Wild Coast N2 Toll Highway

An important factor that may significantly alter the economic and social dynamics of the local communities is the future construction of the new National 2 (N2) Wild Coast Toll road. The new N2 is routed through Lusikisiki and will result in significant social and economic impacts of its own, during construction and operation. The sections of road that will be affected include the R61 coming into Lusikisiki from the south and a new road out of Lusikisiki travelling east (Figure 1.3). Depending on the timing of the construction of this stretch of the Wild Coast Toll Road and the proposed Zalu Dam, the social impacts exerted by both projects may be difficult to discern.

The SIA conducted by Huggins et al. on behalf of Dr Neville Bews & Associates in 2008 outlined potential impacts associated with the N2. These included the concerns raised by communities in the affected areas in addition to predicted impacts:

- A perceived direct increase in job opportunities and indirect opportunities due to increased traffic.
- Expressed that jobs need to go to local people: increase skill levels and increase employment potential: recommendation that a skills audit of local communities is undertaken in order recruit and select most suitable people.
- Increased regional economic development
- Increased employment opportunities
- Increase SMME opportunities
- Increases in HIV/STDs with the increased number of construction workers
- Increases in crime levels with the increased in the number of construction workers
- Opportunities to destabilise community structures with the increased in the number of construction workers.

The N2 Wild Coast toll impacts that are likely to be relevant to the current proposal due to overlapping issues and impacts are:

- Increase HIV/STD risk associated with construction “gangs” and increased traffic
- Secondary impacts such as an increase in crime
- Improvement in transport within the area

- Retail and trade have increased, but agriculture, forestry and fisheries have declined. Retail and wholesale, however, is marginal; the sector experiences economic leakages and suffers from poor infrastructure such as commercial land/property and poor basic services (water, electricity and sanitation)
- Tourism, which has the potential to be major contributor, remains poorly developed due to poor basic economic infrastructure (roads, electrification, communications, etc.)

The IHLM LED strategy anticipates economic benefits from high impact investments such as the N2 Toll highway, Umzimvubu River Basin, Lusipark residential and retail development and the proposed biofuels plant. These projects have a major impact on creating an enabling environment necessary to unlock the economic potential of the relevant areas. The LED strategy identifies the need to implement programmes and projects that can increase the multiplier effect of these investments.

The LED strategy identifies opportunities and proposed projects by sector, as summarised below:

1. Tourism: developing accommodation, infrastructure and recreation facilities around agro-tourism (Magwa tea estate), eco-tourism (Mkambathi and Msikaba) and socio-tourism (cultural and political history), including marketing projects to create awareness.
2. Agriculture Sector: Beef, Sheep, Poultry and eggs and Crop (maize and potato) farming. The only realistic opportunities recommended include (all the rest of the suggested projects fall within the mandate of the Department of Agriculture):
 - Provision of centralised marketing facilities and services for all agriculture production
 - Establishment of cooperatives and auction facilities
 - Establishment of hatchery, abattoirs and rehabilitation of broiler and layer houses (Poultry)
 - Support and institutional restructuring of the maize milling plant
 - Establish potato packaging plant at Lambasi
3. Forestry Sector: Many of the proposed projects fall within the ambit of the Department of Forestry and can therefore not be directly implemented, but rather facilitated by IHLM:
 - Rehabilitation of Flagstaff municipal plantation
 - Development of supporting infrastructure: roads, communications, development of forest product value-chain.
 - Upgrade and expand pole treatment plant in Flagstaff
 - Establishment of seedling nursery
 - Establishment of a charcoal plant, craft development, saw-mill or fibre-board plant
 - Create linkages with tourism

The LED strategy also provides details of projects that may have bearing on the current project that are associated with:

- Bioprospecting and processing
- Business Development Services and SMME support programme (e.g. development of database of local businesses and emerging entrepreneurs)
- Through chamber and consultation events, provide platform for dialogue and capacity building
- Urban Renewal projects
- Retail infrastructure
- Property Development (i.e. development of office and accommodation/residential sites in Flagstaff and Lusikisiki)

No LED strategy could be sourced for the Port St Johns Local Municipality.

2 LEGISLATION

2.1 Overview

Legislation and policy both play an integral role in the EIA process required to identify and assess the potential social impacts that might be associated with projects. Legislation and policy assist an SIA to assess a given development's fit with key planning and policy documents of the government, the district and local municipalities. Therefore, by assessing relevant legislation and policy, one of the SIA's purposes should be to indicate whether a proposed development in its current format conforms to spatial development plans and economic policies by creating opportunities for development.

The following chapter describes the institutional and legislative framework of South Africa and the affected municipalities. This framework will, in turn, inform the impact rating and identification of mitigation measures. In addition, a number of planning documents from the affected municipalities were consulted to guide this SIA.

2.2 Applicable South African Legislation

The project is subject to the prescriptions of numerous local statutes, which are predominantly dealt with (as environmental and social considerations) as part of the EIA process. The most applicable South African EIA-related legislation that bears relevance to the project at hand are listed in Table 2.1 below (in no particular order).

Table 2.1: Relevant South African legislation

Legislation	Date of Enactment
The Constitution of South Africa	Act Nr 108 of 1996 (last amended with Act Nr 3 of 2003)
The National Environmental Management Act (NEMA)	Act Nr 107 of 1998 (last amended with Act Nr 62 of 2008)
The National Heritage Resources Act	Act Nr 25 of 1999
The National Water Act	Act Nr 36 of 1998 (amendment bill in 2013)
The Conservation of Agricultural Resources	Act Nr 43 of 1983(draft amendment bill in 2013)
Development Facilitation Act (DFA)	Act Nr 67 of 1995

2.2.1 The Constitution of South Africa

The Constitution of the Republic of South Africa is the supreme law of the land. It is a comprehensive document that promotes and protects the rights of all South Africans. Today, under the Bill of Rights (Chapter 2 of the Constitution), every citizen has the right to equality of life, freedom of expression and human dignity. Above all, of relevance to the project, people have the right to an environment that is not harmful to their health or well-being. Access to information about project developments is also enforced by the Constitution. The SIA process has been designed to promote these Constitutional rights of interested and affected people (I&AP).

Furthermore, the Constitution requires any developer to:

- Ensure that the proposed development will not result in pollution and ecological degradation;
- Ensure that the proposed development is ecologically sustainable, while demonstrating economic and social development.

2.2.2 The National Environmental Management Act (NEMA)

NEMA specifically provides for and promotes co-operative governance - especially by decision-making powers - on matters related to the environment. In this way, it promotes co-operative governance by establishing procedures and principles for ordinary citizens to become involved in the management of the environment. A key aspect of NEMA is that it provides a set of environmental management principles that apply throughout the Republic to the actions of all

organs of state that may significantly affect the environment. The proposed development has been assessed in terms of possible conflicts or compliance with these principles.

Section 2 of NEMA contains principles relevant to the proposed project. Some of the most important principles applicable to this SIA include the fact that:

- The social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated, and decisions must be appropriate in light of such consideration and assessment;
- Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably;
- Development must be socially, environmentally and economically sustainable;
- Any decisions must take into account the interests, needs and values of all I&APs, and this includes recognising all forms of knowledge, including traditional and ordinary knowledge.

2.2.3 The National Heritage Resources Act

The proposed LRWSS is to be developed in an area where many land has been held in families for generations. As the project has the potential to affect a number of heritage sites, especially graves, along the pipeline this Act is applicable.

The Act largely provides for the protection of historical, cultural, archaeological and paleontological resources, placing the responsibility on the developer to report any objects or material to the responsible heritage resources authority. In addition, of relevance to this project, the Act legislates that no person may alter or demolish any structure or part of a structure (older than 60 years) or disturb any archaeological or paleontological site or grave (older than 60 years) without a permit issued by the relevant provincial heritage resources authority. A permit is required to destroy damage, excavate, alter or deface archaeological or historically significant sites.

2.2.4 The Conservation of Agricultural Resources Act (CARA)

The land that will be inundated by the Zalu dam and the neighbouring area is considered as agricultural land by the affected communities. Adequate measures need to be in place to regulate the control and utilisation of agricultural resources around the dam in order to promote the conservation of soil, water and vegetation and combating weeds and Alien Invasive Plants (AIPs) in order to minimise sedimentation of the dam. CARA provides the regulatory framework for (amongst others):

- The production potential of land to be maintained;
- Preventing and combating erosion;
- Preventing and combating weakening or destruction of the water sources, and
- Protecting vegetation and combating of weeds and invader plants.

2.2.5 The Development Facilitation Act

The Development Facilitation Act of 1995 has an important bearing on the SIA process in terms of national planning and requirements. Specific planning principles that are applicable include, but are not limited to (quoted from Barbour, 2007: p.18):

- “Promoting the integration of the social, economic, institutional and physical aspects of land development;
- Optimising the use of existing resources including such resources relating to agriculture, land, minerals, bulk infrastructure, roads, transportation and social facilities;
- Contributing to the correction of the historically distorted spatial patterns of settlement in the Republic and to the optimum use of existing infrastructure in excess of current needs;
- Encouraging environmentally sustainable land development practices and processes;
- Promoting the establishment of viable communities; and
- Promoting sustained protection of the environment.”

3 METHOD/APPROACH

The study area as defined in Section 1.1 was further refined for community engagement and data collection for this assessment. An area, called the project area, was selected based on direct impacts of inundation and pipeline construction (called Project Affected Communities). Surrounding villages and communities around the inundation area were directly engaged, while communities associated with pipeline reticulation were engaged through ward councillors only.

3.1 Project-Affected Communities

In terms of the Project Affected Communities (PACs), a distinction is made between those that will be directly affected by the proposed Zalu Dam and those that will be affected by the supporting infrastructure such as pipelines. The former will face land acquisition or land losses, and will be affected by inundation of their land as a result of the dam. The latter group includes all villages that will benefit from the project where pipelines for water supply will be either constructed and/or upgraded.

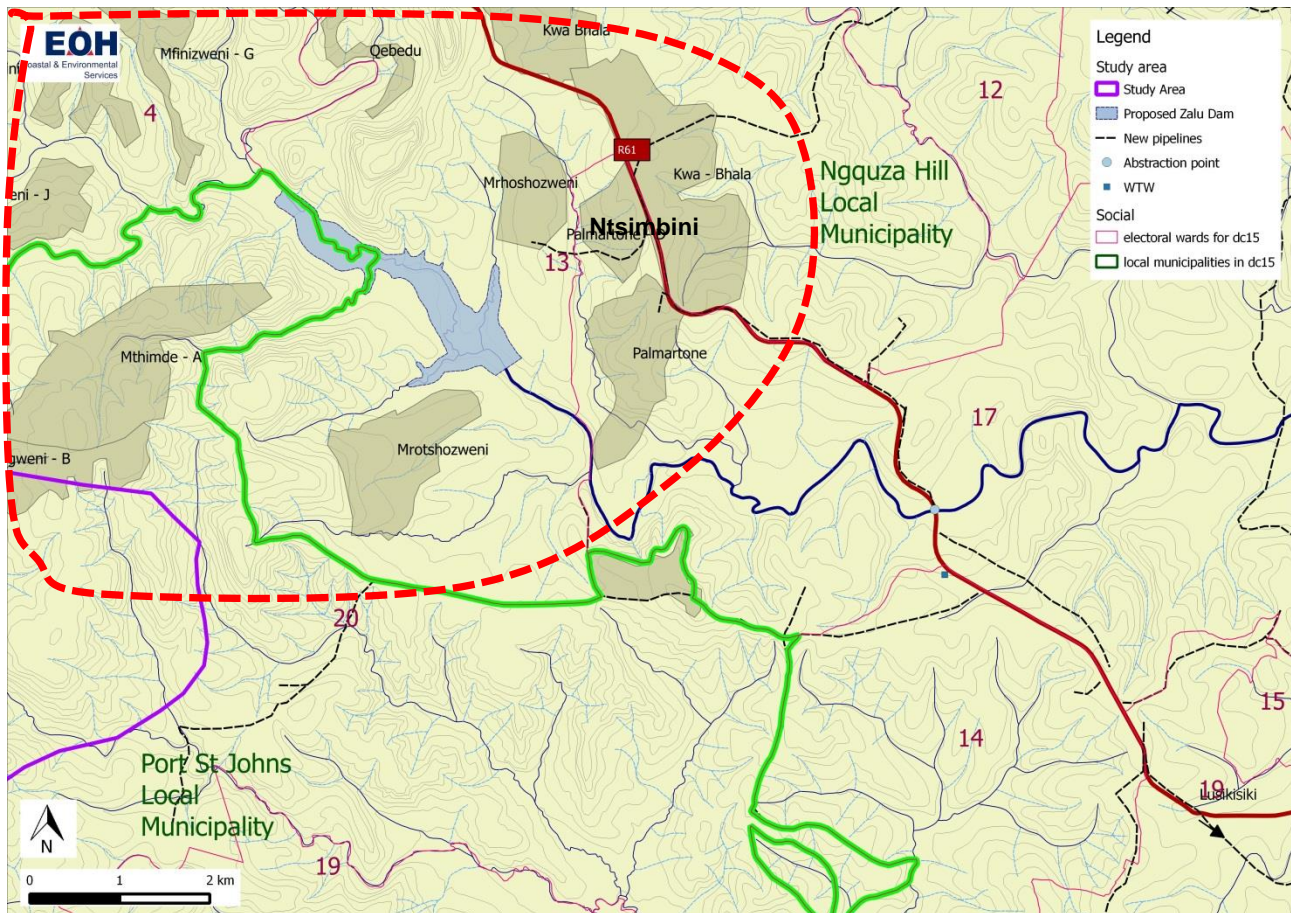


Figure 3.1 Project affected communities that will be directly affected by the proposed Zalu Dam (settlements within red dashed outline)

The Zalu Dam PACs, - the proposed Zalu Dam will affect a number of old arable lands within Zalu Heights Administrative Area (AA). Most of the land at the dam site has not been cultivated for some time, but is primarily used for stock grazing.

The infrastructure PACs – the proposed development includes associated infrastructure such as pipelines and the upgrading of the existing Water Treatment Works (WTW). The pipelines will traverse villages and in some instances will be crossing community grazing areas. According to the HIA a number of pipelines will affect gravesites (see HIA specialist report). The communities where pipelines will affect grave sites and/or even properties, proper consultation must be conducted prior any construction. In some cases it will be necessary to divert the route of the pipeline to avoid affecting these areas.

3.2 Meetings, site visit and data collection

Throughout the EIA, public participation has been ongoing and the SIA has incorporated all communication from IAPs. This study has also undertaken specific activities to collect socio-economic data. Information was gathered from initial community meetings, EIA public meetings and Focus Group & Key Informant Interviews. These are discussed in detail below.

3.2.1 Initial Community Meetings

Due to the large number of affected villages and the limited time on site, initial introductory meetings were held on the 18th and 19th March 2014, with only the communities that will be directly affected by the Zalu Dam. With the help of ward committees the consultant arranged focus group meetings with representatives from the Qhawukeni and Mthimde Traditional Authorities in order to discuss each community, its residents' socio-economic status and living conditions, as well as possible socio-economic impacts of the LWRSS development. All the meetings were well-attended.

All the meetings were chaired by Mr Bosman in the residents' first language (IsiXhosa) to inform them of the EIA for the proposed project. In addition, a Background Information Document (BID) was provided to community leaders in the affected villages. During each meeting, Mr Bosman and Ms Suka were introduced, after which some background was provided on the proposed LRWSS. This included the location of the Zalu Dam and associated infrastructure such as pipelines and upgrade of the existing Water Treatment Works (WTW). The need to engage with the affected communities and to obtain socio-economic data was explained on the basis that this information would be fed into the EIA process. Mr Bosman further explained that a SIA report would be drafted and presented to the Government and client. He further clarified that this report would include particular recommendations on how to mitigate possible negative socio-economic impacts, as well as how to optimise benefits from the project.

Table 3.2: Project-Affected Communities*

Project-Affected Community	Venue	Nr of Attendees		Date
		Males	Females	
Mthimde Village	Community Hall	28	22	05/03/2014
Ntsimbini Village	Community Hall	13	31	05/03/2014

*A local ward councillor agreed to organise a meeting with the community of Mfinizweni without success, due to service delivery protests.

3.2.2 Environmental Impact Assessment public participation

During pre-EIA process, DWS had started to engage with local key stakeholders. Additional stakeholders were identified during the scoping phase of the EIA process, especially at local and district level (refer to Appendix A for the Stakeholder Database). These stakeholders were notified of the EIA via email and phone.

During the Scoping Report Phase community meetings were held from 7-11 July 2014. The meetings were publicised via ward councillors, ward committees and community leaders. During the EIR phase, extensive meetings were held from the 23-26 February 2014. Details, such as attendance and meeting minutes, can be found in the Public Participation Report of the EIA.

The comments received during these meetings have been considered in the compilation of this SIA and the impacts chapter (Chapter 9).

3.2.3 SIA Focus Group and key Informant Interviews

From 25 to 29 August 2014, Mr Bosman and Ms Suka visited the proposed project site and PACs in order to gather data regarding the socio-economic conditions and potential issues and impacts of the proposed Zalu Dam and pipeline reticulation.

An understanding of the socio-economic conditions of the PACs was established by conducting meetings, focus group discussions and key informant interviews (to obtain community information). Details of all interviews are presented in Table 3.1 below.

Questionnaires with open-ended questions were used to guide the meetings. These questionnaires are attached as Appendix B-E. The questions were primarily drafted to obtain basic socio-economic information on each village (essential data which could not be obtained from StatsSA), its social amenities, living conditions and residents' livelihoods. The questions were also aimed at eliciting and identifying possible positive or negative project impacts.

Several issues were discussed, such as cumulative development in the area, cultural issues that may be affected by the project, health issues, water supply and most importantly, employment opportunities. Table 3.2 below provides a list of all the meetings held (Attendance registers presented in Appendix F).

Table 3.1: Key Informant/Focus Group Interviews

Key Informant	Position	Date	Meeting
Mr Nomandindi	Manager Water & Sanitation (IHLM) representing OR Tambo DM	28/08/2014	Not successful
(Mr. Mcondobi & Mr Samfu)	Mthimde Primary: Acting Principal & HOD	26/08/2014	Successful
Ms Mbembe	Laphumilanga Primary School (Ntsimbini Village): Principal	27/08/2014	Successful
Mr E Cezula	St Elizabeth Hospital: Hospital Administrator	28/08/2014	Successful
No name was provided	Palmerton Clinic: Head Nurse	27/08/2014	Successful
Mr Sigwebo	IHLM Environment Department	28/08/2014	Successful
Ncedo Dlomo	Siyazama Power Project: Ntsimbini Village	26/08/2014	Successful
Mthimde Village (PSJ Ward 20)	See attached register in Appendix F	28/08/2014	Successful
Ntsimbini (IHLM Ward 13/17)	See attached register in Appendix F	26/08/2014	Successful
Mfinizweni (IHLM Ward 4)	NA	26/08/2014	Not successful

Meetings were held with the principals of two schools located in the area in order to supplement the information received from Stats Data. Issues regarding the number of people enrolled at the schools and availability of teaching staff, school furniture *etc* were discussed.

Two health centres were also visited in the area and interviews were held with representatives. Information regarding the number of people visiting the health centres and the areas they service were discussed. At St Elizabeth we met with Mr Cezula (Hospital Administrator) who provided insight on the challenges facing the hospital, especially with regards to water supply. The clinic at Palmerton was also visited and an interview with the head nurse at the clinic was conducted. Issues that were raised include the high rate of alcohol- and substance-abuse, as well as other communicable diseases such as HIV/AIDS.

Lastly, a meeting was held with representative of Siyazama Power Project which is a local business venture formed by people at Ntsimbini village. The meeting discussed the challenges facing small businesses in the area and their development.

From the data gathered in the field, together with the South African Census data of 2011, sufficient information was available for a detailed socio-economic description of the project area.

3.3 Data Analysis

The StatsSA Census data of 2011 was used to generate baseline information across a range of socio-economic indicators. A more qualitative approach was adopted to analyse the data obtained through the community and one-on-one interviews, municipal discussion and community meetings. This approach is fundamentally more unstructured, and is often used in the social sciences to construct social trends, and identify socio-economic patterns; relying on participant observation and field notes.

3.4 Limitations

The following limitations are associated with this assessment:

- Not all the direct and indirect PACs could be interviewed, therefore inferences had to be drawn and generalisations made. However, the consultant is confident that the communities that were interviewed were generally similar to all other affected villages.

4 BASELINE FINDINGS: DESKTOP AND SITE OBSERVATIONS

4.1 Overview

As the proposed project affects a number of wards across the IHLM and PSJLM, this chapter focuses largely on the socio-economic context of only the directly affected wards in both these municipalities. Detailed socio-economic indicators for these specific wards would reflect a more accurate setting of the current conditions surrounding the proposed LRWSS. The “project area” referred to in this study consists of wards 4,12,13,14,15,16, 17,18,19,20,21,22,23 and 24 in the IHLM and wards 13,14,15,19 and 20 in the PSJLM.

Data at ward level was obtained from StatsSA (2011), and information supplemented by the IDP of the IHLM (2013-2014) and ORTDM (2012-2016). The section has also been informed by primary data obtained through discussions with the local municipalities, one-on-one interviews, as well as focus groups held with representatives from the PACs.

4.2 Socio-economic description of wards in the LRWSS project area

4.2.1 Demographic Overview

As illustrated in Figure 4.1 below, the vast majority of the population in the project area are classified as Black African (99%) while all other races combined are less than 1%. This may be largely attributed to the fact that this area is a former homeland (Transkei) and therefore still remains largely populated by blacks. The majority of the population is female at 54%, while males constitute 46%.

According to StatsSA (2011) 44.5% of the population in the project area are 15 years or younger, while 50.3% are in the 15-64 year age bracket. Senior citizens above the age of 64 years constitute 5.2% of this population.

There seems to be an out-migration of economically active people in the age group of 20-34 years. This highlights the need for economic investment in order to retain an active workforce and a healthy male-to-female ratio in the area. According to the IHLM IDP, the “high number of young people... leaving the area... suggests that service provision and social upliftment should be targeted at the youth and should be an important consideration for development.” (IHLM IDP Review, 2014-2015). The reasons for such migration can be attributed to a number of factors such as:

- The absence of tertiary educational institutions;
- Promises of better living and working conditions elsewhere;
- Poorly developed rural areas; and
- The poverty context and high unemployment levels.

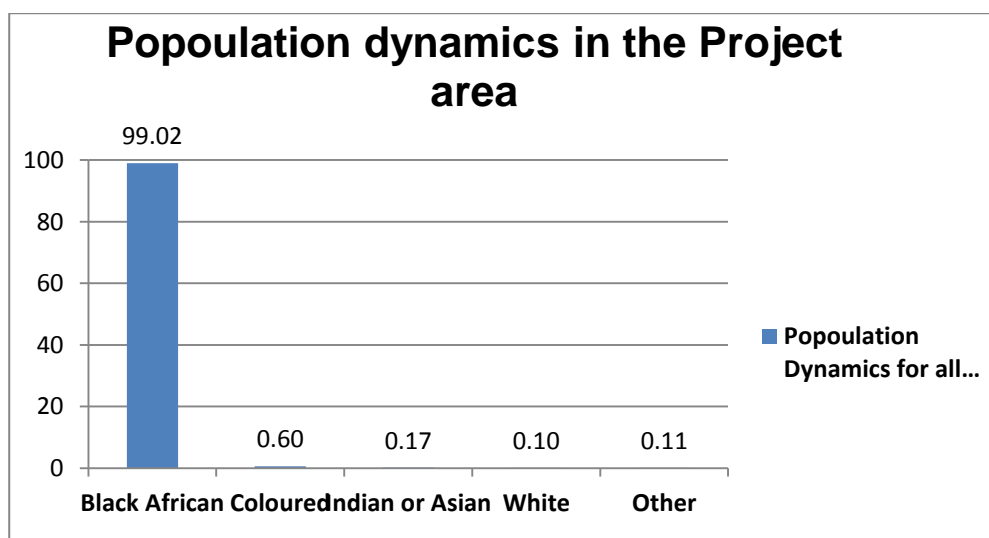


Figure 4.1 Population dynamics for the affected wards

In addition to migration patterns, the largest issue with regards to population dynamics is the prevalence of HIV/AIDs. This disease, apart from creating large strain on health and community support services, can also cripple the local economy. A survey of antenatal HIV prevalence conducted in ORTDM (Table 4.1) indicates that as of 2012, approximately 30% of the survey participants were HIV positive. The incidence of the disease recorded in the economically active age groups (estimated in this study to range from 20-39 years old) was 73.1%, although an alarming 24.1% of the surveyed women younger than 19 are also HIV positive (Figure 4.2). This means that the majority of HIV victims, and 22% of the antenatal group surveyed, may not be economically active.

Table 4.1 HIV/AIDs prevalence in the ORTDM*

Year	2009	2010	2011	2012
% HIV/AIDs prevalence	29.7%	31.5%	28.4%	30.1%

*National Antenatal Sentinel HIV and Herpes Prevalence Survey, South Africa, National Department of Health, 2012

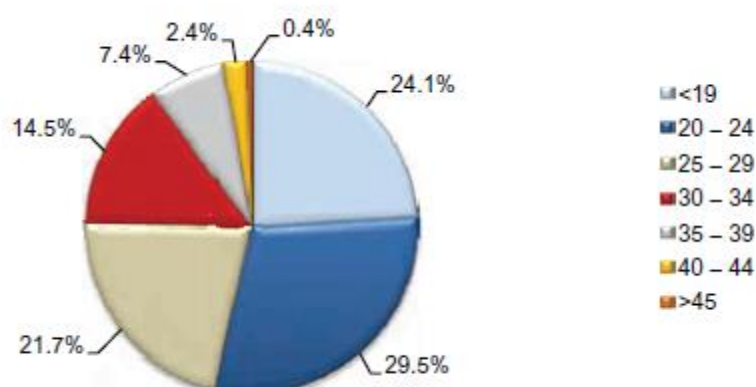


Figure 4.2 HIV prevalence among age groups in the Eastern Cape

(Taken from: National Antenatal Sentinel HIV and Herpes Prevalence Survey, South Africa, National Department of Health, 2012)

According to the IHLM Annual Report (2008), however, the HIV/AIDs prevalence in the local municipality was 20.2%. The source of this information is not provided, but these values indicate that HIV/AIDs prevalence is significantly lower than the surrounding municipalities in the ORTDM. A local HIV/AIDs support programme, TAC, was contacted for more accurate and localised information, but none had been received at the time of report submission.

4.3 Employment

Only 7% of the people within the project area are economically active/employed, most of which are employed within the government sector (Figure 4.3). This status is indicative of a collapsed economy which will require large-scale investment intervention to stimulate economic sectors.

According to the IHLM IDP the IHLM is the second highest contributor to the ORTDM GGP, after King Sabata Dalindyebo Local Municipality, and accounts for 9.4% GGP contribution to the District Municipality (IHLM, 2006). The government sector makes a significant contribution to the IHLM GGP of the municipality with a total contribution of 56%, followed by wholesale (8.7%), retail (7.8%) and agriculture & hunting at 7.4%. The remaining sectors have a contribution of less than 5% each which hampers the economic growth of the area.

Ironically it is the sectors that are making the smallest contribution that have the highest potential to improve the local economy. For example the agricultural sector which should be the dominant sector in the project area, is declining. The decline in agricultural output has several implications for the economy. It indicates that the IHLM depends almost entirely on imports of basic food stuffs. This also results in loss of employment opportunities that could be created by this sector.

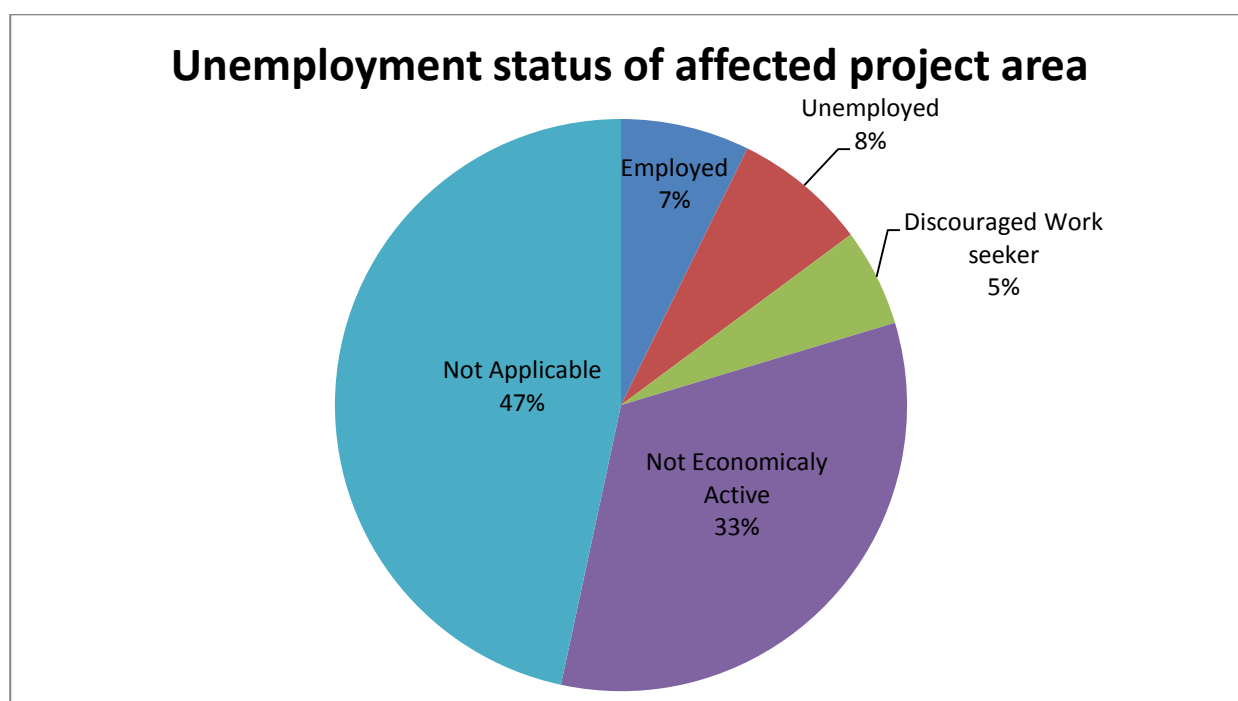


Figure 4.3: Unemployment status of project area

Figure 4.3 represents the unemployment status of the population in the project area. The majority of this population is 15 years or younger (47%) and thus may attribute to the large percentage of the population falling under the 'not applicable' category. Only 7% of the population is employed, implying that this area may have a low standard of living. Many (33%) are not economically active which suggest a high dependency on social grants.

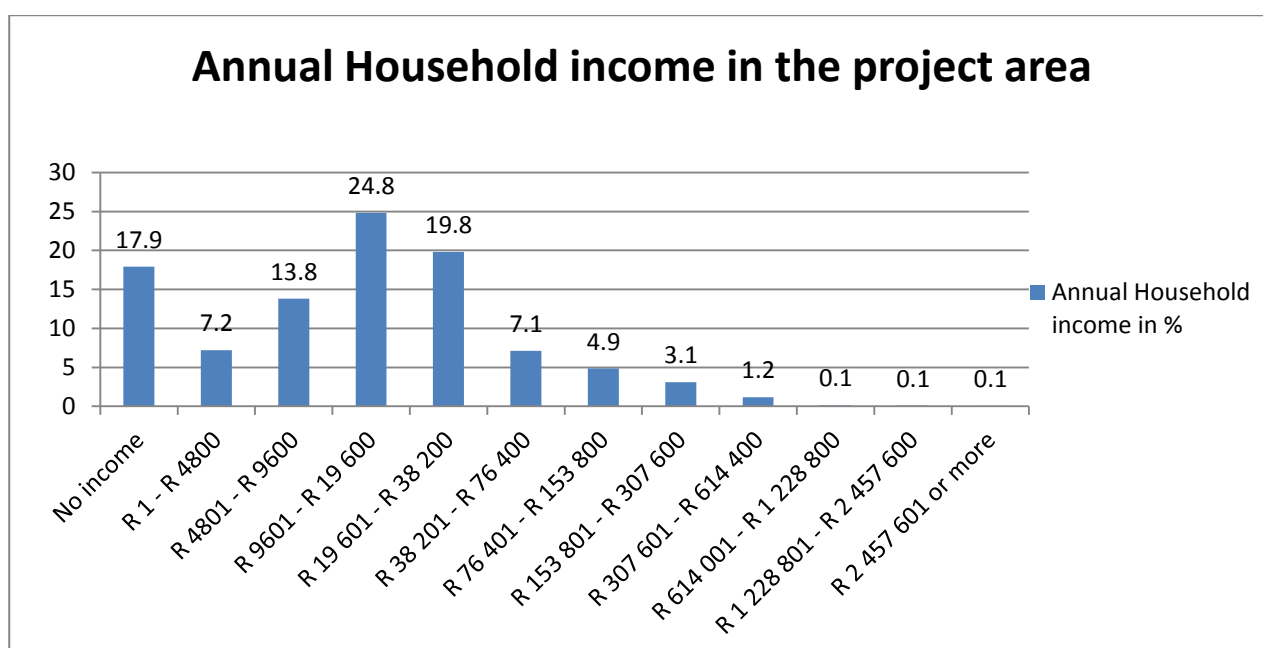


Figure 4.4: Annual Household Income in project area (StatsSa, 2011)

Figure 4.4 above illustrates that the bulk of the households in the project area (58.4%) receive between R4,801- R38,200 per year. While almost 18% of the household receive no income at all.

Very few households (only 1.45%) receive more than R307,601 per year (or R25,633 per month). Baseline data generated from interviews indicates that items such as food, electricity, healthcare and school-related expenses (uniforms and books, for example) were the households' largest monthly expenses.

According to members of Siyazama Power Project, and local business enterprise, the lack of employment opportunities in the area is what made them start the project. The aim of the project is create job opportunities for youth in the area.

4.4 Socio-Economic Living Conditions

4.4.1 Land-Use and Households

All the affected wards are based in the former Transkei. As a result the vast majority of the land is zoned as traditional land at 93.6%. Approximately 0.1% of the land is classified as farms and 3.8% zoned as "urban", (Figure 4.5). According to Stats SA (2011) 1.2% of the population in the project area occupy informal dwellings. Due to the rural nature of the project area, the majority of the population live in traditional dwellings (56%).

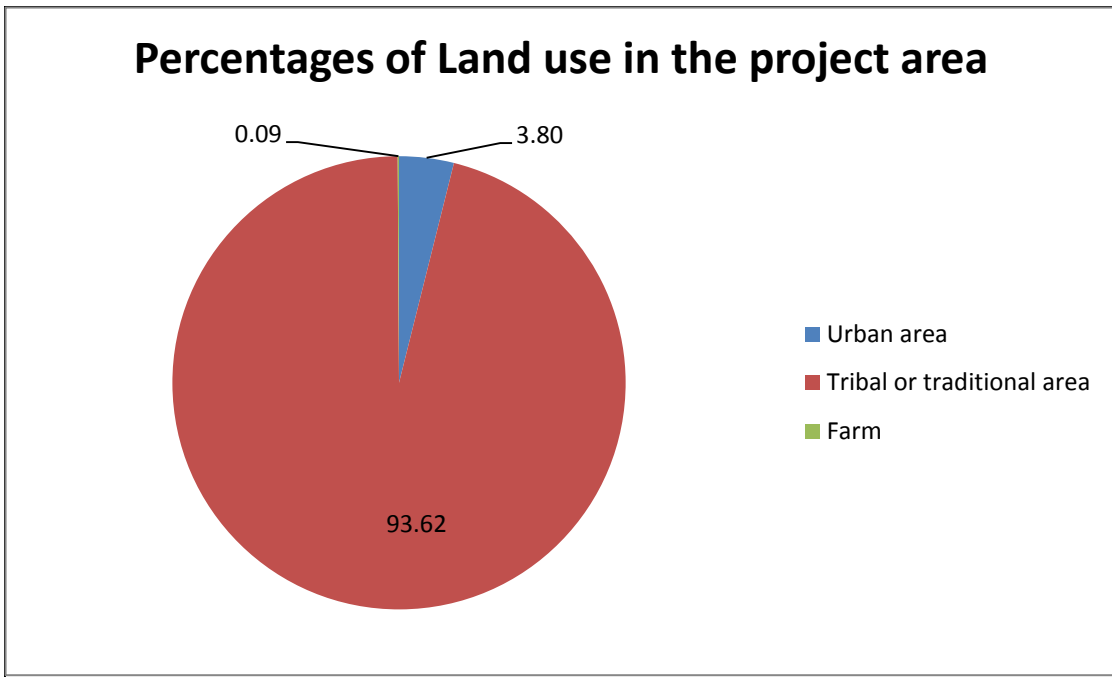


Figure 4.5: Land-use and households (StatsSA, 2011).

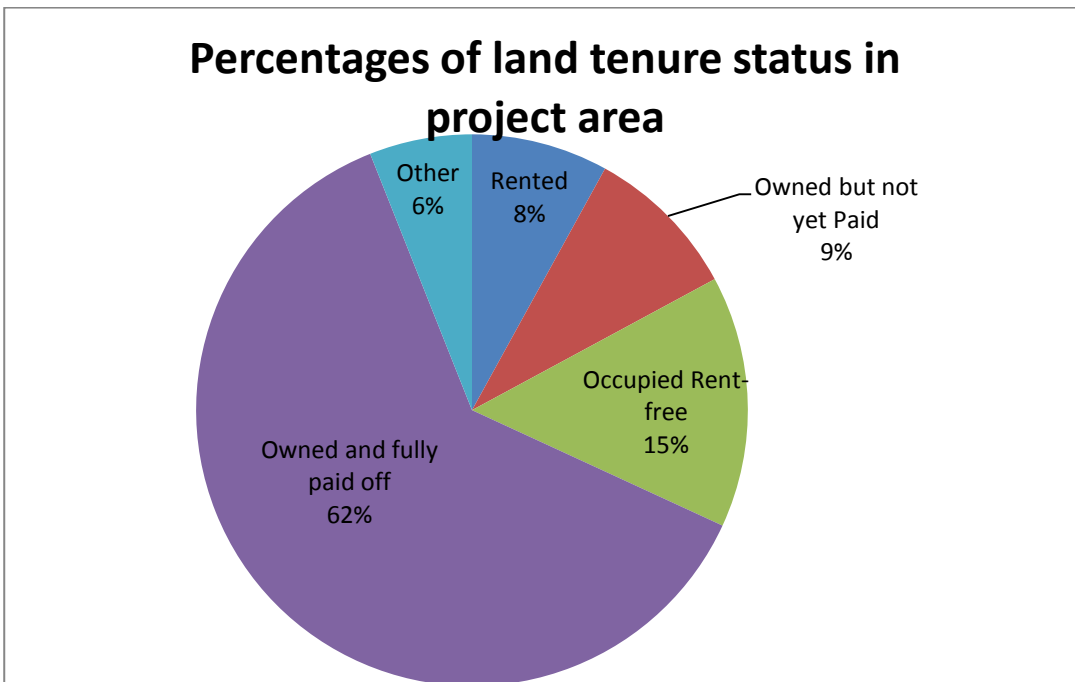


Figure 4.6: Tenure status in the project area (StatsSA, 2011)

Figure 4.6 above illustrates that the majority of the population (62%) in the project area own fully paid houses and 9% are still paying for their homes. About 8% of the population live in rent houses and approximately 15% occupy houses rent free.

The average household in the project area is occupied by 4.7 people and approximately 60% of households are female-headed. In light of the area’s limited economic opportunities, many of these female-headed households are reliant on social grants to make ends-meet. Women in particular might therefore benefit significantly from employment and skills opportunities that arise from the proposed LRWSS.

4.4.2 Education

The level of education in the project area is very low. The majority (35.7%) of the population have some primary school education. Only 6.8% of the population have completed secondary school and a mere 2.6% of the population have education higher than matric (Figure 4.7). This can be attributed to lack of higher educational institutions within the project area. According to the IHLM IDP when comparing the levels of education across the municipalities, a strong correlation with household incomes, high unemployment and a low human development index can be demonstrated.

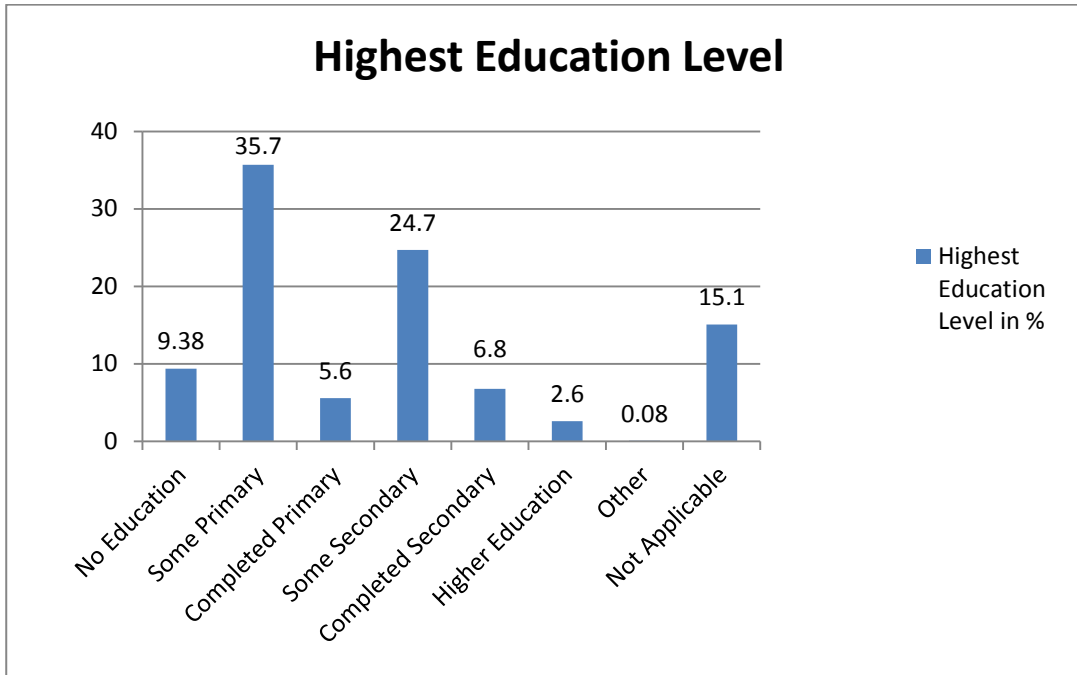


Figure 4.7: Highest education level completed

It was also noted from the site visit and from interviews with educators in the project area that the learning conditions of schools in the area is poor. The schools are faced with challenges such as shortage of teachers, classrooms, furniture and other basic services such as water and sanitation facilities. The three schools visited relied on rain water tanks for water supply or in some cases the municipality delivers water to the school. Due to lack of classrooms, learners in some schools sit outside (Figure 4.8).

There are a few institutions of higher learning in the IHLM. These are based in the two main towns (Lusikisiki and Flagstaff) within the municipality, such as the Ingwe TVET College (Lusikisiki campus). Pupils from far rural areas experience difficulty accessing these institutions. In most instances they rent flats in close proximity.



Figure 4.8: Schools within the project area

4.4.3 Water

According to StatsSA (2011), an alarming percentage of the population in the project area have no access to piped water (61.28%). While this figure has dropped in the past decade, this remains a serious challenge in the area. Figure 4.9 shows access to different sources of water within the project area.

There are number of rivers running through the project area, which extends from the Mzimvubu River in the south-west to the Msikaba River in the north-east. There are other rivers within the project area such as Xura where the Zalu dam will be located. Most of the communities within the project area receive water from natural sources especially rivers, springs and boreholes.

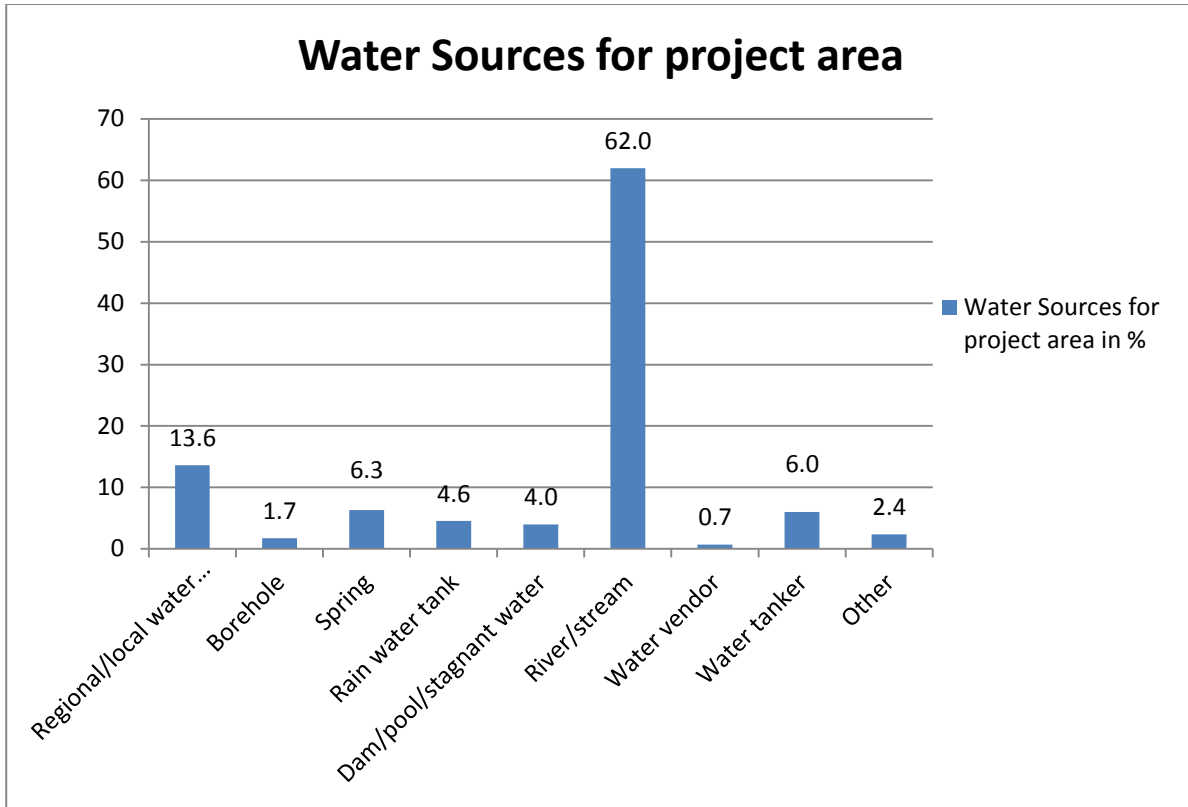


Figure 4.9: Sources of water for the project area. (Regional/local water: formal supply provided by municipal services)

Clearly, there is a need to provide not only potable water services to more households within the area, but also to assist the municipalities with sustainable and clean water provision. At present, the ORTDM has a number of water schemes under its area of jurisdiction. In order to deal with the need for water supply, boreholes are used in some areas. ORTDM upgrades them to ensure better access to communities and monitors their use in order to prohibit the use of the same water by livestock and people. Water is pumped from the borehole into a rainwater tank and is then collected in buckets (Figure 4.10). In most instances these systems are poorly maintained and non-functional.



Figure 4.10: Borehole used for water supply (tank supplied by ORTDM)

4.4.4 Roads

IHLM is traversed by the R61 which links Port St Johns to Durban. This road runs through the commercial centres of IHLM which are Lusikisiki and Flagstaff, and is also a link with Mthatha, the main city in the ORTDM. In most cases this road is not fenced (Figure 4.11a). The road is not adequately maintained resulting in a gradual decline in the quality and safety. The majority of the smaller, rural access roads in the project area are poorly-maintained gravel roads (Figure 4.11b) that have no road markings or signs. There is a serious problem of vehicle-livestock collisions on most of the roads in the project area, especially along the R61 (Figure 4.11a). The majority of the population are pedestrians. A small proportion of the population makes use of buses, minibus axis and private cars for transport.

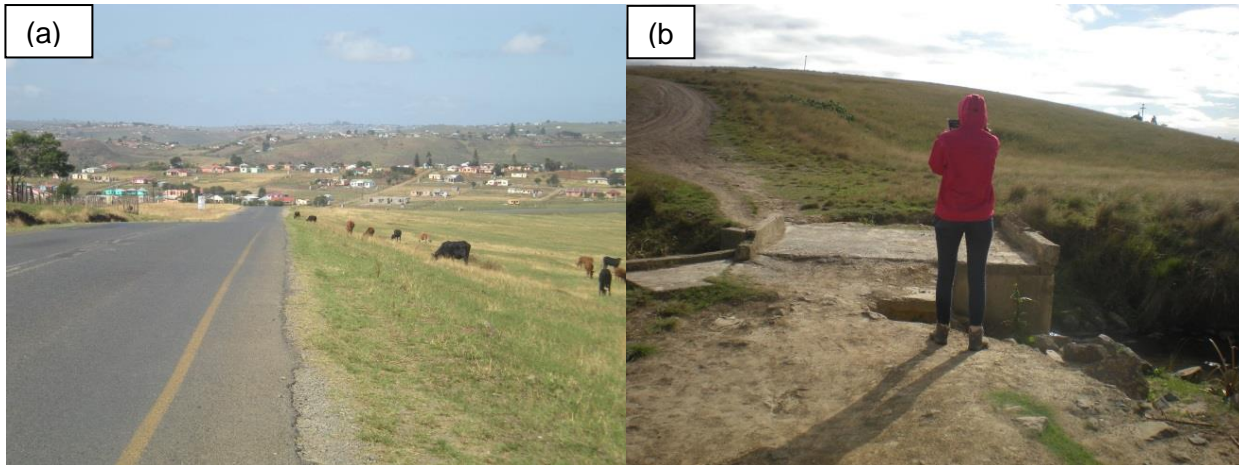


Figure 4.11 (a) R61 within the project area showing no fences and livestock close to the road; (b) Smaller rural gravel roads are poorly maintained.

An important factor that may significantly alter the economic and social dynamics of the local communities is the future construction of the new National 2 (N2) Wild Coast Toll road. The new N2 is routed through Lusikisiki and will result in significant social and economic impacts of its own, during construction and operation. The sections of road that will be affected include the R61 coming into Lusikisiki from the south and a new road out of Lusikisiki travelling east.

4.4.5 Electricity

Numerous electrification projects are currently underway in the general project area. The Eskom Hombe power line is currently under construction, electrifying villages north of Ntsimbini. The project material was kept at Ntsimbini and can be seen in Figure 4.12 below.

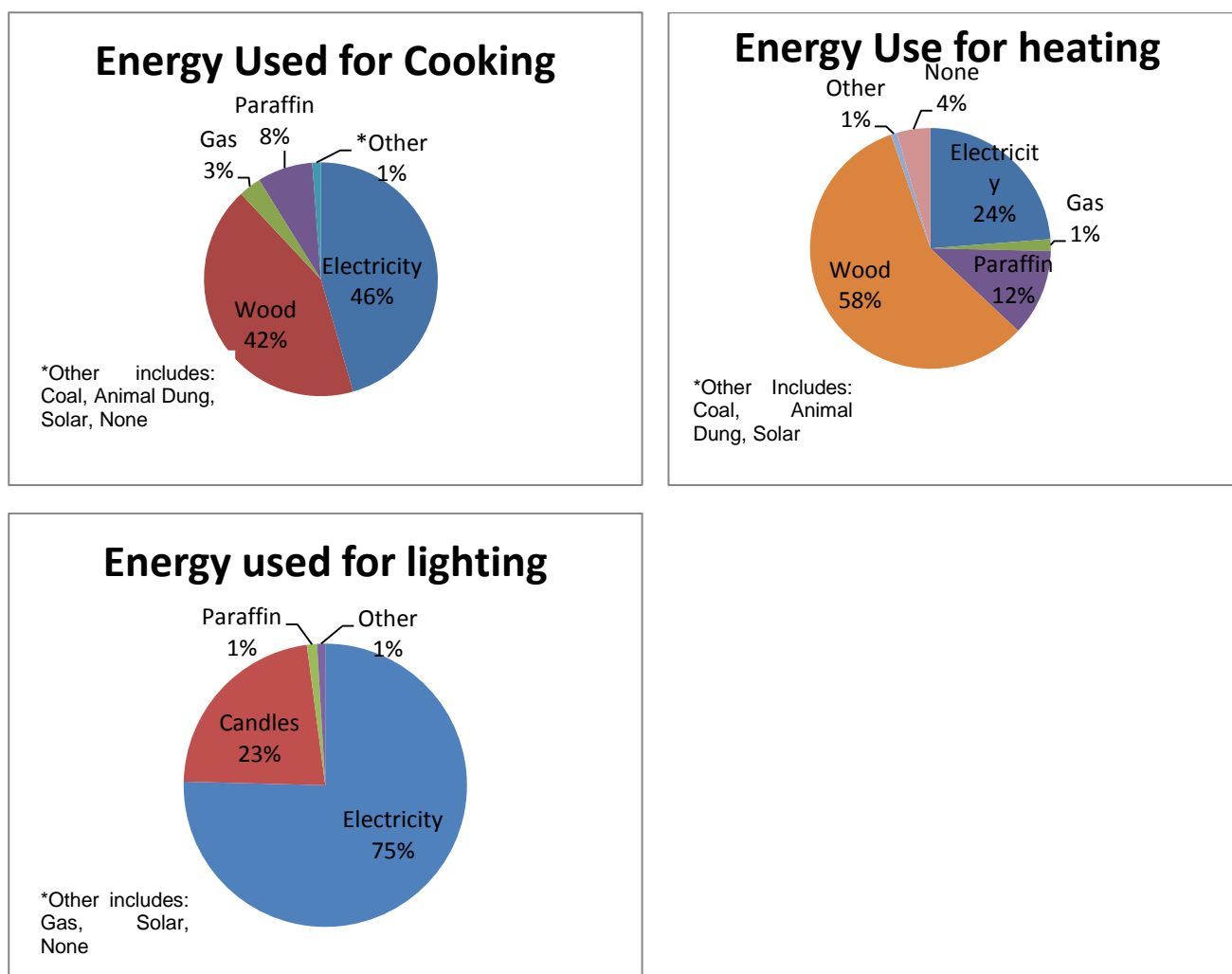


Figure 4.12 Energy sources and usage in the LRWSS project area



Figure 4.13: (a) Electrification; (b & c) Materials for further electrification in the project area.

4.4.6 Sanitation and Refuse Removal

No sanitation (water borne) and refuse removal services are provided in the project area. These services are limited to the major towns in both the IHLM and PSJLM. According to StatsSa only 2% of the population in the project area have flush toilets and a further 12% use chemical toilets. As shown in Figure 4.14, 12% of the population have no access to sanitation services. The majority of the population use pit toilets without ventilation (38%) (Figure 5.14).

Access to sanitation facilities in project area

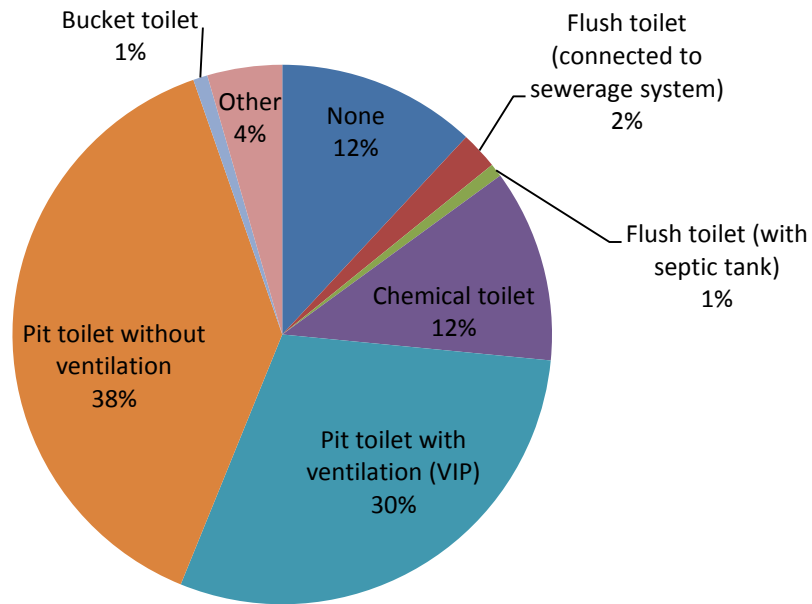


Figure 4.14: Access to sanitation services within the project area



Figure 4.15: Ventilated pit toilet in the project area

Refuse removal is limited to major towns and surrounding townships in the municipalities. According to StatsSA only 2.4% of the population in the project area have refuse collected weekly and a further 0.5% have their refuse collected less often (Figure 4.16). The majority of the population (77.6%) dispose of refuse in their own dumps. In all the villages interviewed, it was noted that they either burn their waste or bury their waste.

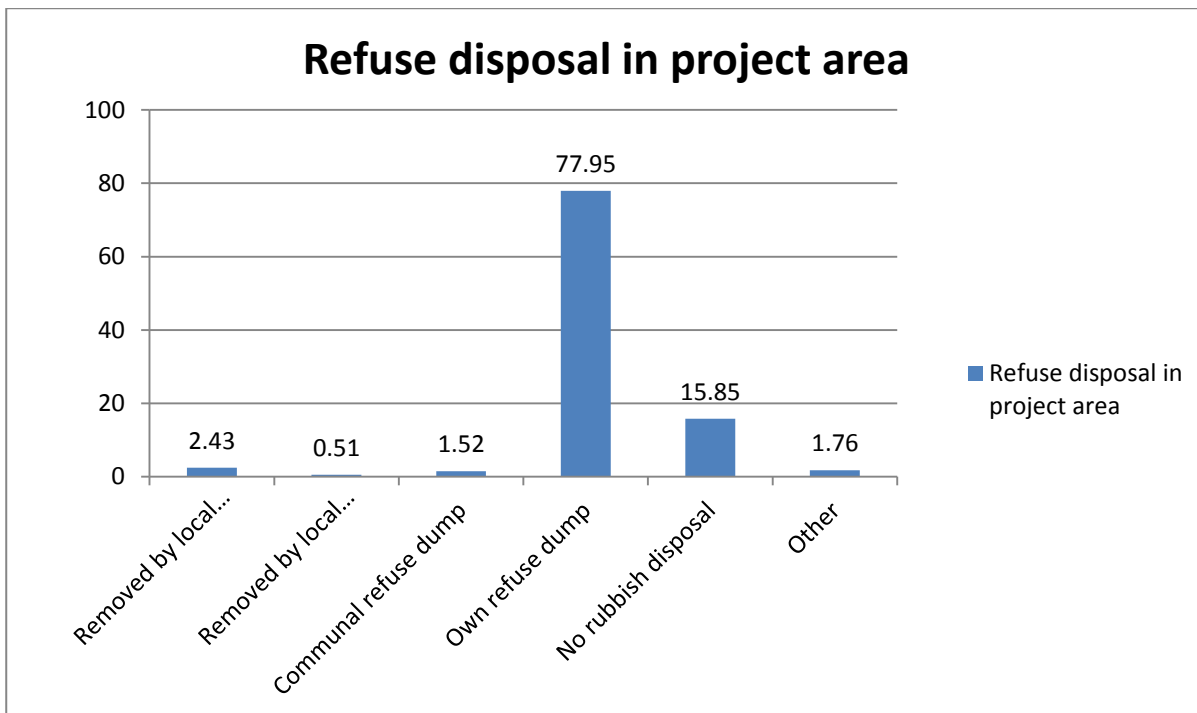


Figure 4.16: Refuse disposal in project area

4.4.7 Culture and Recreation

The predominant religion in the area is the Christian faith. Often, a patriarchal system exists amongst the households in this area. This is a system which has undoubtedly been shaped and reinforced by traditional rural family practices, especially in the Eastern Cape.

However, the patriarchal system has evolved with the Government's commitment to gender equality, as well as the introduction of the South African Social Grant System. There also seems to be a tendency for men to leave their partners after a pregnancy, which might force women to become single-headed households. Still, community members confirmed that men are generally regarded as the household heads in their culture.

During the community meetings and key informant interviews, most residents verified that their communities have few cultural or recreational activities, especially for the youth. A reason put forward is that there are no opportunities in the area for youth to engage in recreational activities. Even sporting activities (i.e. soccer) in the area are poorly supported and the youth rather participate in activities that involve substance abuse. Although many communities have soccer fields many assert that such facilities need an upgrade. Safer recreational activities in the areas are clearly needed, such as playgrounds for children, whilst there seems to be a particular need for after-school care and activities for school children.

The communities in the project area also practise the initiation custom (ulwaluko). In most instances this practise is done in areas outside villages close to forests and woodlands. During the site visit an initiate hut was located east of the dam site. The project will not affect the areas meant for initiation, as they are typically close to villages.

4.4.8 Organisations and Important Groups

During the community meetings and key informant interviews, residents were asked whether there are any important organisations or groups in their communities which the proponent should consult and work with. It was expressed that only soccer teams and a few small business groups such as Siyazama Power Project exist within these communities.

4.4.9 Crime

The local communities raised the current levels of crime as an issue that may be exacerbated by the proposed LRWSS. Although representatives from the Lusikisiki precinct were not available for comment, statistics on the crimes reported in 2012, 2013 and 2014 (Figure 4.17) show a general increase in criminal activities. The total number of reports in the categories given below from 2012-2014 is 2459, 2683, 2930, respectively.

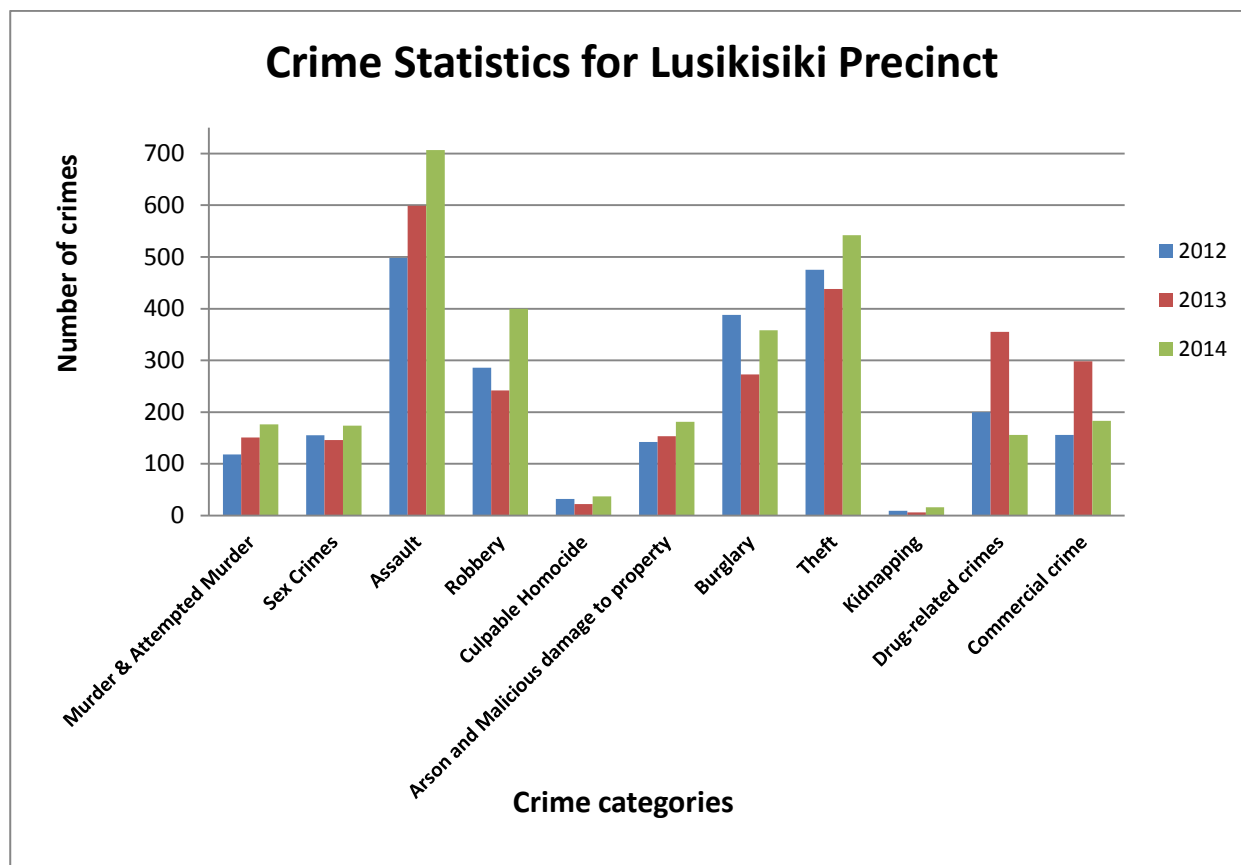


Figure 4.17 Reported crimes at the SAPS Lusikisiki precinct (CrimeStats SA, 2014)

4.5 Key outcomes of site observations and interviews

4.5.1 Project Perceptions

Taking into account many perspectives from a variety of interest groups and stakeholders, the PAC members and the IHLM appear to be receptive of the development. Some of the most important reasons in favour of the project include:

- The need for water supply in most villages;
- The possibility for the project to provide employment opportunities for locals; and
- The need to upgrade existing infrastructure – there will be an upgrade of the current Water Treatment Works (WTW) and supporting infrastructure.

4.5.2 Current socio-economic issues

In summary, the following baseline socio-economic issues, pertaining to the proposed LRWSS, have been identified:

- According to members of Siyazama Power Project, and local business enterprise, there is a serious lack of employment opportunity for youth in the area.

- Items such as food, electricity, healthcare and school-related expenses (uniforms and books, for example) are the largest monthly expenses.
- Learning conditions of schools in the area are poor. The schools are faced with challenges such as shortage of teachers, classrooms, furniture and other basic services such as water and sanitation facilities.
- Safer recreational activities in the areas are needed, such as playgrounds for children, whilst there seems to be a particular need for after-school care and activities for school children.
- ORTDM, as the Water Service Providers, have installed boreholes for community use as an interim measure to supply water. In most instances boreholes are poorly maintained and non-functional.

4.5.3 Socio-economic issues of the proposed LRWSS PPP and SIA meetings:

The following issues have been raised through the public/community meetings held as part of the PPP of the EIA. Only the issues relevant to socio-economic assessment are considered in this study. These issues have been integrated into the impact assessment in Chapter 6.

Table 4.2 Socio-economic issue raised in meetings

Raised by:	Issue	Concern/Comment	Reply/Action
Mr. Nongwani	Traffic Safety	What will be the solution to speeding trucks and construction vehicles?	<p>It was confirmed that an Environmental Management Plan (EMP) will be submitted with the EIA. The aim of the EMP is to provide guidelines which will be followed during the construction and operational phase of the project. These include safety guidelines that will be followed by construction vehicles such as minimum and maximum speed limits. These guidelines will also be made available to the communities as part of the Environmental Authorisation.</p> <p>It was indicated that at this stage we cannot promise what will be or not be done as we are still speculating. If these disasters occur even if it's as a result of the dam the government normally has a disaster management plan to deal with such issues.</p>
Mr Mthemba	Disturbance of grave sites	How would the community know if those are real graves as it is clear from your presentation that you are not sure about some of them? You said some graves look to be more than fifty years old?	It was confirmed that DWS will initiate a separate public consultation process once the EIA has been approved to engage with all those affected either with regard to graves or loss of land.
Mr. Ngwane	Additional benefits	What are the benefits we will get as the communities surrounding the dam except for the water from the dam?	It was indicated that at this stage there is nothing tangible that will benefit the adjacent communities except water supply but a number of initiatives such as fly fishing can be looked at once the EIA has been approved.

Mr. Mafana	Water Safety	Will the dam not be safety hazard to livestock and people? For example will it not bring water animals that will suck and drown animals and people into the dam?	It was indicated that dam safety would be considered and if necessary, the dam will be fenced off. At this stage there is no proposal to close or fence the dam.
Mr. Ngcoza	Landuse in and around the inundation area	What will happen to people who still plant close to the dam?	It was indicated that the only land that will be affected will be the land in the inundation area of the dam. The area adjacent to the dam can be used as normal.
Mr. Witbooi	Disturbance of grave sites	What if you cannot find the owners of the graves? Is the project going to stop?	It was indicated that there is a legal process that will be followed prior to the relocation of the graves if the owners cannot be found. This process will be completed in collaboration with community leaders of the affected area. All in all the project will not stop but it might be delayed if the relatives are not found.
Mr. Mtwasa	Job creation for local communities.	How is the employment going to happen? Are people from all these villages going to be employed in the project?	It was confirmed that people from local communities will be employed in the project. The department (DWS) has policy with regards to how contractors must deal with employment issues.

5 CURRENT AND FUTURE LAND-USE POTENTIAL

5.1 Current land-use of the inundation area

Due to the rural nature of the area most the land in the inundation area is used for grazing and small scale agriculture (Figure 5.1). Most of the arable lands owned by community members outside homesteads are not cultivated, but used as grazing areas. During the focus group interviews the locals informed us that the reason for this is lack of fences and a closure of cooperatives that were operational in the previous Transkei government. The communities close to the proposed dam will have the opportunity to access water for irrigation in the future, but the major concern raised was fencing around the arable fields to protect them from livestock.

Livestock grazing is the dominant land use in the area. The grazing areas are not fenced and in some instances livestock graze along the main roads. This often results in accidents and loss of lives and livestock.



Figure 5.1: Home gardens close to houses

5.2 Tourism and recreation

As identified in the IHLM LED Strategy, Tourism is an economically important and established industry in the study area. Most of the tourism facilities are geographically limited to the Wild Coast.

The following are established tourism facilities in the broader area of the propose project:

- Mkambati Nature Reserve (Eco-tourism)
- Mbotyi Campsite
- Mbotyi River Lodge
- Magwa Estate and Backpackers (Agri-tourism)
- Khululeka Retreat
- Port St Johns as a coastal resort
- Silaka Nature Reserve (Eco-tourism)

The proposed Zalu Dam may contribute towards the tourism economy by providing facilities for water-based recreation and sport. The new proposed N2 Wild Coast Toll Road will provide infrastructure linkages with coastal tourism to potential recreational and tourism activities at Zalu Dam.

It is proposed in this study that the applicant consider the conversion of construction camps, which may include formal ablution, water, semi-permanent structures/buildings and offices, to recreation and tourism facilities after construction has been completed.

5.3 Irrigation/agriculture Potential Assessment (2013)

From Google Earth images dating back to 2004 (Figure 5.2), it is evident that a large portion of the site that will be inundated was still cultivated. In recent years, however, this land has been left fallow and no crops have been planted for some years.

Downstream from the proposed Zalu Dam, pockets of land adjacent to the river are still being cultivated. The construction of a dam may result in excess water allocated to irrigation schemes. For this reason an Irrigation Potential Assessment, prepared by Aecom (DWA, 2013. Report no. P WMA12/T60/00/4211), was conducted for land downstream of the dam, as part of the feasibility study for this project. The irrigation potential assessment was undertaken from 2010/2011 – 2013, and assessed the soil potential for irrigation projects. The majority of the lands (5247.6 out of a total 5253 ha) were considered moderate to marginal, which would not be suitable for irrigation (Figure 5.3).

The area of inundation was not assessed since the land would hold no irrigation potential, however, detailed soil surveys were undertaken for the adjacent and downstream pockets of land previously cultivated. Most of the pockets surveyed are geographically similar to the inundation area (i.e. adjacent to the river) and consist of the same underlying geology. Therefore, this report has extrapolated the results of the Irrigation Potential Assessment (2013) in order to assess the cultivation potential of the inundation area, and therefore the impact that the loss of agricultural land may have on the livelihoods of surrounding communities.

In summary, only 5.4 ha of land downstream of the proposed dam was identified as suitable for irrigation cropping, which means that a large-scale irrigation scheme would not be viable. The remaining cultivation areas were deemed moderate to marginal and therefore not desirable for irrigation. The Irrigation Potential Assessment does state that there is opportunity, with technical and managerial input, for small agricultural gardens where soil conditions are more favourable.

In addition, the Irrigation Potential Assessment (2013) investigated the status of other agricultural activities, such as livestock and milk production, broiler and egg production, in the surrounding project area. It was determined that:

- Maize, vegetable, milk, eggs and hens are imported into the project area, which means there is opportunity to increase local production.
- There is high potential for commercial forestry plantation, tourism and dry-land agriculture due to favourable climatic and natural conditions.



Figure 5.2 Land within the inundation area of the Zalu Dam, adjacent to the river which was actively cultivated in 2004 (shaded in red).

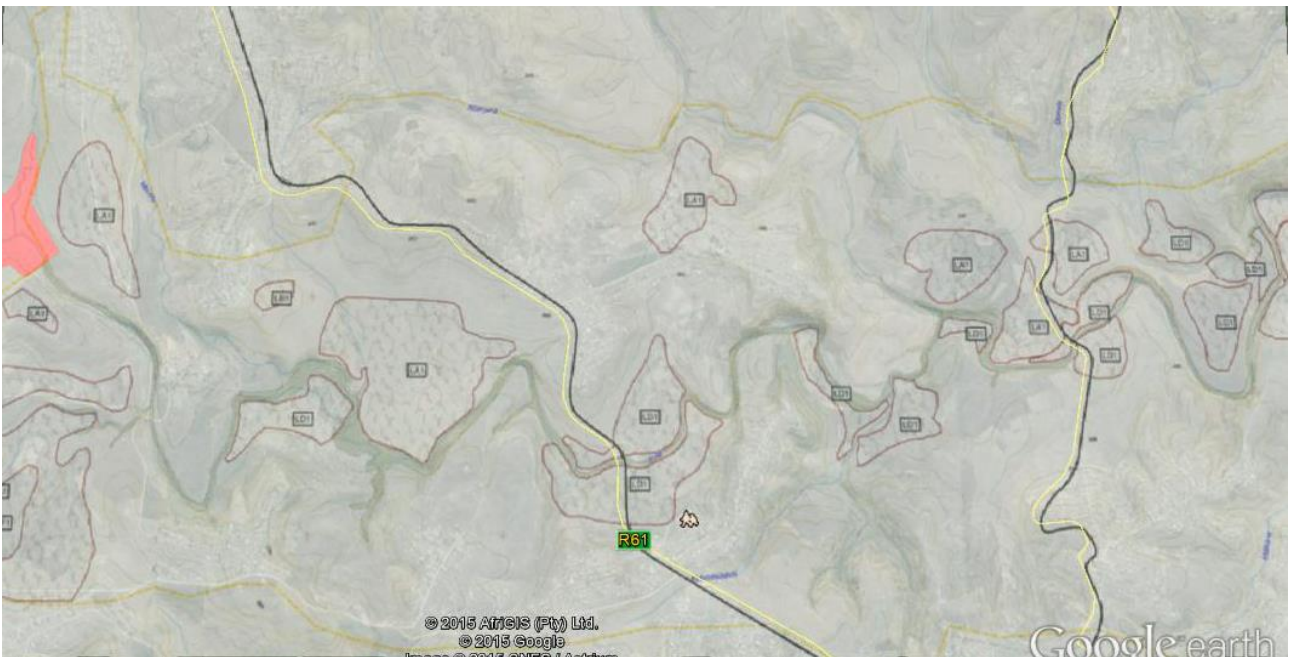


Figure 5.3 Soil irrigation potential downstream of the proposed Zalu Dam. 99.8% of the lands is considered moderate to marginal.

5.4 Aquaculture

There is a significant increase in interest in aquaculture both in South Africa and globally, where global fish consumption has doubled in the last 40 years, outpacing population growth. In addition, nutritionists promote the health benefits of eating fish.

The IHLM LED Strategy reported a decline in the Fisheries economy. The Zalu Dam could present very real economic opportunities for the culture of freshwater fish/plant species. However, setting up an aquaculture business can be a risky exercise and requires a serious commitment of time and financial resources. As with any other business venture, it requires a detailed feasibility study before investment decisions are made.

Potential fish species and products that could be considered

It is suggested that an aquaculture facility at the Zalu Dam could focus on the following main fish species:

- Tilapia
- Trout (uncertain if appropriate climatic conditions)

Tilapia fish	
Tilapia products processing	

The total global aquaculture production of tilapia was reported to be 1,265,800 tons in 2000. The largest exporter, Taiwan, supplies Japan with high-quality tilapia fillets for the sashimi market, and ships frozen tilapia to the United States market (40,000 tons in 2001). Taiwan exports about 70% of its domestic tilapia production. In Africa, Zimbabwe, now also produces fresh and frozen fillets for the EU market.

Criteria for an optimal aquaculture project

The following criteria may be relevant for the establishment of an aquaculture project:

- Located on a suitable site, reliable water source and suitable land
- Acceptable water supply and water quality conditions

- Knowledge of the relevant climatic and land conditions
- Climatic conditions that are suitable for the intended species
- Access to the relevant target markets
- Adequate space for intended use plus future expansion
- Access to services, technical assistance and public infrastructure such as roads
- Environmentally friendly enterprise

Integrated multi-trophic aquaculture

Aquaculture has been combined with a number of other production processes to form a recycle/beneficiation system. Land-based aquaculture in combination with integrated beneficiation such as biomass production and food gardens, presents a key opportunity in terms of job creation, food production and food security potential renewable energy projects.

Integrated multi-trophic aquaculture (IMTA), also called aquaponics uses the by-products, including waste, from one aquatic species as inputs (fertilizers, food) for another (Figure 5.4). Farmers combine fed aquaculture (e.g., fish) with inorganic extractive (e.g., algae, food gardens or hydroponic cropping) hydroponics to create balanced systems for environment remediation (biomitigation), economic stability (improved output, lower cost, product diversification and risk reduction), food production and social acceptability (better management practices). These systems, however, can be highly technical and require skilled management in order to maintain the optimal balance.

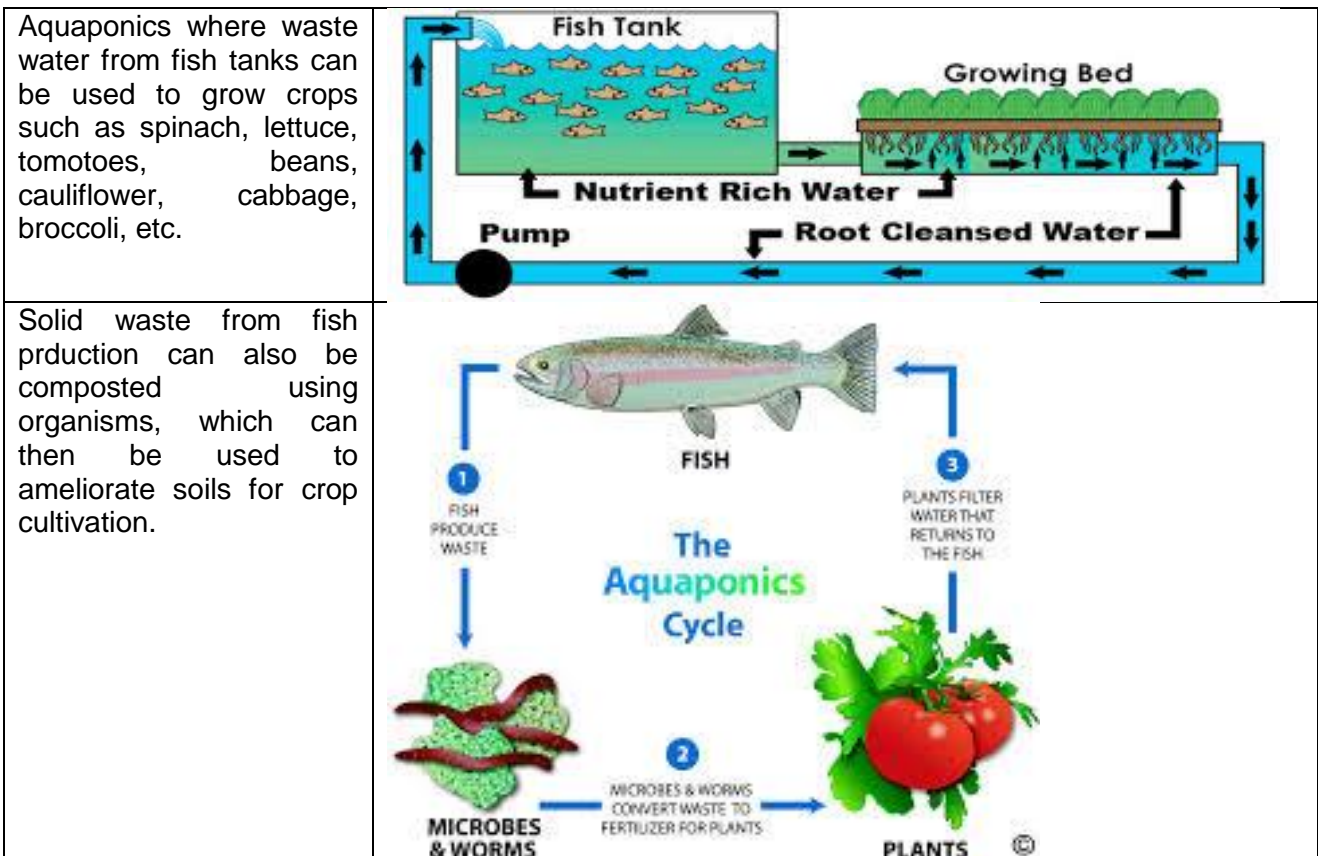


Figure 5.4 Examples of Integrated multitrophic aquaculture/ aquaponics.

6 ASSESSMENT OF THE POTENTIAL SOCIO-ECONOMIC IMPACTS

6.1 Overview

The following section of the report identifies the potential positive and negative impacts of the proposed LRWSS project on the PACs, as well as on the broader district and region. These impacts have been identified after consultation with the PACs as well as discussions with municipal officials. In addition, some of the impacts have also been guided by secondary literature and data.

The impacts in this chapter are listed in no particular order. Each impact has been aggregated into several issues. Each issue (as a heading) has a common theme and management strategy at its core. It should be noted that the assessment of socio-economic impacts differs from identifying environmental impacts in the following key ways:

- The social impact of a project is not always measurable, and their assessment often involves a subjective dimension. Considering whether such an impact is positive or negative is also a value judgement in itself. Consequently, such impacts need to be informed by a clear understanding of the social processes and knowledge of the communities under study;
- Social impacts are often cumulative and synergistic, i.e. often clustered and interdependent;
- Social impacts can change as community dynamics and social processes change. Consequently, the project at hand is one of a number of possible contributing factors to such on-going change, and hence cannot be viewed in isolation from the broader social and economic dynamics of the area. The specialist believes that an SIA should account for such cumulative factors, which in itself alludes to the fact that the project cannot be viewed in isolation. It is therefore often very difficult to attribute a particular impact entirely to the project itself. For example, potential health risks already exist, but it is possible for a project to compound (or indeed even reduce) these impacts; and
- It should be noted that social impacts are often unintended and unavoidable, making them extremely difficult to mitigate. Therefore, in this study, mitigation strategies need to be conceptualised as strategies aimed at managing change, as opposed to a means to avoid such impacts entirely. It can also be the case that successful management of potentially negative impacts may even change the impacts from negative to positive.

6.2 Identified Potential Project Issues and Impacts

The potential project related impacts are described below. Most of the impacts are short-term. i.e. during the construction phase of the project. Long term beneficial impacts are anticipated during operational phase which relate to service provision and economic opportunities. Table 6.1 below summarises the issues and impacts discussed in this chapter.

Table 6.1: A Summary of Potential Project Issues and Impacts Identified

Issue Nr	Issues	Impacts
1	Influx of Job-Seekers	Increased community conflicts between local labour and outside workers
		Increased social pathologies
		Increase and spread of communicable diseases (HIV)
		Economic stimulation of and invest into business and enterprise due to an increase in demand for local services
2	Impact on health and general quality of life	Provision of water
		Upgrading of roads
		Increased demand on existing infrastructure facilities and social services
		Noise and dust generated by construction vehicles,

Issue Nr	Issues	Impacts
		blasting, borrow pit and hard rock quarry sites.
		Reduced safety during the construction of the dam due to high vehicle activity and potential run-away fires
		Increased risk of drowning in the Zalu Dam
3	Loss of land as result of the Zalu Dam construction	Land Acquisition for the Dam
		Loss of access to natural resources
4	Stimulation of Economic Growth	Employing local labour: Job opportunities
		Supporting local businesses and stimulation of economic opportunities in Lusikisiki
		Skills training opportunities
		Potential spin-off economic opportunities: aquaculture, irrigation, recreation and tourism.
5	Disturbance of graves sites	Impact on grave sites along the route of the pipeline

To ensure comparability and consistency of impact assessment criteria between various specialist studies, CES uses a standard rating scale. Details of the impact rating scales are provided in Appendix G.

The issues and impacts identified above are described in detail, assessed in terms of selected criteria and mitigation measures recommended to reduce negative impacts and enhance positive impacts.

6.3 Issue 1: Influx of Job Seekers

Although many of the construction workers will be recruited from surrounding communities, a portion of the job opportunities, especially the skilled and highly skilled positions will need to be sourced externally. As the study area's residents are poorly educated, more educated and skilled labour will certainly be needed from other areas. The construction of the dam in the area will therefore cause an influx of job-seekers and contractual workers into the area. It may also result in the return of men who have left the area in search of work.

In addition, the study area is characterised by high levels of unemployment and the possibility of the project creating job opportunities will attract people from neighbouring villages and towns.

The impacts associated with the influx of people can be significant. A major concern raised by communities is the potential conflict between outsiders and locals. In addition, an influx of people to the area may also increase and worsen existing social pathologies such as substance-abuse, sex work, risky sexual behaviours, spread of HIV and other communicable diseases and teenage pregnancies. Although an influx of job seekers is outside the control of project developers, it is suggested that the situation is monitored and managed, as an influx of job seekers can threaten the project.

Depending on the timing, the influx of job seekers into the area may be compounded by the construction of the N2 Wild Coast Toll Road. The impacts resulting from the influx of people will therefore be difficult to attribute to either project.

It should be noted that, as with most social impacts, in-migration may also have a positive impact in terms of providing locals with small business opportunities due to an increased demand for local produce and other goods.

The following issues are discussed under this section:

- Increased community conflicts due to differential benefits or between local labour and outside workers; and
- Increased social pathologies (substance-abuse, crime and an increase in high risk sexual behaviours and related teenage pregnancies)

- Spread of HIV and other communicable diseases
- Economic stimulation due to increase in demand for local services

Impact 1.1: Increased community conflicts within communities and between locals and outsiders

Cause and Comment

Community members and key informant interviewees revealed a general concern that conflict might be stirred between the local residents and potential migrant workers, especially in the areas around the dam. Such conflicts could result from tension over perceived preferential treatment. For example, local residents may perceive that migration workers receive unfair benefits from the construction company.

Conflict within communities could result due to the disruption of the host communities' social dynamics. Conflict can be generated by a number of factors. Some of these include (but are not limited to):

- An increase in economic disparities between those with jobs and those without;
- Changes in values and changes in 'way of life' of those with jobs;
- Changes in power relations between employed youth and elders;
- Perceived unfair recruitment strategies; and/or
- Perceived preferential procurement strategies;

Mitigation Measures

The following mitigation and/or enhancement measures should be adopted:

It is suggested that a project steering committee consisting of the DWS, contractor (community liaison person), recruitment agency, community leaders, elders, youth, ward councillors and the IHLM LED must be established in order to:

- Conduct an audit of the affected communities in term of employment capacity.
- Identify potential workers from the affected communities.
- Identify possible conflicts in and between communities.
- Recommend support programmes that would assist with conflict minimisation and resolution.

With Mitigation

Should appropriate mitigation measures be adopted, the overall significance of this impact should be **low negative** during the construction and **low** in operational phase as there will be fewer direct job opportunities. With any development, a degree of community tension would be expected.

Without Mitigation

Without any mitigation measures, the consultant believes that the overall significance of this impact would be **moderate negative** during the construction phase. However, its severity might decrease to an overall significance of **low negative** during the operational phase as there will be fewer job opportunities during operational phase.

Impact Significant Rating

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction Phase					
Without Mitigation	Short-term	Study area	Moderately severe	May occur	MOD -
With Mitigation	Short-term	Study area	Slightly severe	May occur	LOW -
Operation Phase					
Without Mitigation	Long-term	Study area	Slightly severe	May occur	LOW -
With Mitigation	Long-term	Study area	Slightly severe	Unlikely	LOW -
No-Go					
General Impact	No Change – existing status will not be affected				

Impact 1.2: Increased social pathologies*Cause and Comment*

Throughout the report, issues of substance-abuse have been raised. Substance abuse (alcohol- and drug-use) reinforces and accounts for a range of social pathologies, such as intra-household violence, women abuse, rape, teenage pregnancies and crime. Several South Africa studies have confirmed that these pathologies are directly linked with substance-abuse (*cf.* Meade *et al.*, 2012; King *et al.*, 2004 and Bhatt, 1998).

Apart from substance-abuse, many people fear that newcomers could elevate levels of crime. At present, residents complained about high crime rates, with almost 3000 crimes reported annually at the Lusikisiki precinct (Crime Stats SA, 2014). Many believe that this behaviour might increase with new people coming to the area. A concern regarding potential increases in crime was mostly expressed by community members at a focus group meeting at Nstimbini Village. An increase in crime rate will place more pressure on policing resources. Residents have voiced concern about the current local police station's limited capacity to deal with such issues, as most stations are far from the rural towns.

Moreover, it is expected that there might be an increase in risky sexual behaviour and prostitution. Increased numbers of construction workers with an increase in disposable income combined with the low income levels in the surrounding communities may result stimulate prostitution. A concern has also been expressed by the Principal Laphumilanga Primary School at Ntsimbini, regarding an increase in teenage pregnancies. There is reason to believe that this might worsen with an influx of job-seekers if no mitigation measure is implemented.

Mitigation Measures

The following mitigation and/or enhancement measures should be adopted:

Crime:

- The role of Traditional Authorities in exerting control over land allocation in order to prevent densification of people around the construction areas should be supported.
- The DWS and contractor must encourage settlement in Lusikisiki by providing daily transport for "outside" workers who settle in the town of Lusikisiki, to and from the construction sites to minimise the potential crime factor in the rural areas.
- All construction workers must be clearly identifiable and wear easily recognisable uniforms. They need to carry identification cards issued by the contractor.
- The SAPS must have access to construction sites.
- Local communities should be encouraged to report suspicious activity to the community liaison or nearest environmental site officer.
- The contractor must prevent loitering around the construction camp by providing transport to and from the camp sites.
- All construction and camp sites must be fenced and secure.

Increased prostitution and sexual behaviour:

- National and local awareness programmes that discourage promiscuity, especially at schools in the project area should be supported.
- Condoms must be made easily accessible to all construction workers.

With Mitigation

Should appropriate mitigation measures be adopted, the overall significance of this impact should be **low negative** both during the construction and operational phase. Changing social pathological behaviours is extremely difficult, as it involves changing attitudes and community values. At most, associated impacts can be managed, but never eliminated.

Without Mitigation

Without any mitigation measures, the consultant believes that the overall significance of this impact would be **moderate negative** during the construction and **low negative** during the operational phase.

Impact Significant Rating

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction Phase					
Without Mitigation	Short-term	Study area	Moderately severe	May occur	MOD -
With Mitigation	Short-term	Study area	Slightly severe	Probable	LOW -
Operation Phase					
Without Mitigation	Long-term	Study area	Moderately severe	May occur	MOD -
With Mitigation	Long-term	Study area	Slightly severe	May occur	LOW -
No-Go					
General Impact	No Change – existing status will not be affected				

Impact 1.3: Increase and spread of HIV/AIDs and other communicable diseases*Cause and Comment*

The main driver in the increase of communicable diseases, especially on large capital development projects such as the LRWSS, is labour migration. This results social pathologies such as substance abuse, prostitution and short-term relationships with the local residents. As a result, the spreading of communicable diseases such as HIV is facilitated. This has long-term effects on family well-being, community integrity and the local economy. The increase in and spread of communicable diseases also places pressure on local health facilities and social welfare. It is also important to consider that a number of large infrastructure projects in the area (e.g. Mzimvubu Basin, N2 Wild Coast Toll Road) may also contribute towards this impact and therefore this project should not be considered in isolation.

Mitigation Measures

The following mitigation and/or enhancement measures should be adopted:

- An HIV/AIDS, non-discrimination, awareness, prevention and health care support, policy must be implemented.
- Condoms must be made easily accessible to all construction workers.
- An HIV/AIDs education and behaviour change programme for all contracted construction workers, should be developed.
- The above program must extend to the communities located near the construction site.
- Existing public health care centres and programmes such as TAC must be involved in HIV/AIDS campaigns and monitoring of HIV/AIDs prevalence should be undertaken in collaboration with these agencies.
- Voluntary counselling and testing should be encouraged for all workers.

With Mitigation

Should appropriate mitigation measures be adopted, the overall significance of this impact should be **moderate negative** during the construction and **low negative** during operational phase as the number of migrant labourers would have decreased. The spread of HIV cannot be halted, but with proper awareness and education programmes, impacts may be managed.

Without Mitigation

Without any monitoring and management interventions, the spread of communicable diseases is likely to be more severe and therefore the overall significance of this impact would be **high negative** during the construction phase. However, the severity may decrease to an overall significance of **low negative** during the operational phase, as there will be few workers during operational phase.

Impact Significant Rating

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction Phase					
Without Mitigation	Long-term	Study area	Severe	Probable	HIGH -
With Mitigation	Long-term	Study area	Moderately severe	May occur	MOD -
Operation Phase					
Without Mitigation	Long-term	Study area	Slightly severe	May occur	LOW -
With Mitigation	Long-term	Study area	Slightly severe	May occur	LOW -
No-Go					
General Impact	No Change – existing status will not be affected				

Impact 1.4: Economic stimulation of and investment into business and enterprise due to an increase in demand for local services*Cause and Comment*

The skilled and unskilled construction workers for the proposed LRWSS will require local services such as food, fuel and accommodation. The demand for more services will stimulate investment into local towns and will create a market place in Lusikisiki for local resources during the construction phase. Further comment on the economic benefits is discussed in Impact 4.4.

Mitigation Measures

The following enhancement measures should be adopted:

- DWS is limited in its capacity to enhance the benefits of this impact, as the development of the communities and town will occur in response to the needs and demands of construction workers. The proponent can play role in facilitating the skills required to recognise the need and respond appropriately. The proponent must link the Provincial Department of Economic Development and Local Municipal LED programmes with small to medium enterprises (including communities) in the area so that a state of “readiness” to optimise economic benefits is achieved. This may involve training in the following sectors: business, tourism, catering etc.

With Mitigation

The success of mitigation cannot be predicted with certainty as it relies on:

- The willingness of enterprises to respond to the available demand opportunities,
- The skills available and acquired
- The involvement of organisations that are able to provide support, training and skills transfer

The proponent can play a key facilitation role. Ultimately, with successful mitigation, the significance of the potential **benefits** is **high** during the construction phase, especially since mitigation can prolong benefits into the operation phase. Economic benefits during the operation phase are discussed in Impact 4.4 below.

Without Mitigation

Without a key facilitator or driver, it is unlikely that stakeholders will engage and integrate in a cohesive manner with the primary objective to ensure maximum benefits to all affected communities. The potential economic benefits of an influx of people will not be optimised and the significance will therefore be **moderate**. Economic benefits during the operation phase are discussed in Impact 4.4 below.

Impact Significant Rating

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction Phase					
Without Mitigation	Medium-term	Study area	Moderately severe	Probable	MOD +
With Mitigation	Long-term	Study area	Severe	Probable	HIGH +
No-Go					
General Impact	No Change – existing status will not be affected				

6.4 Issue 2: Impact on Health and general quality of life

The main aim of the project is to improve water supply to communities within the project area, covering wards in the IHLM and PSJLM. In all meetings, community members expressed support of the project, especially as it will bring the much needed water supply to their areas. It is acknowledged that the proposed LRWSS will improve the welfare of the study area, through increased access to infrastructure and services such as:

- Direct access to clean water may reduce disease and mortality.
- Improved access roads will improve access to markets, education and health care services
- Improved communication networks will improve education

The project may also have negative short-term (construction) effects on the provision of particular social services by increasing their demand and placing limited resources under pressure. Such services include: health care, education, municipal and policing.

The LRWSS will have additional short-term impacts on the health and quality of life of surrounding communities through noise and dust generation during the construction phases of all aspects of the project.

Impact 2.1: Provision of Water*Cause and Comment*

In South Africa, the provision of basic services is a key challenge, especially in rural communities. The proposed LRWSS is aimed at providing the ORTDM with the resources and infrastructure to provide basic water services to its residents. The proposed LRWSS has been based on several engagements with the ORTDM as the Water Service Provider for IHLM and PSJLM. The proposed project will improve water supply to schools and clinics, where it is needed. In most instances public facilities rely on rain water tanks, which run dry during the winter season, or water delivered by the municipality.

Mitigation Measures

As the project is for provision of water supply in the municipality no mitigation measures are suggested.

Impact Significant Rating

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction Phase					
Without Mitigation	Not applicable				
With Mitigation					
Operation Phase					
Without Mitigation	Long-term	Municipality	Very beneficial	Probable	HIGH +
With Mitigation	Long-term	Municipality	Very beneficial	Definite	HIGH +
No-Go					
General Impact	No Change – existing status will not be affected				

Impact 2.2: Upgrading of roads*Cause and Comment*

Generally, the conditions of the roads are construed as poor and inadequate by many community leaders and people that were engaged during the site visit. A number of roads will be upgraded as a result of the proposed LRWSS and this includes the bridge over the Xura River just below Palmerton Primary School. This bridge was described by locals as dangerous and a number of vehicles have been washed over this bridge. In 2013 a vehicle carrying school children was washed over this bridge. Learners and teachers do not attend school when the river is full as they cannot cross over safely.

Mitigation Measures

The upgrading of existing roads within the project area will be very beneficial to the region and the affected communities and will have long term benefits. The upgrades will also create better business opportunities for local businesses as it will be easier to travel around the project area. No mitigation or enhancement measures have been identified.

Impact Significant Rating

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction Phase					
Without Mitigation	Long-term	Study area	Beneficial	Definite	MOD +
With Mitigation	Long-term	Study area	Beneficial	Definite	MOD +
Operation Phase					
Without Mitigation	Long-term	Study area	Beneficial	Definite	MOD +
With Mitigation	Long-term	Study area	Beneficial	Definite	MOD +
No-Go					
General Impact	No Change – existing status will not be affected				

Impact 2.3: Increased demand on existing infrastructure facilities and social services*Cause and Comment*

The influx of people into the Lusikisiki area making use of the direct and indirect economic opportunities of the proposed Lusikisiki RWSS project will require access to the basic infrastructure and services. The increase in demand may especially place pressure on social service provision, such as hospitals and clinics and schools. The IHLM will be required to improve its service delivery (e.g. sanitation and solid waste management) in order to cope with the anticipated development of the area.

An increase in criminal elements will place pressure on current resources and may affect effective policing of the surrounding communities.

Mitigation Measures

The following mitigation measures should be adopted:

- Service providers associated with the IHLM and PSJLM, clinics, schools and the SAPS must be made aware of an increase in demand, both in the town of Lusikisiki and in the surrounding rural areas, and therefore the increased pressure to provide services for new households.
- This will require direct communication with the local municipalities, ORTDM, the Department of Health, South African Police Service and the Department of Education. The channels of communication must be established as permanent points of contact throughout the construction phase of the project.

- Regular monitoring of the schools and clinics in order to determine whether there are sufficient resources must be undertaken. When resources are deemed insufficient, DWS must communicate, through established channels, with the relevant departments for assistance.

With Mitigation

The DWS is limited in its capacity to increase the resources allocated to social services, but can be instrumental in communicating with the relevant Provincial departments. With mitigation, resource allocation to social services may meet the demand, resulting in **moderate-low negative** impact. This impact is likely to be much less severe during the operation phase as the Lusikisiki RWSS will retain fewer workers.

Without Mitigation

The current resource allocation to social services in the project area is already spread thin. The Lusikisiki RWSS project will result in an increase in the demand for these services and therefore increase the pressure, resulting in poor service delivery during the construction period. This is considered a **high significance** impact, without the necessary monitoring and intervention from DWS.

Impact Significant Rating

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction Phase					
Without Mitigation	Short-term	Project area	Severe	Probable	HIGH-
With Mitigation	Short-term	Project area	Slightly severe	Probable	MOD -
Operation Phase					
Without Mitigation	Long-term	Project area	Slightly severe	May occur	LOW -
With Mitigation	Long-term	Project area	Slightly severe	May occur	LOW -
No-Go					
General Impact	No Change – existing status will not be affected				

Impact 2.4: Noise and dust generated by construction vehicle activity, blasting, borrow pit and hard rock quarry sites

Cause and Comment

Noise generation by construction vehicles and blasting in the quarry sites and dam wall site will result in noise impacts. The impact is exacerbated by the rural, and therefore generally quiet, nature of the project site.

Dust created by construction vehicles using gravel access roads and from burrow pits and hard rock quarries may become a nuisance. In high wind conditions, the dust generated may increase.

Mitigation Measures

The following mitigation and/or enhancement measures should be adopted:

- Noise and dust prevention measures and monitoring thereof must be included in an Environmental Management Programme.
- Communities must have access to a grievance reporting mechanism, e.g. through a project steering or liaison committee.

With Mitigation

With mitigation, the associated impacts of dust and noise may be reduced to **low significance**.

Without Mitigation

Without mitigation, noise and dust nuisance will affect the quality of life in the surrounding

communities throughout the construction period. The significance of these impacts, with particular emphasis on dust, is **moderate**.

Impact Significant Rating

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction Phase					
Without Mitigation	Short-term	Study area	Moderately severe	May occur	MOD -
With Mitigation	Short-term	Study area	Slightly severe	May occur	LOW -
Operation Phase					
Without Mitigation	Not applicable				
With Mitigation					
No-Go					
General Impact	No Change – existing status will not be affected				

Impact 2.5: Reduced safety during the construction of the dam due to high vehicle activity and potential run-away fires

Cause and Comment

The safety of surrounding community members may be reduced during the construction phase of the LRWSS, through increased vehicle activity (especially on rural access roads to a from construction and quarry sites) and increased risk of veld fires.

A significant number of heavy construction vehicles will be using rural access roads for transporting materials to and from construction sites. Village communities and homesteads in close proximity to construction access routes will be most at risk, with the most vulnerable being the young and elderly.

Mitigation Measures

The following mitigation and/or enhancement measures should be adopted:

Traffic safety:

- All affected communities must be informed of the formal construction routes.
- All vehicle operators and drivers must undergo regular training, clearly outlining the high safety risk to local rural communities
- Signage making communities aware of the high safety risk due to heavy construction vehicles on the road must be erected at appropriate locations.
- Traffic calming devices such as speed bumps should be considered on rural access roads.

Fire safety:

- Fires outside construction camps must be prohibited.
- Fires that are lit must be in a contained area and safety precautions must be followed. The fire must be monitored for cinders and extinguished when no longer needed.
- Firefighting equipment must be stored onsite.
- The construction campsite must be surrounded by a firebreak.
- Education of fire risks must form part of the construction-worker training.

With Mitigation

The strict implementation of the recommended mitigation measures, the significance of the risks may be reduced to **moderate**. Constant auditing of vehicle speed and driver training must be emphasised.

Without Mitigation

The risk to the safety of the surrounding communities during the construction phase of the proposed Lusikisiki RWSS in terms of both vehicle and fire risk is **high**. During the operation phase, these risks are considered **negligible**.

Impact Significant Rating

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction Phase					
Without Mitigation	Short-term	Project area	Severe	May occur	HIGH -
With Mitigation	Short-term	Project area	Moderately severe	May occur	MOD -
Operation Phase					
Without Mitigation	Not applicable.				
With Mitigation					
No-Go					
General Impact	No Change – existing status will not be affected				

Impact 2.6: Increased risk of drowning in the Zalu Dam*Cause and Comment*

The unusual presence of a large water body during the operation phase may pose a risk of drowning to community members. Although some people may be familiar with bathing in the rivers or streams, the dam will be far deeper. Also, people may start to use water transport, exposing water users to the risk of drowning. Fencing off the dam was considered during the public engagement, but this is not feasible and would restrict other benefits, such as stock watering and public access.

Although a concern about livestock safety has been raised, it is unlikely that livestock will be negatively affected.

Mitigation Measures

The following mitigation measures should be adopted:

- Safe and controlled recreational swimming sites should be identified.
- A water safety awareness campaign should be implemented by DWS.
- Signage providing warning of drowning risks should be placed at visible locations in high activity areas such as the river/dam crossing.
- A swimming programme for local learners should be implemented.

With Mitigation

During the construction phase, there is unlikely to be any significant water storage. During operation, the dam will fill up over time, giving the surrounding communities time to adjust. Public awareness about the danger of water, in conjunction with management and training programmes, will go a long way towards reducing the likelihood of this impact and its significance to **moderate**.

Without Mitigation

Ignorance about the danger of large and deep water bodies may result in irresponsible use of the water resource, which may consequently result in the loss of life. Due to the long-term severity of this impact, it has been rated as **high** without mitigation.

Impact Significant Rating

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction Phase					
Without Mitigation	Not applicable.				
With Mitigation					
Operation Phase					
Without Mitigation	Long-term	Project area	Severe	Probable	HIGH -

With Mitigation	Long-term	Project area	Moderately severe	May occur	MOD -
No-Go					
General Impact	No Change – existing status will not be affected				

6.5 Issue 3: Loss of land due to Zalu Dam construction and inundation

Impact 3.1: Land Acquisition for the Zalu Dam

Cause and comment

Although no resettlement will be necessary, families in the surrounding communities and villages will claim the land. The dam inundation area is old fallow land currently used for grazing. The process of acquiring the land for the dam will include an economic valuation in order to determine appropriate compensation. The land could be important from a cultural perspective, but this has not been raised by any of the communities as an impact.

Mitigation Measures

The process for land acquisition by DWS must be conducted through the traditional authorities operating in the areas as they have jurisdiction over land allocations. Individual landowners must be identified and engaged. All the properties must be professionally assessed and valued by professional independent evaluators registered with South African Institute of Valuers and the South African Council for Property Valuers. Valuations, and the process of evaluation, must be shared with the landowners and will form the basis for on-going negotiations with them.

With Mitigation

The loss of land, if correctly compensated, will be **low** in significance during the construction and operation phase, although the loss of land will only take place once the land is inundated.

Without Mitigation

Without mitigation, the loss of land is considered a **moderate** significance impact. The acquisition of the land may not be successful if the correct engagement procedure is employed.

Impact Significant Rating

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction Phase					
Without Mitigation	Permanent	Project area	Slightly severe	Definite	MOD -
With Mitigation	Permanent	Project area	Slightly severe	Definite	LOW -
Operation Phase					
Without Mitigation	Permanent	Project area	Slightly severe	Definite	MOD -
With Mitigation	Permanent	Project area	Slightly severe	Definite	LOW -
No-Go					
General Impact	No Change – existing status will not be affected				

Impact 3.2: Loss of access to natural resources

Cause and Comment

The inundation of the dam will result in a loss of access to natural resources and ecological services that the river valley provides, that may be sustaining livelihoods. Resources such as: medicinal plant and food harvesting, hunting, fuel wood collection, thatch grass harvesting, livestock grazing, etc. will be permanently lost after inundation. These losses will be most felt by the marginal and vulnerable groups, who rely more heavily on these resources.

Mitigation Measures

The following mitigation measures should be adopted:

- It is anticipated that the increase in economic activity in the general area will result in an increase in alternative livelihood opportunities and activities. It is important that all members of the community are afforded equal opportunities to be involved with the proposed Lusikisiki RWSS by affording the surrounding communities opportunities to provide input into project planning.
- Current landowners and land users should be sufficiently compensated. Compensation must be equitable across gender and age.
- Assist with the relocation of livestock, if necessary.

With Mitigation

The loss of natural resources that will occur during dam inundation cannot be directly mitigated, but management interventions that ensure financial compensation and alternative livelihood strategies, will reduce the severity of the impact to a **low** significance.

Without Mitigation

It is possible that the economic stimulation associated with the proposed Lusikisiki RWSS will result in a shift in livelihood strategies of the surrounding communities, and that they will become less reliant on natural resources for sustenance. Without equitable allocation of opportunities the loss of natural resources may be of **moderate** significance.

Impact Significant Rating

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction Phase					
Without Mitigation	Not applicable. Dam inundation will occur during operation phase.				
With Mitigation					
Operation Phase					
Without Mitigation	Long-term	Project area	Moderately severe	Probable	MOD -
With Mitigation	Long-term	Project area	Slightly severe	Probable	LOW -
No-Go					
General Impact	No Change – existing status will not be affected				

6.6 Issue 4: Stimulation of Economic Growth

One of the major positive impacts of the project is the fact that a significant number of direct and indirect employment opportunities will be generated during construction, together with skills development opportunities for the youth.

In addition, significant spin-off opportunities exist during the operation phase. Agriculture (through irrigation schemes), aquaculture, sports & recreation and tourism activities are some of the potential economic possibilities associated with the dam.

However, appropriate mitigation and project enhancement measures are needed to ensure that employment remains a positive impact and that all the benefits are equitable and can be optimised or enhanced. The following impacts are discussed below:

- Employment of local labour;
- Developing and supporting local businesses;
- Skills and training opportunities; and
- Economic spin-off opportunities associated with aquaculture, irrigation, sports & recreation and tourism

Impact 4.1: Employing local labour: Job opportunities*Cause and Comment*

An estimated 900 direct job opportunities over a 3 year construction period, created by the proposed LRWSS, will need to be fulfilled locally. As the project area is characterised by high levels of unemployment, the proposed development will bring much needed employment opportunities to the area. The question of employment of local people in the project area was raised in almost every public meeting held during the EIA process and is therefore perceived to be one of the biggest impacts.

The importance of employing local residents cannot be overstated. Employment provides an income to households that have none, in addition to other benefits that could include:

- Reducing rates of crime – crime was stated as a serious problem in the project area;
- Reducing rates of alcohol and drug-abuse; and
- Reducing intra-household violence. Intra-household violence and especially women abuse are believed to be coupled with income-related arguments and worsened by substance-abuse.

The proposed LRWSS will need highly skilled workers especially when constructing the Zalu Dam and staff with experience in dam construction. However, a large number of the tasks can be performed by local labour, and the proponent is encouraged to maximise such opportunities as far as reasonably possible.

Mitigation Measures

The following mitigation and enhancement measures are proposed:

- Equal jobs opportunities for women and men must be promoted.
- Culture and tradition must be considered when planning the division of labour for construction.
- Employment must be managed by a recruitment agency/office that uses a selection system that ensures recruitment of semi and unskilled workers from all local impacted communities in accordance with recent government policies related to local procurement. This must ensure a fair and equitable recruitment process.
- Where appropriate, employees involved in the construction phase should be incorporated into the permanent maintenance staff for the operational phase; and
- Particular attention must be paid to employment opportunities for women and disabled persons.

With Mitigation

This is sensitive impact which could, if managed properly, have a **high positive** overall impact on the population during the construction phase, and a **low positive** impact during the operational phase. During the operational phase there will be fewer job opportunities and the spatial scale would become local.

Without Mitigation

Without proper labour recruitment practices and use of local resources the project may garner negative sentiment with local communities. Also, without specific enhancement measures, some economic benefits may not be realised. Such a missed opportunity would result in a **high negative** impact during the construction phase and a **low negative** during the operational phase.

Impact Significant Rating

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction Phase					
Without Mitigation	Short-term	Study area	Very severe	Probable	HIGH -
With Mitigation	Short-term	Study area	Very beneficial	Definite	VERY HIGH +

Operation Phase					
Without Mitigation	Long-term	Local	Slightly beneficial	May occur	LOW -
With Mitigation	Long-term	Local	Slightly beneficial	Probable	LOW +
No-Go					
General Impact	No affect				

Impact 4.2: Supporting local businesses

Cause and Comment

The buying power of people living in the area will increase due to increases individual and household income. This will increase the demand for goods and services, which presents an opportunity for local businesses to diversify and expand.

With specific reference to the financial spend of the LRWSS associated with construction, the demand for building materials, accommodation, food, fuel, catering, conferencing facilities etc., will also present significant opportunities to local business enterprises and SMMEs. Building materials for the project will be sourced locally and regionally which will boost local and regional businesses.

The following sectors are anticipated to benefit:

- Construction Phase: building and construction, manufacturing, real estate and business services
- Operational Phase: Water, manufacturing, transport and storage

Mitigation measures

The following enhancement measures are proposed:

The proponent must ensure that the principal of utilising local business resources (suppliers and SMMEs) in accordance with recent government policies related to local procurement (State of the nation address, 2015) forms part of the procurement specifications. Examples of local business resources that must be considered:

- Catering services
- Transport services
- Quarries/borrow pits (where necessary)
- Small civils
- Accommodation
- Security
- Hygiene services
- Fencing

With Mitigation

Should appropriate mitigation measures be implemented, the overall significance of this impact would be **high positive** especially during the construction phase. SMMEs will develop skills during the construction phase that could then be applied to other sectors, such as tourism. In this way the LRWSS project will result in **moderate beneficial** impacts on local businesses during the operation phase.

Without Mitigation

Should local SMMEs not be supported and their development not stimulated, the economic benefit of the LRWSS would be considered a missed opportunity and therefore result in **high negative** impact during the construction phase and would be **low positive** (as some benefits would ultimately accrue due to skill development in the project area) during the operation phases.

Impact Significant Rating

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction Phase					
Without Mitigation	Short-term	Regional	Very severe	May occur	HIGH -
With Mitigation	Medium-term	Regional	Very beneficial	Definite	HIGH +
Operation Phase					
Without Mitigation	Long-term	Regional	Slightly beneficial	May occur	LOW +
With Mitigation	Long-term	Regional	Beneficial	Probable	MODERATE+
No-Go					
General Impact	No affect				

Impact 4.3: Skills training opportunities*Cause and Comment*

The construction of the Zalu Dam and supporting infrastructure will need skilled/unskilled workers and staff with experience in dam construction. Although some community members do have brick-laying or building experience, a concern was raised that much of this knowledge is not related to dam construction, but housing construction. Sufficient community skills and training opportunities should be provided prior and during the construction phase of the LRWSS, in order for the communities to satisfy the labour requirements. Training and skills development throughout construction will assist with the long-term employability of the local communities.

Mitigation Measures

The following enhancement measure is proposed:

- Implement a skills development programme which includes training in business, project management, monitoring and evaluation.

With Mitigation

By implementing a skills development programme, the LRWSS should have a positive overall significant impact on the communities. This is considered as a **benefit** of **high** significance during the construction phase and of **moderate** significance during the operation phase due to the long-term benefits of training and skill development.

Without Mitigation

Without mitigation measures, such as not having a skills development programme, the effect on the population would remain unchanged. Therefore, there would be **no affect (no benefits)** during the construction or operational phases. However, the missed opportunity to improve the livelihoods of the local community due a lack of skills transfer and training is considered a moderate negative during construction and operation phase.

Impact Significant Rating

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction Phase					
Without Mitigation	Medium - term	Study area	Moderately severe	Possible	MOD -
With Mitigation	Long-term	Regional	Beneficial	Definite	HIGH +
Operation Phase					
Without Mitigation	Medium - term	Study area	Moderately severe	Possible	MOD -
With Mitigation	Long-term	Regional	Beneficial	Probable	MOD +
No-Go					
General Impact	No affect				

Impact 4.4: Potential spin-off economic opportunities associated with aquaculture, irrigation schemes, recreation and tourism.

Cause and Comment

There is a very real and significant economic opportunity that the proposed Zalu Dam may provide in terms of spin-off projects and investment opportunities. This includes the consideration of production activities such as crop irrigation in limited garden-type projects, integrated aquaculture and biomass production due the availability of water. In addition, the Zalu Dam can support water-sport and recreational facilities, which can link with the established tourism industry along the coastline.

Mitigation Measures

The following mitigation and/or enhancement measures should be adopted:

- The proponent is limited in terms of their input regarding the spin-off business opportunities as these depend on investor interest and market demand; however they play a key role in permitting water use activities. The DWS should therefore, in their consideration of water use applications, consider the benefit to local communities and ensure that equitable benefits are realised and readily facilitate water use activities that will benefit the community.
- DWS must consider in their planning and development of construction camps and settlements the possibility of converting these transformed areas into tourism or recreation facilities.

With Mitigation

The facilitation of issuing water use licences for spin-off business opportunities will assist the local communities to realise not just the social benefits, but also the long-term **highly** significant economic **benefits** of the propose Zalu Dam.

Without Mitigation

It is unlikely that the proponent would limit development opportunities associated with water uses on Zalu Dam. However, applications that do not result in local beneficiation will decrease the direct economic benefit of the dam resources for local communities, resulting in long-term **moderate** economic **benefits**.

Impact Significant Rating

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction Phase					
Without Mitigation	Not applicable.				
With Mitigation					
Operation Phase					
Without Mitigation	Long-term	Project area	Beneficial	Possible	MOD +
With Mitigation	Long-term	Project area	Very beneficial	Possible	HIGH +
No-Go					
General Impact	No Change – existing status will not be affected				

6.7 Issue 5: Disturbance of grave sites

Impact 5.1: Impact on grave sites along the route of the pipeline

Cause and Comment

The inundation of dam area will not affect grave sites. However, a number of grave sites along the route of the pipeline as noted in the Heritage Impact Study, may be affected. Some of the pipeline routes are also in close proximity to graves which might result in disturbance thereof.

Mitigation measures

Where practical and feasible, pipeline routes need to be diverted around identified grave sites. Where this is not possible, the affected families need to be consulted to discuss reburial. Additional mitigation measures are provided in the Heritage Impact Assessment.

With Mitigation

This significance of this impact is considered **high**.

Without Mitigation

Without mitigation measures, the impact would be **very high** as graves are considered culturally important for the surrounding local communities.

Impact Significant Rating

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction Phase					
Without Mitigation	Short-term	Local	Very severe	May occur	VERY HIGH -
With Mitigation	Short-term	Local	Severe	May occur	HIGH -
Operation Phase					
Without Mitigation	Not applicable				
With Mitigation	Not applicable				
No-Go					
General Impact	No affect				

6.8 No-go option

The No-Go option is described as the “without project” scenario, i.e. no dam construction, water treatment or distribution reticulation. The impact of the “No-Go” alternative is assessed in terms of the Constitution and the National Infrastructure Plan (2012). The assessment of the No-Go scenario as non-compliances in terms of the state’s obligations and policies is considered as a HIGH negative impact, in that service delivery and hence economic development will continue to be underdeveloped.

6.8.1 The Constitution

The Constitution places the responsibility on government to ensure that such services are progressively expanded to all, within the limits of available resources. Government policy on most of these issues is to provide universal access to basic services which include:

- Housing,
- Education,
- Health care,
- Social welfare,
- Transport,
- Electricity and energy,
- **Water,**
- Sanitation and Refuse and waste removal.

Without the construction of the proposed LRWSS, it is unlikely that the state will be able to fulfil this responsibility.

6.8.2 National Infrastructure Plan

In 2012, the South African Government adopted a National Infrastructure Plan. The objectives of the plan are to identify and implement key infrastructure projects that will stimulate the economy by infrastructure development that will combine the goals of ensuring service delivery and at the same time creating jobs.

The investment into infrastructure projects is anticipated to improve access by South Africans to healthcare facilities, schools, **water**, sanitation, housing and electrification, whilst the construction of ports, roads, railway systems, electricity plants, hospitals, schools and **dams** will contribute to faster economic growth.

In order to implement the goals and objectives of the National Infrastructure Plan, a number of Strategic Infrastructure Projects (SIPs) have been developed. The construction of the proposed LRWSS forms part of SIP 18 which speaks directly to Water and Sanitation infrastructure. SIP 18 involves a 10 year plan to address the estimated backlog of **adequate water to supply 1.4 m households** and 2.1 m households to basic sanitation. The project will involve provision of sustainable supply of water to meet social needs and support economic growth. These projects include provision for new infrastructure, rehabilitation and upgrading of existing infrastructure, as well as improve management of water infrastructure.

Without the construction of the proposed LRWSS, it is unlikely that the state will be able to fulfil the objectives within the project area in question.

7 CONCLUSION

7.1 Proposed project and Terms of Reference

The DWS propose the construction of the LRWSS which includes the development of the Zalu Dam, abstraction weir, water treatment facility upgrade and pipeline reticulation to surrounding villages. A clay borrow area and rockfill quarries will be needed and are located within the project area.

The terms of reference provided to guide this study have been fulfilled and comment, where necessary, provided in Table 7.1 below.

Table 7.1 Comments on the terms of reference

Terms of reference	Comment
Describe the local socio-economic environment that will be directly affected as a result of the project;	Chapter 5 of this report provides a detailed account of the socio-economic conditions of the all the wards that will be directly affected by the proposed LRWSS.
Assess the local social infrastructure (health, education, markets, community);	
Identify income and expenditure trends;	
Ensure that the study deals with the issues raised during scoping public participation	Chapter 3 describes the public meetings held as part of the EIA public participation, as well as interviews held with specific key informants as part of this study. Chapter 5 describes key outcomes and communications with respect to issues raised.
Describe the formal and informal governing structures;	The District and Local Municipal structures have been described. The traditional leadership have been engaged throughout the public participation.
Describe landownership	Landownership is discussed in Chapter 4
Assess the significance of potential economic and social impacts and benefits on the local populace and the Local Municipality and O R Tambo District Municipality;	Chapter 7 identifies and assesses issues and impacts that may be associated with the proposed LRWSS.
Identify project-related impacts and provide recommendations for mitigating negative impacts and optimising positive impacts.	

7.2 Issues and impacts

Socio-economic issues and impacts identification and assessment can be highly subjective. Due to the interdependence of socio-economic structures and networks, the severity and likelihood are difficult to predict and are therefore even more difficult to mitigate. In most instances, impacts cannot be mitigated, but instead need to be monitored and managed through intervention strategies.

It is also important to note that in many cases, by addressing a negative impact, socio-economic benefits may accrue. In summary, 9 (nine) potentially HIGH pre-mitigation negative impacts were identified during construction (Table 7.2). These could all be reduce through the implementation of mitigation measures to MODERATE impacts, with the exception of “Disturbance of gravesite”, which cannot be avoided, but can be managed. Some impacts, with mitigation, could provide benefits through the service delivery and provision of economic opportunities. Post-mitigation, the proposed LRWSS could result in significant socio-economic benefits during the construction phase.

The operation phase impacts are anticipated to be relatively muted. This is due to the lower job requirements of the project. No HIGH negative impacts have been identified, but numerous economic benefits may be realised through the increased access to water resources.

Table 7.2 Summary of assessment of Socio-economic Impacts

	Pre-mitigation			Post-mitigation		
	LOW	MOD	HIGH	LOW	MOD	HIGH
Construction	0	5 (2+)	7 (1+)	3	5 (1+)	1 (5+)
Operation	4 (1+)	4 (2+)	0	5 (1+)	1 (3+)	1+
Total	4 (1+)	9 (4+)	7 (1+)	8 (1+)	6 (4+)	1 (6+)

7.3 Concluding remarks

There is an obligation on the National and Local governments to provide basic services. These obligations are implicit in the Constitution and the National Infrastructure Plan and associated Strategic Infrastructure Projects, and largely speak to the provision/supply of water. The proposed LRWSS is aimed at fulfilling these objectives, as well as creating the necessary conditions required for economic growth.

In order to achieve the maximum economic benefit for local communities, implementation of the proposed LRWSS project must include ongoing community engagement and concerted efforts to link with other economic programmes (such as the LED and DEDEAT initiatives).

With regards to economic spinoff activities and land use and water resource use effort must be made to stimulate and encourage agriculture and tourism activities. As a downstream irrigation scheme will not be viable, aquaculture, dry crop production and livestock production should be looked at as alternative agricultural options. DWS must consider the benefit to the local communities when allocating water use licences.

The Lusikisiki Regional Water Supply Scheme (LRWSS) Project SIA has been based on fieldwork undertaken in March and August 2014. The fieldwork methodology entailed community and focus group meetings, as well as face-to-face interviews with the key stakeholders.

Apart from the construction of the Zalu Dam, pipeline reticulation will deliver water to a number of selected villages. The impacts that will be experienced by villages due to dam inundation are different to those that will experience impacts associated with pipeline reticulation (for e.g. disturbance of gravesites).

The PACs are directly affected by land acquisition and inundation by the Zalu Dam. Several issues and impacts have been identified in this report pertaining to the communities who will lose their land. The proponent must engage with landowners and follow appropriate land acquisition and compensation procedures.

The engagement process shows that the project is highly desired due to the associated skills development and employment benefits opportunities. Most community members and their leaders were concerned about the lengthy timeframes of the EIA process, but none objected to the project.

Key issues pertaining to an influx of job-seekers and outsider workers have been assessed. In particular, there is a concern amongst community members that social pathologies in the communities, such as substance-abuse, risky sexual behaviours and crime might increase in response to the influence of “outsiders”. Several mitigation measures to manage the impact have been proposed.

7.4 Impact Statement:

7.4.1 Summary of impact assessment and recommended mitigation measures

Since many of the socio-economic impacts cannot be prevented, management responses, rather than preventative actions, are required in order to mitigate the severity of negative impacts. In order to implement management responses, monitoring of certain impacts will be necessary.

During construction, the Environmental Control Officer (ECO) must be responsible for the collection or sourcing of monitoring data. Alternatively, these functions may be delegated to DWS officials. Ultimately, the ECO must ensure that monitoring is conducted and must collate, review and comment on the outcomes/trends, and make management response recommendations.

A summary of the identified issues/impacts and the responding recommended mitigation measures is provided below (Table 7.3).

Table 7.3 Summary of the impact and associated recommended mitigation measures.

Issue Nr	Issues	Impacts	Mitigation
1	Influx of Job-Seekers	Increased community conflicts between local labour and outside workers	<p>A project steering committee consisting of the DWS, contractor (community liaison person), recruitment agency, community leaders, elders, youth, ward councillors and the IHLM LED must be established in order to:</p> <ul style="list-style-type: none"> • Conduct an audit of the affected communities in term of employment capacity • Identify potential workers from the affected communities • Identify possible conflicts in and between communities • Recommend support programmes that would assist with conflict minimisation and resolution
		Increased social pathologies	<p>Crime:</p> <ul style="list-style-type: none"> • The role of Traditional Authorities in exerting control over land allocation in order to prevent densification of people around the construction areas should be supported. • The DWS and contractor must encourage settlement in Lusikisiki by providing daily transport for “outside” workers who settle in the town of Lusikisiki, to and from the construction to minimise the potential crime factor in the rural areas. • All construction workers must be clearly identifiable and wear easily recognisable uniforms. They need to carry identification cards issued by the contractor. • The SAPS must have access to construction sites. • Local communities should be encouraged to report suspicious activity to the community liaison or nearest environmental site officer. • The contractor must prevent loitering around the construction camp by providing transport to and from the camp sites. • All construction and camp sites must be fenced and secure. <p>Increased prostitution and sexual behaviour:</p> <ul style="list-style-type: none"> • National and local awareness programmes that discourage promiscuity, especially at schools in the project area should be supported. • Condoms must be made easily accessible to all construction workers.

		Increase and spread of communicable diseases (HIV)	<ul style="list-style-type: none"> • An HIV/AIDS, non-discrimination, awareness, prevention and health care support, policy must be implemented. • Condoms must be made easily accessible to all construction workers. • An HIV/AIDS education and behaviour change programme for all contracted construction workers, should be developed. • The above program must extend to the communities located near the construction site. • Existing public health care centres and programmes such as TAC must be involved in HIV/AIDS campaigns and monitoring of HIV/AIDS prevalence should be undertaken in collaboration with these agencies. • Voluntary counselling and testing should be encouraged for all workers.
		Economic stimulation of and investment into business and enterprise due to an increase in demand for local services	<ul style="list-style-type: none"> • DWS is limited in its capacity to enhance the benefits of this impact, as the development of the communities and town will occur in response to the needs and demands of construction workers. The proponent can play role in facilitating the skills required to recognise the need and respond appropriately. The proponent must link the Provincial Department of Economic Development and Local Municipal LED programmes with small to medium enterprises (including communities) in the area so that a state of “readiness” to optimise economic benefits is achieved. This may involve training in the following sectors: business, tourism, catering etc.
2	Impact on health and general quality of life	Provision of water	No mitigation measure required.
		Upgrading of roads	No mitigation measure required.
		Increased demand on existing infrastructure facilities and social services	<ul style="list-style-type: none"> • Service providers associated with the IHLM and PSJLM, clinics, schools and the SAPS must be made aware of an increase in demand, both in the town of Lusikisiki and in the surrounding rural areas, and therefore the increased pressure to provide services for new households. • This will require direct communication with the local municipalities, ORTDM, the Department of Health, South African Police Service and the Department of Education. The channels of communication must be established as permanent

			<p>points of contact throughout the construction phase of the project.</p> <ul style="list-style-type: none"> Regular monitoring of the schools and clinics in order to determine whether there are sufficient resources must be undertaken. When resources are deemed insufficient, DWS must communicate, through established channels, with the relevant departments for assistance.
		Noise and dust generated by construction vehicle activity, blasting, borrow pit and hard rock quarry sites.	<ul style="list-style-type: none"> Noise and dust prevention measures and monitoring thereof must be included in an Environmental Management Programme. Communities must have access to a grievance reporting mechanism, e.g. through a project steering or liaison committee.
		Reduced safety during the construction of the dam due to high vehicle activity and potential run-away fires	<p>Traffic safety:</p> <ul style="list-style-type: none"> All affected communities must be informed of the formal construction routes. All vehicle operators and drivers must undergo regular training, clearly outlining the high safety risk to local rural communities Signage making communities aware of the high safety risk due to heavy construction vehicles on the road must be erected at appropriate locations. Traffic calming devices such as speed bumps should be considered on rural access roads. <p>Fire safety:</p> <ul style="list-style-type: none"> Fires outside construction camps must be prohibited. Fires that are lit must be in a contained area and safety precautions must be followed. The fire must be monitored for cinders and extinguished when no longer needed. Firefighting equipment must be stored onsite. The construction campsite must be surrounded by a firebreak. Education of fire risks must form part of the construction-worker training.
		Increased risk of drowning in the Zalu dam	<ul style="list-style-type: none"> Safe and controlled recreational swimming sites should be identified. A water safety awareness campaign should be implemented by DWS. Signage providing warning of drowning risks should be placed at visible locations in high activity areas such as the river/dam crossing.

3	Loss of land as result of the Zalu dam construction	Land acquisition for the Dam	<ul style="list-style-type: none"> • A swimming programme for local learners should be implemented. • The process for land acquisition by DWS must be conducted through the traditional authorities operating in the areas as they have jurisdiction over land allocations. • Individual landowners must be identified and engaged. • All the properties must be professionally assessed and valued by professional independent evaluators registered with South African Institute of Valuers and the South African Council for Property Valuers. Valuations, and the process of evaluation, must be shared with the landowners and will form the basis for on-going negotiations with them.
		Loss of access to natural resources	<ul style="list-style-type: none"> • It is anticipated that the increase in economic activity in the general area will result in an increase in alternative livelihood opportunities and activities. It is important that all members of the community are afforded equal opportunities to be involved with the proposed Lusikisiki RWSS by affording the surrounding communities opportunities to provide input into project planning. <ul style="list-style-type: none"> • Current landowners and land users should be sufficiently compensated. Compensation must be equitable across gender and age. • Assist with the relocation of livestock, if necessary.
4	Stimulation of Economic Growth	Employing local labour: Job opportunities	<ul style="list-style-type: none"> • Equal jobs opportunities for women and men must be promoted. • Culture and tradition must be considered when planning the division of labour for construction. • Employment must be managed by a recruitment agency/office that uses a selection system that ensures recruitment of semi and unskilled workers from all local impacted communities in accordance with recent government policies related to local procurement. This must ensure a fair and equitable recruitment process. • Where appropriate, employees involved in the construction phase should be incorporated into the permanent maintenance staff for the operational phase; and • Particular attention must be paid to employment opportunities for women and disabled persons.
		Supporting local businesses and stimulating local economic opportunities	The proponent must ensure that the principal of utilising local business resources (suppliers and SMMEs) in accordance with recent

			<p>government policies related to local procurement (State of the nation address, 2015) forms part of the procurement specifications. Examples of local business resources that must be considered:</p> <ul style="list-style-type: none"> • Catering services • Transport services • Quarries/borrow pits (where necessary) • Small civils • Accommodation • Security • Hygiene services • Fencing
		Skills training opportunities	<ul style="list-style-type: none"> • Implement a skills development programme which includes training in business, project management, monitoring and evaluation.
		Potential spin-off economic opportunities: aquaculture, irrigation, recreation and tourism.	<ul style="list-style-type: none"> • The proponent is limited in terms of their input regarding the spin-off business opportunities as these depend on investor interest and market demand; however they play a key role in permitting water use activities. The DWS should therefore, in their consideration of water use applications, consider the benefit to local communities and ensure that equitable benefits are realised and readily facilitate water use activities that will benefit the community. • DWS must consider in their planning and development of construction camps and settlements the possibility of converting these transformed areas into tourism or recreation facilities.
5	Disturbance of graves sites	Impact on grave sites along the route of the pipeline	Where practical and feasible, pipeline routes need to be diverted around identified grave sites. Where this is not possible, the affected families need to be consulted to discuss reburial. Additional mitigation measures are provided in the Heritage Impact Assessment.

7.5 Opinion of the specialist

Although a number of high negative impacts have been identified in this study, it is expected for the positive impacts to far outweigh the negative. Negative impacts can be sustainably mitigated and managed through proper monitoring, stakeholder engagement and the involvement of affected communities from the inception of the project. With regard to the possible affected land-owners at the dam site, further discussion and engagements are needed to resolve land delineation and ownership issues.

In conclusion, the EOH Coastal & Environmental Services consultants are of the opinion that the project will ultimately uplift communities, which are in dire need of basic water supply and employment opportunities. No fatal flaws with respect to any of the proposed activities have been raised or identified.

It is also the opinion of EOH Coastal & Environmental Services that this SIA contains sufficient information to allow DEA to make an informed decision. EOH Coastal & Environmental Services therefore, recommends that the application for authorisation be approved on condition that the recommended mitigation measures stated herein are effectively implemented.

8 REFERENCES

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APPENDIX A: STAKEHOLDERS DATA BASE

Organisation	Name	E-mail	Tel	fax
Stakeholders				
SAHRA	M Galimberti	mgalimberti@sahra.org.za		
ECPHRA	Mr Mzikayise L. Zote	mlzote@ecphra.org.za	(043) 642 2811 or (076) 836 5467	(043) 642 2812
Department of Water Affairs		-		
Zimkhitha /Lungiswa	Mthatha Town Hall	lungiswab@ksd.gov.za	047 5014081	0866929701
I & AP register				
Ben van dr Merwe	Urban-econ	ben@urban-econ.com		
Mluleki Fihlani	Ingquza Hill LM	nmdiya@ihlm.gov.za	039 253 1568/ 039 253 1096	039 252 0131
Nomvuyo (Speaker's office)	PSJ LM	-	047 564 1208	
Mr N Pakde (Acting Municipal Manager)	PSJ LM	mshiywa.feziwe@gmail.com	047 564 1208	
Kabane Siyabonga	Eskom	kabanes@eskom.co.za		
Kumbula Charles	OR Tambo	charles@yahoo.com		
Mafumbata Ntosh	Eskom	mafumba@eskom.co.za		
Mase Sithembele	ECDC	smase@ecdc.co.za		
V Fihla	Eskom	fihlav@eskom.co.za		
Mjindi LM	Eskom	mjindilm@eskom.co.za		
Wana Xolani	Eskom	wanaxs@eskom.co.za		
Mdoda N	Eskom	mdoadan@eskom.co.za		
Sifiso Khoza	OR Tambo	sifisok@ortambodm.gov.za		
Mzayi Eric	OR Tambo	mzayiye@ortambodm.gov.za		
Mr Notho	OR Tambo DM	Singwa@gmail.com		
O Sopela	Ingquza Hill LM	osopela@psjmunicipality.co.za		
Nyawose Mthokozi	Amatola Water	cthompson@amatolawater.co.za		
Ndzungu C	DWA	ndzunguc@dwa.gov.za		
Van Jaarsveld S	DWA	vanjaarsvelds@dwa.gov.za		
Fourie F	DWA	fourief@dwa.gov.za		

Lusikisiki Regional Water Supply Scheme – April 2015

Geldenehuys T	DWA	geldenuhust@dwa.gov.za		
DM Manggo (Mayor)	PSJ LM	dmanggo@psimuni.co.za		
S Sotshongaye (Ward 17)	PSJ LM	silassotshongaye@gmail.com		
N Diki (Ward 11)	PSJ LM	ngdiki@gmail.com		
M Vena (Ward 10)	PSJ LM	mthuthuzelivena@gmail.com	073 477 7569	
Novangeli Town Hall	PSJ LM	-	073 415 4731	
Fono M (Ward 9)	PSJ LM	fonokm@gmail.com	082 634 6725	
Daniso B (Ward 11)	PSJ LM	-	072 564 1712	
Mtiki Z (Ward 12)	PSJ LM	zemtiki@gmail.com	073 394 6089	
Zweni M (Ward 13)	PSJ LM	rmzweni@gmail.com	082 564 0212	
Cuba Z (Ward 14)	PSJ LM	-	082 564 2979	
Tshoto G (Ward 15)	PSJ LM	tshoto@webmail.co.za	072 256 2463/ 079 896 1111	
Mzaza S (Ward 19)	PSJ LM	siyamthanda.mzaza@yahoo.com	082 564 5298	
Ms Mbotshwa N (Ward 20) (Mthimde)	PSJ LM	ntsebz@gmail.com	073 035 3219 or 079 691 1451	
Cllr X Moni (Ward 18)	PSJ LM	xolilemoni@gmail.com		
IHLM Reception		-	039 253 1563/ 039 253 1096	
Ms Nkayitshana (Ward 12)	Ingquza Hill LM	-	071 865 3068	
Mr Ntshobo (Ward 13)	Ingquza Hill LM	-	071 865 3029	
Mr Malulwana (Ward 14)	Ingquza Hill LM	-	082 843 3887	
Mr Thambodala (Ward 15)	Ingquza Hill LM	-	083 562 3717	
Ms Jotile (Ward 16)	Ingquza Hill LM	-	083 462 3892	
Mr Mpozana (Ward 17)	Ingquza Hill LM	-	071 865 3038	
Mr Zati (Ward 18)	Ingquza Hill LM	-	073 782 1459	
Mr Mtsosto (Ward 19)	Ingquza Hill LM	mndenyane@ihlm.gov.za	074 865 3591	
Mr Ngxamile (Ward 20)	Ingquza Hill LM	pnqxamile@ihlm.gov.za	071 865 3089	
Ms Daniso (Ward 21)	Ingquza Hill LM	-	083 668 5540	
Mr Tshwatshuka (Ward 22)	Ingquza Hill LM	-	083 668 4480	
Ms Daliwe (Ward 23)	Ingquza Hill LM	-	083 623 6921	
Mr Nkungu (Ward 24)	Ingquza Hill LM	minkungu@yahoo.com	083 623 9025	
Nolwazi N	PSJ LM	nolwazin2000@yohao.com	082 774 4288	
Mr Mgwili (Ward 4) (Mfinizweni)	Ingquza Hill LM	-	083 455 3286	
Neliswa IHLM		n92vato@gmail.com		

Lusikisiki Regional Water Supply Scheme – April 2015



IAP Scoping Phase			
B Ngotana			083 340 9583
MD Mvinjwa			083 445 2496
SE Malulwana			082 843 3887
H Mabetla			083 441 6564
A Vungaye			073 230 5592
T Songunzu			073 665 5772
M Mfolozi			083 444 1194
F Mdutshane			083 440 3459
L Dumani			082 209 3471
N Ndondo			083 446 0225
S Mnge			073 555 7913
Z Bashe			083 419 8256
M Tana			083 448 2567
NF Diko			083 591 4708
N Nyenyiso			083 447 1990
B Mfitizo			083 444 0933
NF Dwabayo			076 587 6282
N Msikwa			083 445 0593
W Mhanywa			083 444 4289
N Bhala			083 419 8550
N kwakhwa			060 380 5946
M Sithilanga			082 448 0351
N Zikizela			083 446 9036
Z Tshemese			083 448 3823
M Matwasa			078 670 1128
NC Mkombe			083 444 5600
N Mtenjwa			083 445 2229
N Linganiso			083 441 5869
XW Sopilase			083 448 3303
M Mkwenkwe			078 514 4996
M Mali			083 442 2457
NC Cawe			083 419 9499
L Mgwaza			083 444 3153
P Mbaleni			073 188 4465
N Mkumbuzi			073 347 6531

Lusikisiki Regional Water Supply Scheme – April 2015

Y Kholisile			083 441 4355	
Veliswa Peter			083 447 5064	
Nothemba Jijimba			073 559 0100	
Mampinge M Diko			083 41 6762	
Michael Gqweta			083 440 8277	
Mfundiso Jazi			083 485 0115	
Alicia Mbalo			083 443 2703	
P Tshicila			083 443 3214	
TA Muge			083 444 7774	
Nomalizo Manciya (Chieftainess)			083 532 8191	
Hamilton Mgwici			083 455 3286	
T Gwane		thembisile2@gmail.com	078 654 4972	
B Bantwana		bongeka2@gmail.com	078 026 2170	
A Mbeni			073 806 5470	
N Mpambaniso			078 529 1242	
N Tenyane			078 136 7929	
S Dlomo			079 628 9203	
N Siko		n.siko@gmail.com	073 390 6243	
N Mngoma			071 943 8596	
M Mngwane			078 754 8704	
DL Mbola			073 660 5004	
M Dlomo			073 321 1638	
S Matwasa			078 741 4790	
M Mafanya			083 424 8945	
S Dlomo			083 622 4396	
S Mbendana			073 900 5574	
M Siko			083 770 6499	
M Mthemba			078 501 5948	
L H Ngotana			078 773 8858	
S Mbeni			071 816 0502	
K A Duntsula			073 348 5430	
M Mbeni			072 662 3883	
B Mbeni				
M Mtsenge			078 078 6997	
Mgwili Dedani	Ingquza Hill		073 702 0716	

APPENDIX B: QUESTIONNAIRE USED AT FOCUS GROUP MEETINGS

lusikisiki regional water supply scheme traditional leaders questionnaire

<p>Prepared for: Department of Water Affairs</p>  <p>water affairs Department: Water Affairs REPUBLIC OF SOUTH AFRICA</p>	<p>Prepared by: EOH Coastal & Environmental Services</p>  <p>Head office: Grahamstown (South Africa) Physical Address: 67 African Street, Grahamstown 6139 Postal Address: P.O Box 934, Grahamstown 6140 Telephone: +27 46 622 2364 Mobile: +27 82 783 6393 Fax: +27 46 622 6564 Website: www.cesnet.co.za</p>
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EOH Coastal & Environmental Services (CES) has been appointed by the Department of Water Affairs (DWA) to undertake the Environmental Impact Assessment (EIA) for the proposed Lusikisiki Regional Water Supply Scheme (LRWSS) and obtain environmental approval in terms of the National Environmental Management Act (1998). The LRWSS has been under consideration since the 1970's (van Niekerk et al., 2013) when it was recommended that a regional water supply scheme based on a dam on the Xura River and a main bulk supply reservoir close to Lusikisiki would provide potable water supply for the entire region between Lusikisiki and the coast, extending from the Mzimvubu River in the south west to the Msikaba River in the north east. Some areas up to 15 km inland of Lusikisiki would also be supplied.

As part of the EIA process CES is conducting specialist studies to identify the impacts of the proposed project on environment. We would like to ask you a few questions to get more information on the socio-economic situation of the affected areas.

Questions for Traditional Leadership

1. Which villages fall under your jurisdiction?

.....
.....
.....

2. What is the name of this tribal authority?

.....

3. What is the name of your administrative area?

.....

4. Do you have knowledge about the proposed development (LRWSS)? Explain

.....
.....
.....

5. What do you think will be the major challenges to the success of this project

.....
.....
.....

6. How do you see the community benefiting from this development?

.....
.....
.....

7. Are there any existing community organisations that are operational in your area?

.....
.....
.....

8. If yes, how are they doing? (i.e. management, finances, etc)

.....
.....

9. How is the relationship between the different affected areas? Is there a good working relationship?

.....
.....
.....

10. Are there no people/families that have land use rights at the site allocated for the project?

.....
.....

11. According to your knowledge, are there are any graves in and around the project area?

.....
.....

12. Are there no cultural activities that are being practised in the area?

.....
.....

13. Are there any recreational activities (e.g. sports) taking place at the dam site?

.....
.....

14. What is the relationship between traditional and political leaders (i.e. councillors) in these areas?

.....
.....

15. Do you have any other comments to make about the proposed development?

.....
.....

Signature of leader:

Date:

APPENDIX C: QUESTIONNAIRE USED FOR HEALTHWORKERS

lusikisiki regional water supply scheme health workers questionnaire

<p>Prepared for: Department of Water Affairs</p>  <p>water affairs Department: Water Affairs REPUBLIC OF SOUTH AFRICA</p>	<p>Prepared by: EOH Coastal & Environmental Services</p>  <p>Head office: Grahamstown (South Africa) Physical Address: 67 African Street, Grahamstown 6139 Postal Address: P.O Box 934, Grahamstown 6140 Telephone: +27 46 622 2364 Mobile: +27 82 783 6393 Fax: +27 46 622 6564 Website: www.cesnet.co.za</p>
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As part of the EIA process CES is conducting specialist studies to identify the impacts of the proposed project on environment. We would like to ask you a few questions to get more information on the socio-economic situation of the affected areas.

Questionnaire for Health Workers

1. Name of health centre (clinic/hospital)

.....

2. Which areas does this health centre service?

.....

3. What kind of sicknesses do you commonly deal with?

.....

.....

.....

.....

4. Are there any spatial variations in the nature of sicknesses in different villages in the areas?

.....

5. How many staff members are presently working at the health centre?

.....

6. To what extent is the staff at the health centre overloaded (under-staffed)?

.....

7. To what extent is this health centre adequately resourced? (equipment, buildings and vehicles)

.....

.....

.....

8. Which government services are currently available at the health centre (e.g. water, electricity, etc.)?

.....

.....

9. Is alcoholism and drug abuse a common social problem in this area (relative to other areas)? (% of cases?) [Severe, high, average, low, non-existent]

.....

.....

10. What are the challenges or constraints with respect to the provision of health services in the Lusikisiki area?

.....

.....
.....
.....

11. To what extent are health services available to communities in the region? (problems)

.....
.....

12. How would you expect the development of the LRWSS to affect the health situation in the area?



.....
.....
.....

Signature:

Date:

APPENDIX D: QUESTIONNAIRE USED AT SCHOOLS

lusikisiki regional water supply scheme health workers questionnaire

<p>Prepared for: Department of Water Affairs</p>  <p>water affairs Department: Water Affairs REPUBLIC OF SOUTH AFRICA</p>	<p>Prepared by: EOH Coastal & Environmental Services</p>  <p>Head office: Grahamstown (South Africa) Physical Address: 67 African Street, Grahamstown 6139 Postal Address: P.O Box 934, Grahamstown 6140 Telephone: +27 46 622 2364 Mobile: +27 82 783 6393 Fax: +27 46 622 6564 Website: www.cesnet.co.za</p>
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As part of the EIA process CES is conducting specialist studies to identify the impacts of the proposed project on environment. We would like to ask you a few questions to get more information on the socio-economic situation of the affected areas.

Schooling questions

Questions for School Teacher/Principal

1. Name of school:

.....

2. Location of school:

.....

3. What grades are taught at this school?

.....

4. What is the medium of instruction in this school? (language)

.....

5. How many pupils are enrolled at this school?

.....

6. From which surrounding villages do the learners come from?

.....

.....

.....

7. What proportion (or number) of the pupils are from the project affected villages?

.....

8. Where do the pupils who graduate from this school go to next?

.....

9. Is pupil attendance at school excellent, good, average or poor?

.....

10. Is pupil performance at school excellent, good, average or poor? Explain

.....

.....

11. Do you know what proportions of students who have come to this school have gone on to obtain higher levels of education at other schools? (estimate)

.....

12. Where does the teacher live? (at the village or elsewhere)?

.....

13. Is water and electricity provided to the school?

.....

.....

14. How many classrooms, offices, libraries, toilets, sports fields etc. (fixed assets) does the school have?

.....

School Facilities	Yes/No or Number
Accommodation for teacher	
Class Rooms	
Office	
Library	
School Hall	
Toilets	
Yard	
Sports fields	
Electricity	
Water	
Telephone	

15. To what extent can this school accommodate any additional children (if there is a lot of immigration as a result of the proposed project)?

.....

16. What proportion of pupils who leave school go on to find jobs? (estimate)

.....

17. Do you have any concerns about the proposed development, and how it would affect your school and pupils?

.....

.....

.....

18. Are there any incidences of teenage pregnancies amongst pupils at this school?

.....

.....

19. Are there any incidences of violence, or drug/alcohol consumption amongst pupils at this school?

.....

20. What are the challenges currently facing the school?



.....
.....
.....
.....

Signature:

Date:

APPENDIX E: QUESTIONNAIRE USED FOR MUNICIPAL OFFICIALS

lusikisiki regional water supply scheme MUNICIPAL OFFICIALS questionnaire

<p>Prepared for: Department of Water Affairs</p>  <p>water affairs Department: Water Affairs REPUBLIC OF SOUTH AFRICA</p>	<p>Prepared by: EOH Coastal & Environmental Services</p>  <p>Head office: Grahamstown (South Africa) Physical Address: 67 African Street, Grahamstown 6139 Postal Address: P.O Box 934, Grahamstown 6140 Telephone: +27 46 622 2364 Mobile: +27 82 783 6393 Fax: +27 46 622 6564 Website: www.cesnet.co.za</p>
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As part of the EIA process CES is conducting specialist studies to identify the impacts of the proposed project on environment. We would like to ask you a few questions to get more information on the socio-economic situation of the affected areas.

Questionnaire for Municipal Officials

Provision of Services

1. What are the main challenges facing the communities in the project area from the municipality perspective?

.....
.....

2. What are the current projects that the municipality is involved in these areas?

.....
.....

3. Does the municipality have any plans to bring service in the project area and if so please list the planned services and the projected time frames for completion? (esp. water supply related infrastructure)

.....
.....
.....
.....

Water

4. Describe the current water supply system for these communities?

.....
.....

5. Have there been any problems with the water supply system in these areas, and if so, explain what these problems were?

.....
.....
.....

6. Does the municipality have any plans to expand the supply of water and in what areas?

.....
.....
.....

Local Economic Development

7. What are the municipality's plans for local economic development?

.....
.....
.....
.....

8. What initiatives have been implemented so far? (history)

.....
.....
.....

9. How have they performed? What impact or success have they had?

.....
.....
.....

10. What are the constraints to LED in this area?

.....
.....
.....

11. What are the opportunities for LED in this area?

.....
.....
.....

12. What assistance will be needed to overcome these constraints and make use of these opportunities?

.....
.....
.....

Signature:

Date

DWA - LUSIKISIKI REGIONAL WATER SUPPLY SCHEME PUBLIC MEETING

VILLAGE	Mthimde
FACILITATORS	Mr Bosman & Ms Nande Suka
DATE	26 / 08 / 2014

ATTENDANCE REGISTER Focus group duration:

NAME	VILLAGE	Contact details	Signature
B. MATINDABUZO	Mthimde	0833693253	
John Nongwana	Mthimde	X	
Z. Mbelu	Mthimde	X	
S. Selina Macoko	Mthimde	X	
M.M. Lobe	Mthimde	X	
Zakaria Butsula	Mthimde	X	
E. Gochu	Mthimde	0791016038	
N. Malyeza	Mthimde	0835479380	
N. Malyeza	Mthimde	0835328191	
Z. Nacha	Mthimde	0781214004	
L. Gochu	Mthimde	0835328191	
Zhangha Malyeza	Mthimde	X	
Silayi Zimoshile	Mthimde	X	
T. Nganabeni	Mthimde	X	
W. Bezana	Mthimde	X	
Titela Tchitshi	Mthimde	X	
Z. Mgula	Mthimde	X	

Focus Group Meeting at Ntsimbini

DWA - LUSIKISIKI REGIONAL WATER SUPPLY SCHEME PUBLIC MEETING

VILLAGE	Qhawukeni Traditional Authority
FACILITATORS	Mr Bosman & Ms Nande Suka
DATE	26 / 08 / 2014

ATTENDANCE REGISTER Focus group duration:

NAME	VILLAGE	Contact details	Signature
MAFANYA Bongiswa	Mhlotshozweni	0782202802	
MPAMBANISO Nkubhe		0785291242	
Mbuyi selo Sishovata	Ilimbani	0730403267	
MWAKHISI Lwaxo	NTSIBINI	0835060436	
M.A. Mgomo	Mrotsho	072533896	
V. Linyane	Mtshobane	0787553579	
J.W. M Bomba	IROTSBO	0730964890	

APPENDIX G: IMPACT RATING SCALE

EOH CES' Ranking of Evaluation Criteria

Temporal Scale		Score	
Short-term	Less than 5 years	1	
Medium-term	Between 5-20 years	2	
Long-term	Between 20 and 40 years (a generation) and from a human perspective also permanent	3	
Permanent	Over 40 years and resulting in a permanent and lasting change that will always be there	4	
Spatial Scale			
Localised	At localised scale and a few hectares in extent	1	
Study Area	The proposed site and its immediate environs	2	
Regional	District and Provincial level	3	
National	Country	3	
International	Internationally	4	
Severity	Severity*	Benefit	
EFFECT	Slight	Slightly beneficial to the affected system(s) and party(ies)	1
	Moderate	Moderate impacts on the affected system(s) or party(ies)	2
	Severe/Beneficial	Severe impacts on the affected system(s) or party(ies)	4
	Very Severe/Beneficial	Very severe change to the affected system(s) or party(ies)	8
	Likelihood		
LIKELIHOOD	Unlikely	The likelihood of these impacts occurring is slight	1
	May Occur	The likelihood of these impacts occurring is possible	2
	Probable	The likelihood of these impacts occurring is probable	3
	Definite	The likelihood is that this impact will definitely occur	4

* This refers to the impact's intensity

Matrix used to determine the overall significance of the impact based upon the likelihood and effect of the impact

Likelihood	Effect															
	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
1	4	5	6	7	8	9	10	11	12	13	14	15	16	17		
2	5	6	7	8	9	10	11	12	13	14	15	16	17	18		
3	6	7	8	9	10	11	12	13	14	15	16	17	18	19		
4	7	8	9	10	11	12	13	14	15	16	17	18	19	20		

Description of socio-environmental significance ratings and associated range of scores*

Significance rating	Description	Score
Low	An acceptable impact for which mitigation is desirable but not essential. The impact by itself is insufficient even in combination with other low impacts to prevent the development being approved. These impacts will result in either positive or negative medium to short term effects on the social and/or natural environment.	4-8
Moderate	An important impact which requires mitigation. The impact is insufficient by itself to prevent the implementation of the project but which in conjunction with other impacts may prevent its implementation. These impacts will usually result in either a positive or negative medium to long-term effect on the social and/or natural environment.	9-12
High	A serious impact, which if not mitigated, may prevent the implementation of the project (if it is a negative impact). These impacts would be considered by society as constituting a major and usually a long-term change to the (natural &/or social) environment and result in severe effects or beneficial effects.	13-16
Very High	A very serious impact which, if negative, may be sufficient by itself to prevent implementation of the project. The impact may result in permanent change. Very often these impacts are unmitigatable and usually result in very severe effects, or very beneficial effects.	17-20

* These tables have been formulated by CES through years of experience with impact assessments