REPORT NO. : P WMA 12/T30/00/5314/7

water & sanitation
Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

Environmental Impact Assessment

for the proposed

MZIMVUBU WATER PROJECT

DEA Ref. No.: 14/12/16/3/3/2/677 (Dam construction)
14/12/16/3/3/2/678 (Electricity generation)
14/12/16/3/3/1/1169 (Roads)

SOCIAL IMPACT ASSESSMENT

SEPTEMBER 2014

Prepared for:

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ENVIRONMENTAL IMPACT ASSESSMENT FOR THE MZIMVUBU WATER PROJECT

Report Title:	***Social Impact Assessment***
Authors:	*Dr Neville Bews*
Project name:	***Environmental Impact Assessment for the Mzimvubu Water Project***
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SPECIALIST: DR NEVILLE BEWS & ASSOCIATES

Approved for Dr Neville Bews & Associates by:

Dr Neville Bews
Consultant

DEPARTMENT OF WATER AND SANITATION – DIRECTORATE: OPTIONS ANALYSIS

*Approved for DWS**:***

M Mugumo
Chief Engineer: Options Analysis (South)

L S Mabuda
Chief Director: Integrated Water Resource Planning

ENVIRONMENTAL IMPACT ASSESSMENT FOR THE MZIMVUBU WATER PROJECT

LIST OF REPORTS

REPORT TITLE	DWS REPORT NUMBER
Inception Report	P WMA 12/T30/00/5314/1
Scoping Report	P WMA 12/T30/00/5314/2
Environmental Impact Assessment Report	P WMA 12/T30/00/5314/3
Environmental Management Programme	P WMA 12/T30/00/5314/14
Water Use Licence Application Supporting Documents	P WMA 12/T30/00/5314/4
Ntabelanga Dam borrow pits and quarry Environmental Management Plan	P WMA 12/T30/00/5314/5
Lalini Dam borrow pits and quarry Environmental Management Plan	P WMA 12/T30/00/5314/6
SUPPORTING REPORTS	
Social Impact Assessment	P WMA 12/T30/00/5314/7
Economic Impact Assessment	P WMA 12/T30/00/5314/8
Visual Impact Assessment	P WMA 12/T30/00/5314/9
Floral Impact Assessment	P WMA 12/T30/00/5314/10
Faunal Impact Assessment	P WMA 12/T30/00/5314/11
Heritage Impact Assessment	P WMA 12/T30/00/5314/12
Water Quality Study	P WMA 12/T30/00/5314/13
Aquatic Ecology Assessment	P WMA 12/T30/00/5314/15
Wetland Assessment	P WMA 12/T30/00/5314/16

ENVIRONMENTAL IMPACT ASSESSMENT FOR THE MZIMVUBU WATER PROJECT

DEA REF No. 14/12/16/3/3/2/677 (Dam construction application)
14/12/16/3/3/2/678 (Electricity generation application)
14/12/16/3/3/1/1169 (Roads application)

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Department of Water and Sanitation, South Africa (2014). ***Environmental Impact Assessment for the Mzimvubu Water Project: Social Impact Assessment***

DWS Report No: P WMA 12/T30/00/5314/7

Prepared for: Directorate – Options Analysis
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DECLARATION OF INDEPENDENCE

I, Neville Bews as authorised representative of Dr Neville Bews & Associates hereby confirm my independence as a specialist and declare that neither I nor Dr Neville Bews & Associates have any interest, be it business, financial, personal or other, in any proposed activity, application or appeal in respect of which Dr Neville Bews & Associates was appointed as social impact assessment specialists in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), other than fair remuneration for work performed, specifically in connection with the Social Impact Assessment for the Mzimvubu Water Project Environmental Impact Assessment. I further declare that I am confident in the results of the studies undertaken and conclusions drawn as a result of it – as is described in my attached report.

Signed: 

Date: 15 September 2014

ENVIRONMENTAL IMPACT ASSESSMENT FOR THE MZIMVUBU WATER PROJECT

SOCIAL IMPACT ASSESSMENT

Executive summary

BACKGROUND

The Mzimvubu Water Project is an integrated multi-purpose project consisting of domestic water supply, agricultural irrigation scheme, power generation, transport, tourism, conservation and industry proposed for the Eastern Cape Province. The area remains underdeveloped and one of the poorest regions in the country, despite the existence of abundant untapped water resources. The Department of Water and Sanitation has proposed the project with the intention of providing a socio-economic development opportunity for the region.

The project consists of the construction of:

- Two dams with associated water infrastructure
- Domestic water supply infrastructure
- Agricultural irrigation scheme infrastructure
- Hydro-electric power generation and distribution infrastructure
- Road infrastructure.

The Social Impact Assessment, as part of the Environmental Impact Assessment process, investigated the impact that these activities are likely to have on the social environment of the region to assist in informing decision making by the Department of Environmental Affairs and Tourism (DEAT) in regard to the environmental authorisation for the proposed project. In this sense the potential social impacts were identified together with mitigation measures.

APPROACH

The approach taken was to collect data from as wide a source as was possible within the constraints of time and budget available. Data was gathered during a field survey trip, which included limited engagement with Interested and Affected Parties, various interactions with the project proponents and engineers, and through secondary data sources.

Social impacts are rated in accordance with the Environmental Impact Assessment Regulations, 2010 and the criteria drawn from the Integrated Environmental Management (IEM) Guidelines Series, Guideline 5: Assessment of Alternatives and Impacts, published

by the (DEAT, 2006), as well as the Guideline Document on Impact Significance (DEAT, 2002)

SOCIAL ENVIRONMENT

The district and local municipalities directly associated with the project are:

- Joe Gqabi District Municipality (DC14)
  - Elundini Local Municipality (EC141);
- O.R. Tambo District Municipality (DC15);
  - Nyandeni Local Municipality (EC155)
  - Mhlontlo Local Municipality (EC156);
- Alfred Nzo District Municipality (DC44)
  - Umzimvubu Local Municipality (EC442)
  - Ntabankulu Local Municipality (EC444).

The area is characterised by high poverty and out-migration resulting in sex ratio imbalances, a high proportion of female headed households and a low population growth rate. Consequently there is a high dependency ratio and a high level of food access inadequacy. The population also lacks basic amenities and relies heavily on subsistence farming. At one time a system of communal land ownership and land management was introduced which seems to have fallen into disuse. Nevertheless, allocated fields still retain a value through folk memory and would need to be addressed through the traditional authority structures.

Turning towards the areas directly affected by the project, it has been identified by means of a field survey that, with regard to the Ntabelanga Dam Basin, 62 structures and 19.9136 km^2 of cultivated land will be lost. The Lalini Dam Basin, technically preferred Option 1 will result in the loss of 12 dwellings, 2 being abandoned and 7.59 km^2 of cultivated land. In total, it has been established that 160 structures and 0.69 km^2 of cultivated land could be lost as a result of the linear infrastructure components of the project.

Apart from the structures and cultivated areas that will be lost as a result of the project 124 structures have also been identified as being within 5 m of the project and therefore are at risk. The facilities at risk are largely associated with the linear components of the project which include access roads, pipelines and power lines and, as a relatively wide servitude is currently being used for the purpose of identifying these components, it is possible to re-align the routes to avoid the majority, if not all of these structures at risk. The primary mitigation measures applied in these instances is avoidance and considering that the pipeline will be buried it is possible that the servitudes can be restored to their original condition after construction. The facilities within the project servitude/footprint and those at risk, will be addressed more specifically below as associated with each of the various components of the project.

SOCIAL IMPACT VARIABLES

The social impact variables considered across the project are clustered in the following seven main categories.

1. Health and social well-being impacts
2. Quality of the living environment (Liveability) impacts
3. Economic impacts and material well-being impacts
4. Cultural impacts
5. Family and community impacts
6. Institutional, legal, political and equity impacts
7. Gender relations impacts.

The social impact of the various project components, including the no project option, were assessed during the construction and operation phase, according to the above variables, and mitigation measures proposed, which are summarised in the Impact Statement.

DAMS AND ASSOCIATED WATER INFRASTRUCTURE

Most negative impacts will occur during the construction phase of the project as a result of the need for resettlement, the loss of land and the influx of the construction workforce. The size and extent of the project will result in these impacts being significant and wide spread, however, they will largely be of a temporary nature and many can be mitigated. Notwithstanding this, however, the impact of resettlement on both the displaced and host communities must not be under estimated. It is also important to reduce the impact of the influx of construction workers by utilising local labour as far as possible.

The negative operational impacts, although they extend over a long period, are likely to be less significant with the more significant impacts, such as economic development and investment and the provision of domestic and agricultural water, being of high significance for the area. The provision of water, for both domestic and agricultural use, is likely to have an effect on the division of labour. On the domestic front this is likely to be positive in nature releasing women from the arduous and time consuming task of collecting water. With regard to agriculture, however, this may result in an increased work burden being placed on women due to double or triple cropping with women undertaking such tasks as weeding.

ELECTRICITY GENERATION AND DISTRIBUTION INFRASTRUCTURE

As with the construction of the dams and associated water infrastructure most social impacts are related to the construction phase of the project. As this aspect of the project is not a stand-alone project it must be considered on a cumulative basis together with the rest of the project components, as the cumulative effect will be greatest. A unique aspect of the generation and distribution of electricity concerns exposure to electromagnetic fields. There has been wide international concern regarding the effect that electromagnetic fields have on public health and a possible link to various cancers. On a positive basis the hydro-

electricity scheme has the potential to positively contribute to the economy, which would have positive social benefits.

ROAD INFRASTRUCTURE

As with the electricity generation and distribution infrastructure the realignment and upgrading of roads is not a separate project and must, at the social level, be assessed together with all the other project components. The unique aspect of the road infrastructure concerns easier access to the area, which will carry with it both positive and negative consequences. On the positive side communities living in the area will have easier access into and out of the area as will tourists wanting to visit the area. On a more negative basis, easier access could hasten the effects of globalisation and the changes to local norms and culture. Vulnerable groups may also face greater psychological and social impacts due to rapid change as a result of greater access and exposure to outsiders

LALINI DAM ALTERNATIVES

With regard to the Lalini Dam, three dam sizes are under consideration:

Option	Structures lost	Cultivated land inundated
1	12	7.58762 km^2
2	2	4.9539 km^2
3	77	12.08256 km^2

Of these Option 1 is the technically preferred option while Option 2 emerges as the socially preferred as it involves the loss of fewer structures and less land. The technically preferred option is acceptable with the careful application of mitigation measures aimed at reducing the impact, particularly on displaced and host communities.

CONCLUSION AND RECOMMENDATIONS

It is clear that the area is underdeveloped and poor and that the proposed project holds potential for significant development and growth in the area. There are, however, a number of concerns relating to institutional capacity in the area and the need for correct implementation of the various project benefits, suggested by Mike Muller, which would need to be in place to ensure project success.

With the Constitutional and policy obligations placed on the authorities to deliver water to the poor, the project holds the potential to move beyond this and uplift the state of development in the area. However, only through a carefully coordinated, planned and management effort and with close cooperation between the different agencies and broad based community buy in, is the project likely to succeed.

Due to a lack of available information the effect that the project will have on communities living both up- and downstream of the dams was not assessed. It is, however, important to consider these communities and to investigate, assess and mitigate any negative effects that the dams may have on these communities.

ENVIRONMENTAL IMPACT ASSESSMENT FOR THE MZIMVUBU WATER PROJECT – SOCIAL IMPACT ASSESSMENT

DEA REF No. 14/12/16/3/3/2/677 (Dam construction application)
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Acronyms and abbreviations

AD	Anno Domini
AIDS	Acquired immunodeficiency syndrome
AsgiSA-EC	Accelerated and Shared Growth Initiative for South Africa – Eastern Cape
BID	Background Information Document
BUF	Buffalo City Metropolitan Municipality
CFRD	Concrete-faced rockfill dam
DC10	Cacadu District Municipality
DC12	Amarole District Municipality
DC13	Chris Hani District Municipality
DC14	Joe Gqabi District Municipality
DC15	O. R. Tambo District Municipality
DSR	Draft Scoping Report
DEIR	Draft Environmental Impact Assessment Report
DC44	Alfred Nzo District Municipality
DM	District Municipality
DWS	Department of Water and Sanitation
EC141	Elundini Local Municipality
EC156	Mhlontlo Local Municipality
EC422	Umzimvubu Local Municipality
EC444	Ntabankulu Local Municipality
EC	Eastern Cape
ECRD	Earth Core Rockfill Dam
ECSECC	Eastern Cape Socio Economic Consultative Council
EF	Earthfill (dam)
EIA	Environmental Impact Assessment
EMFs	Electromagnetic fields
EMPR	Environmental Management Programme Reports
ESIA	Environmental and Social Impact Assessment
EWR	Environmental Water Requirements
FAO	Food and Agricultural Organisation
FSL	Full Supply Level
GDP	Gross Domestic Product
HIV	Human Immunodeficiency Virus
I&AP	Interested and Affected Party
IEM	Integrated Environmental Management
IDP	Integrated Development Plan
ILO	International Labour Organisation
MAR	Mean annual runoff (from catchment)
NEMA	National Environmental Management Act
NMA	Nelson Mandela Bay Metropolitan
NWA	National Water Act
NDP	National Development Plan

NBA	Dr Neville Bews and Associates
RAP	Relocation Action Plan
SAPS	South African Police Services
SANRAL	South African National Road Agency Limited
SIA	Social Impact Assessment
SDF	Spatial Development Framework
SLA	Sustainable Livelihood Approach
SMC	Study Management Committee
SMME	Small Medium and Micro Enterprises
SPV	Special Purpose Vehicle
Stats SA	Statistics South Africa
STDs	Sexually Transmitted Diseases
TCTA	Trans Caledon Tunnel Authority
ToR	Terms of Reference
UN	United Nations
WRYM	Water Resources Yield Model
WSA	Water Services Authority
WTW	Water Treatment Works
WTP	Water Treatment Plant
WULA	Water Use Licence Application
WHO	World Health Organisation

List of units

MW	Mega Watt
m	Metres
km	Kilometres
km^2	Square Kilometres
GW	Gigawatt
GWh/a	Gigawatt hour per annum
ha	Hectare
°C	Degrees Celsius
%	Percentage

1. INTRODUCTION

1.1 BACKGROUND

The Department of Water and Sanitation (DWS) commissioned the Mzimvubu Water Project, an integrated multi-purpose (domestic water supply, agriculture, power generation, transport, tourism, conservation and industry) project, with the intention of providing a socio-economic development opportunity for the region.

Environmental authorisation is required for the infrastructure components of the project. The purpose of the Environmental Impact Assessment (EIA) is to assess the components of the project that are listed activities by the National Environmental Management Act (NEMA) for which the DWS has the mandate and intention to implement. The EIA process will provide the information that the environmental authorities require to decide whether the project should be authorised or not, and if so under what conditions.

As part of this EIA process Dr Neville Bews & Associates (NBA) have been contracted to undertake a Social Impact Assessment.

1.2 PURPOSE OF THIS REPORT

The purpose of the study is to identify the social baseline conditions in which the proposed project will unfold and to acquire an understanding of the proposed project. Against this background, the primary objective was to identify the issues and concerns associated with the Mzimvubu Water Project and to identify, assess and propose mitigation for the likely social impacts that may occur as a result of the proposed project. These social impact variables are categorised as follows:

- Health and social well-being
- Quality of the living environment
- Economic and material well-being
- Cultural
- Family and community
- Institutional, legal, political and equity and
- Gender relations

1.3 DETAILS AND EXPERTISE OF THE SPECIALIST

Qualifications:

University of South Africa: B.A. (Honours) – 1984
Henley Management College, United Kingdom: The Henley Post-Graduate Certificate in Management – 1997
Rand Afrikaans University: M.A. (cum laude) – 1999
Rand Afrikaans University: D. Litt. et Phil. – 2000

Projects:

The Social Impact Assessment (SIA) for the Gautrain Rapid Rail Link; The impact assessment for the Australian – South African sports development programme; SIA for Kumba Resources, Sishen South Project; Evaluation of a Centre for Violence Against Women for The United Nations Office on Drugs and Crime; SIAs for the following Exxaro Resources Ltd.'s mines, Leeuwpan Coal Mine Delmas, Glen Douglas Dolomite Mine Henley-on-Klip, Grootegeluk Open Cast Coal Mine Lephalale; SIA for the South African National Road Agency Limited (SANRAL) on Gauteng Freeway Improvement Project; SIA for SANRAL on the N2 Wild Coast Toll Highway; Research into research outputs of the University for the University of Johannesburg; SIA for Waterfall Wedge housing and business development in Midrand Gauteng; SIA for the Environmental Management Plan for Sedibeng District Municipality; Social and Labour Plan for the Belfast Project on behalf of Exxaro Resources Ltd; SIA for the Transnet New Multi-Product Pipeline (Commercial Farmers) on behalf of Golder Associates Africa (Pty) Ltd; SIA for the Proposed Vale Moatize Power Plant Project in Mozambique on behalf of Golder Associates Africa (Pty) Ltd; SIA for Kumba Resources Ltd.'s proposed Dingleton Resettlement Project at Sishen Iron Ore Mine on behalf of Water for Africa (Pty) Ltd; SIA for Gold Fields West Wits Project for EcoPartners; SIA for the Belfast Project for Exxaro Resources Ltd; SIA for Eskom Holdings Ltd.'s Proposed Ubertas 88/11kV Substation on behalf of KV3 Engineers (Pty) Ltd; SIA for the Mokolo and Crocodile River (West) Water Augmentation Project for the Department of Water and Sanitation on behalf of Nemai Consulting and the Trans Caledonian Water Authority; Assisted Octagon Consulting with the SIA for Eskom's Nuclear 1 Power Plant on behalf of Arcus GIBB Engineering & Science. SIA for the 150MW Photovoltaic Power Plant and Associated Infrastructure for Italgest Energy (Pty) Ltd, on behalf of Kalahari Survey Solutions cc. SIA for Eskom Holdings Limited, Transmission Division's Neptune-Poseidon 400kV Power Line on behalf of Nemai Consulting. Ncwabeni Off-Channel Storage Dam for security of water supply in Umzumbe, KwaZulu-Natal. Social Impact assessment for Eskom Holdings Limited, Transmission Division, Forskor-Merensky 275kV ±130km Powerline and Associated Substation Works in Limpopo Province. Social impact assessment for the proposed infilling of the Model Yacht Pond at Blue Lagoon, Stiebel Place, Durban. ABC Prieska Solar Project; Proposed 75 MWp Photovoltaic Power Plant and its associated infrastructure on a portion of the remaining extent of ERF 1 Prieska, Northern Cape. Sekoko Wayland Iron Ore, Molemole Local Municipalities in Limpopo Province. Langpan Chrome Mine, Thabazimbi, Limpopo; Jozini Nodal Expansion Implementation Project, KwaZulu-Natal, on behalf of Nemai Consulting; SIA for Glen Douglas Dolomite Burning Project, Midvaal Gauteng, on behalf of Afrimat Limited; SIA for Lyttelton Dolomite mine Dolomite Burning Project, Marble Hall Limpopo on behalf of Afrimat Limited; Tubatse Strengthening Phase 1 – Senakangwedi B Integration for Eskom Transmission on behalf of Nsovo Environmental Consulting.

Regularly lecture in the Department of Sociology at the University of Johannesburg and collaborated with Prof. Henk Becker of Utrecht University, the Netherlands, in a joint lecture

to present the Social Impact Assessment masters course via video link between the Netherlands and South Africa and regularly lecture on this course. Presented papers on Social Impact Assessments at both national and international seminars. Published on both a national and international level.

Affiliation:

- The South African Affiliation of the International Association for Impact Assessment.
- Registered on the database for scientific peer review of iSimangaliso GEF project outputs.

1.4 STRUCTURE OF THIS REPORT

This specialist study is undertaken in compliance with Regulation 32 of GN 543. **Table 1 - 1** and indicates how the requirements of Regulation 32 of GN 543 have been fulfilled in this report.

Table 1 - 1: Report content requirements in terms of Regulation 32 of GN 543

Regulatory Requirements in terms of Regulation 32 of GN 543	Section of Report
(a) The person who prepared the report; and the expertise of that person to carry out the specialist study or specialised process.	Chapter 1
(b) a declaration that the person is independent	Page iv
(c) an indication of the scope of, and the purpose for which, the report was prepared	Chapters 1 and 3
(d) a description of the methodology adopted in preparing the report or carrying out the specialised process	Chapter 3
(e) a description of any assumptions made and any uncertainties or gaps in knowledge	Chapter 4
(f) a description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives, on the environment	Chapters 7 & 8
(g) recommendations in respect of any mitigation measures that should be considered by the applicant and the competent authority	Chapter 7 &11
(h) a description of any consultation process that was undertaken during the course of carrying out the study	Chapter 6
(i) a summary and copies of any comments that were received during any consultation process	Chapter 6
(j) any other information requested by the competent authority.	Chapter 10

2. PROJECT BACKGROUND SUMMARY

2.1 LOCALITY

The project footprint spreads over three District Municipalities (DMs) namely the Joe Gqabi DM in the north west, the O. R. Tambo DM in the south west and the Alfred Nzo DM in the east and north east.

The proposed Ntabelanga Dam site is located approximately 25 km east of the town of Maclear and north of the R396 Road. The proposed Lalini Dam site is situated approximately 17 km north east of the small town Tsolo. Both are situated on the Tsitsa River.

2.2 MAIN PROJECT COMPONENTS

Water Resource Infrastructure includes:

- A dam at the Ntabelanga site with a storage capacity of 490 million m^3;
- A dam at the Lalini site with a storage capacity of approximately 150 million m^3;
- A pipeline and tunnel and a power house at Lalini Dam site for generating hydropower;
- Five new flow measuring weirs will be required in order to measure the flow that is entering and released from the dams. These flow gauging points will be important for monitoring the implementation of the Reserve and for operation of the dams.
- Wastewater treatment works at the dam sites;
- Accommodation for operations staff at the dam sites; and
- An information centre at each of the two dam sites.

The Ntabelanga Dam will supply potable water to 539 000 people, wich is estimated to rise to 730 000 people by year 2050. The domestic water supply infrastructure will include:

- A river intake structure and associated works;
- A regional water treatment works at Ntabelanga Dam;
- Potable bulk water distribution infrastructure for domestic and industrial water requirements (primary and secondary distribution lines);
- Bulk treated water storage reservoirs strategically located; and
- Pumping stations.

The Ntabelanga Dam will also provide water to irrigate approximately 2 900 ha. This project includes bulk water conveyance infrastructure for raw water supply to edge of field.

About 2 450 ha of the high potential land suitable for irrigated agriculture are in the Tsolo area and the rest near the proposed Ntabelanga Dam and along the river, close to the villages of Machibini, Nxotwe, Culunca, Ntshongweni, Caba, Kwatsha and Luxeni.

There will be a small hydropower plant at the Ntabelanga Dam to generate between 0.75 MW and 5 MW (average 2.1 MW). This will comprise a raw water pipeline from the dam to a building containing the hydropower turbines and associated equipment, and a discharge

pipeline back to the river just below the dam wall. The impact is expected to be similar to that of a pumping station.

The hydropower plant at the proposed Lalini Dam and tunnel (used conjunctively with the Ntabelanga Dam) will generate an average output of 30 MW when operated as a base load power station and up to 150 MW if operated as peaking power station. The power plant will require a pipeline (approximately 4.6 km) and tunnel (approximately 3.2 km) linking the dam to the power plant downstream of the dam and below the gorge.

The power line to link the Lalini power station to the existing Eskom grid will be approximately 18.5 km and the power line linking the Ntabelanga Dam to the Eskom grid will be approximately 13 km. Power lines will be constructed to supply power for construction at the two dam sites and for operating five pumping and booster stations along the bulk distribution infrastructure.

The area to be inundated by the dams will submerge some roads. Approximately 80 km of local roads will therefore be re-aligned. Additional local roads will also be upgraded to support social and economic development in the area. The road design will be very similar to the existing roads as well as be constructed using similar materials.

The project is expected to cost R 12.45 billion and an annual income of R 5.9 billion is expected to be generated by or as a result of the project during construction and R 1.6 billion per annum during operation. It will create 3 880 new skilled employment opportunities and 2 930 un-skilled employment opportunities during construction.

2.3 ALTERNATIVES

The following project level alternatives will be assessed:

- Three hydro power tunnel positions and associated power lines;
- Peak versus Base load power generation;
- Three different dam sizes for the Lalini Dam; and
- The no project option.

For the construction camps, pipeline routes and new roads, the specialist will identify any sensitive areas and deviations to avoid these will be proposed in consultation with the technical team.

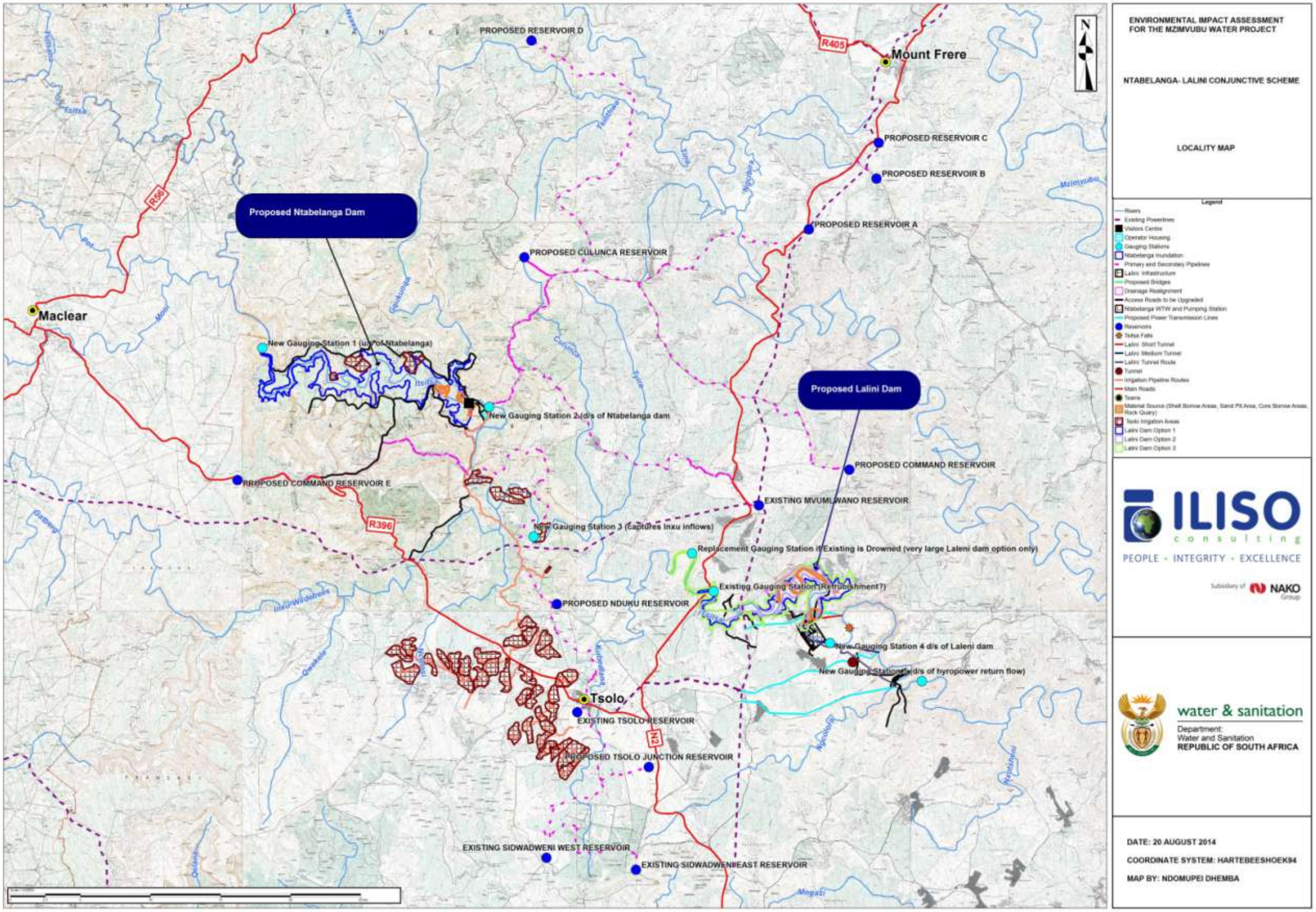


Figure 1 - 1: Locality map

3. TERMS OF REFERENCE

3.1 SCOPE OF THE STUDY

To consider the extent of the proposed project and social environment within which the project will be placed and accordingly identify the potential social impacts that are likely to arise as a result of the project. These impacts are identified on the basis of the issues and concerns raised by the Interested and Affected Parties (I&APs), the findings of other specialists and secondary data sources such as reports and responses generated in response to the project. The final aim of this report is to identify various optimisation and mitigation measures in an effort to compensate for the adverse social impacts of the proposed project.

3.2 METHODOLOGY

Both a quantitative and qualitative methodological approach was applied throughout the study, in a research technique referred to as triangulation. A recognised impact assessment technique was applied in assessing the impacts and is described below in greater detail.

Data was gathered through:

- A scan and analysis of the Draft Scoping Report prepared for the project by ILISO Consulting (Pty) Ltd.
- Statistics South Africa, Census 2011; Quarterly Labour Force Survey First Quarter, 2013.
- A comprehensive scan of the Issues and Response Report generated by ILISO Consulting (Pty) Ltd.
- Site visits and consultations with traditional leaders, the affected communities and other I&APs.
    - This fieldwork was undertaken between 23 June 2014 to 11 July, 2014 and over this period those structures directly and indirectly affected by the project were identified and photographically recorded.
- Discussions with the project proponents and Environmental Impact Assessment Consultants.
    - 03 March 2014, 20 May 2014, 21 July 2014 and 29 July 2014.
- A literature review of various documents such as the relevant municipal Integrated Development Plans (IDPs) and other specialist reports and documents.
- A broader literature scan.

3.3 IMPACT CRITERIA AND RATING SCALE

The social impacts are rated in accordance with the Environmental Impact Assessment Regulations, 2010 and the criteria drawn from the Integrated Environmental Management (IEM) Guidelines Series, Guideline 5: Assessment of

Alternatives and Impacts, published by the DEAT, 2006 as well as the Guideline Document on Impact Significance (DEAT, 2002) as listed below.

The key issues identified during the Scoping Phase inform the terms of reference of this specialist study. Each issue consists of components that on their own or in combination with each other give rise to potential impacts, either positive or negative, from the project onto the environment or from the environment onto the project. The significance of the potential impacts is considered before and after identified mitigation is implemented, for direct, indirect, and cumulative impacts, in the short and long term.

A description of the nature of the impact, any specific legal requirements and the stage (construction / decommissioning or operation) is given. Impacts are considered to be the same during construction and decommissioning.

The following criteria have been used to evaluate significance:

- **Nature:** This is an appraisal of the type of effect the activity is likely to have on the affected environment. The description includes what is being affected and how. The nature of the impact will be classified as positive or negative, and direct or indirect.

- **Extent and location:** This indicates the spatial area that may be affected (Table 1 - 2:).

Table 1 - 2: Geographical extent of impact

Rating	Extent	Description
1	Site	Impacted area is only at the site – the actual extent of the activity.
2	Local	Impacted area is limited to the site and its immediate surrounding area
3	Regional	Impacted area extends to the surrounding area, the immediate and the neighbouring properties.
4	Provincial	Impact considered of provincial importance
5	National	Impact considered of national importance – will affect entire country.

- **Duration:** This measures the lifetime of the impact (**Table 1 - 3**).

Table 1 - 3: Duration of Impact

Rating	Duration	Description
1	Short term	0 – 3 years, or length of construction period
2	Medium term	3 – 10 years
3	Long term	> 10 years, or entire operational life of project.
4	Permanent – mitigated	Mitigation measures of natural process will reduce impact – impact will remain after operational life of project.
5	Permanent – no mitigation	No mitigation measures of natural process will reduce impact after implementation – impact will remain after operational life of project.

- **Intensity/severity:** This is the degree to which the project affects or changes the environment; it includes a measure of the reversibility of impacts (**Table 1 - 4**).

Table 1 - 4: Intensity of Impact

Rating	Intensity	Description
1	Negligible	Change is slight, often not noticeable, natural functioning of environment not affected.
2	Low	Natural functioning of environment is minimally affected. Natural, cultural and social functions and processes can be reversed to their original state.
3	Medium	Environment remarkably altered, still functions, if in modified way. Negative impacts cannot be fully reversed.
4	High	Cultural and social functions and processes disturbed – potentially ceasing to function temporarily.
5	Very high	Natural, cultural and social functions and processes permanently cease, and valued, important, sensitive or vulnerable systems or communities are substantially affected. Negative impacts cannot be reversed.

- **Potential for irreplaceable loss of resources:** This is the degree to which the project will cause loss of resources that are irreplaceable (**Table 1 - 5**).

Table 1 - 5: Potential for irreplaceable loss of resources

Rating	Potential for irreplaceable loss of resources	Description
1	Low	No irreplaceable resources will be impacted.
3	Medium	Resources can be replaced, with effort.
5	High	There is no potential for replacing a particular vulnerable resource that will be impacted.

- **Probability:** This is the likelihood or the chances that the impact will occur (**Table 1 - 6**).

Table 1 - 6: Probability of Impact

Rating	Probability	Description
1	Improbable	Under normal conditions, no impacts expected.
2	Low	The probability of the impact to occur is low due to its design or historic experience.
3	Medium	There is a distinct probability of the impact occurring.
4	High	It is most likely that the impact will occur
5	Definite	The impact will occur regardless of any prevention measures.

- **Confidence:** This is the level of knowledge or information available, the environmental impact practitioner or a specialist had in his/her judgement (**Table 1 - 7**).

Table 1 - 7: Confidence in level of knowledge or information

Rating	Confidence	Description
1	Low	Judgement based on intuition, not knowledge / information.
2	Medium	Common sense and general knowledge informs decision.
3	High	Scientific / proven information informs decision.

- **Consequence:** This is calculated as extent + duration + intensity + potential impact on irreplaceable resources.

- **Significance:** The significance will be rated by combining the consequence of the impact and the probability of occurrence (i.e. consequence x probability = significance). The maximum value which can be obtained is 100 significance points (**Table 1 - 8**).

Table 1 - 8: Significance of issues (based on parameters)

Rating	Significance	Description
1-14	Very low	No action required.
15-29	Low	Impacts are within the acceptable range.
30-44	Medium-low	Impacts are within the acceptable range but should be mitigated to lower significance levels wherever possible.
45-59	Medium-high	Impacts are important and require attention; mitigation is required to reduce the negative impacts to acceptable levels.
60-80	High	Impacts are of great importance, mitigation is crucial.
81-100	Very high	Impacts are unacceptable.

- **Cumulative Impacts:** This refers to the combined, incremental effects of the impact. The possible cumulative impacts will also be considered.

- **Mitigation:** Mitigation for significant issues will be incorporated into the EMP.

The relevant legislation and guidelines associated with the project are addressed under the next section.

3.4 LEGISLATION AND GUIDELINES CONSIDERED

The Social Impact Assessment (SIA) forms part of the environmental authorisation process and is guided by the following national legislation.

- **The Constitution of the Republic of South Africa, 1996**
  The Constitution is relevant in that it stipulates a number of basic rights enjoyed by South African citizens which, amongst others, include:
  - Section 24: The right to a healthy environment and to have the environment protected for the benefit of present and future generations.
  - Section 25: The right to property and no law may permit arbitrary deprivation of property, limited in that property may only be expropriated under a law of general application, for a public purpose and subject to compensation.
  - Section 26: The right to adequate housing, including the right to due process with regard to court-ordered eviction and demolition.
  - Section 27: The rights to access to food, water, health care and social assistance, which the state must progressively realise within the limits of its resources.
  - Section 32: The right of access to information, including all information held by the government and required for the exercise or protection of any rights.
  - Section 33: The right to justice in administrative action by the state.

- **National Environmental Management Act (Act 107 of 1998)**

The preamble of Act 107 of 1998 indicates that;

> "*everyone has the right to an environment that is not harmful to his or her health or well-being;*
>
> *the State must respect, protect, promote and fulfil the social, economic and environmental rights of everyone and strive to meet the basic needs of previously disadvantaged communities;*
>
> *inequality in the distribution of wealth and resources, and the resultant poverty, are among the important causes as well as the results of environmentally harmful practices;*

sustainable development requires the integration of social, economic and environmental factors in the planning implementation and evaluation of decisions to ensure that development serves present and future generations".

The implications of this Act for the project are laid out in the preamble.

- **National Water Act (Act 36 of 1998)**
  The preamble of Act 36 of 1998 indicates that the purpose of the Act is in;

  "*Recognising that water is a scarce and unevenly distributed national resource which occurs in many different forms which are all part of a unitary, interdependent cycle;*

  Recognising that while water is a natural resource that belongs to all people, the discriminatory laws and practices of the past have prevented equal access to water, and use of water resources;

  Acknowledging the National Government's overall responsibility for and authority over the nation's water resources and their use, including the equitable allocation of water for beneficial use, the redistribution of water, and international water matters;

  Recognising that the ultimate aim of water resource management is to achieve the sustainable use of water for the benefit of all users;

  Recognising that the protection of the quality of water resources is necessary to ensure sustainability of the nation's water resources in the interests of all water users; and

  *Recognising the need for the integrated management of all aspects of water resources and, where appropriate, the delegation of management functions to a regional or catchment level so as to enable everyone to particip*ate".

The implications of this Act for the project are laid out in the preamble.

- **Promotion of Administrative Justice Act (Act 3 of 2000)**
  This Act gives effect to provisions under the Constitution and Bill of Rights that secure for citizens the right to:
  - Fair and reasonable administrative action;
  - Access to the reasons for any administrative actions that affect their rights in a negative manner and

- The right to challenge decisions which they believe are erroneous.

The Act has implications in that it requires administrators to act in a fair and respectful manner regarding the rights of citizens as laid out in the Constitution. The powers of government are limited under this Act which indicates how such powers can be exercised and requires that government function in an open, transparent, accountable and participative manner.

- **Traditional Leadership and Governance Framework Amendment Act (Act 23 of 2009)**
  Act 23 of 2009 amends the Traditional Leadership and Governance Framework Act (Act 41 of 2003) and provides for communities to decide for themselves if they want to be regarded as a traditional community in terms of their customs and to observe a system of customary law.

  The implications of this Act are that it describes the roles and powers of traditional leaders and the manner in which communication with traditional communities should occur. The Act also prescribes the power held by the traditional authorities within the project area in terms of acting on behalf of communities within their area of jurisdiction. This is relevant in respect of land acquisition negotiations and granting access to the construction workforce.

- **Water Services Act (Act 108 of 1997)**
  Act 108 of 1997 provides for;
  " *…the rights of access to basic water supply and basic sanitation; …the setting of national standards and of norms and standards for tariffs and water services development plans*".

  The relevance of this Act is that it acknowledges both the duty and role of all spheres of Government in providing water supply services and sanitation services sufficient for subsistence and sustainable economic activity.

- **Development Facilitation Act (Act 67 of 1995)**
  The relevance of this Act is associated with its main purpose which is to prescribe land development procedures in respect of land use that both includes and excludes small scale farming. Different procedures for the two different circumstances are prescribed through the Act. Although the principles in the Act are specifically aimed at land development, the close integration between the use of land and water as resources means that the principles should be applied in the use of water as well. The Act also deals with land tenure matters and promotes both the establishment of viable communities and sustainable environments.

The following strategies and guidelines also apply:

- **National Development Plan (NDP)**
  The NDP serves as a strategic framework for future government planning with the aim of eliminating poverty and reducing inequality across the country by 2030. The focus of the plan is on increasing employment, strengthening the social wage, improving public transport and boosting rural incomes. It is also suggested in the NDP that public infrastructure investment be set at 10 percent of South Africa's gross domestic product (GDP) which, together with an emphasis on raising rural incomes, make it relevant in respect of this project.

- **National Water Resources Strategy (June 2013)**
  This strategy provides a national framework against which water resources across the country will be managed and in this sense aims to;
  " *…ensure that national water resources are protected, used, developed, conserved, managed and controlled in an efficient and sustainable manner towards achieving South Africa's development priorities in an equitable manner over the next five to 10 years. This Strategy responds to priorities set by Government within the National Development Plan (NDP) and National Water Act (NWA) imperatives that support sustainable development. The NWRS2 acknowledges that South Africa is a water-stressed country and is facing a number of water challenges and concerns, which include security of supply, environmental degradation and resource pollution, and the inefficient use of water*" (Department of Water Affairs, 2013a, p. iii).

- **Department of Water Affairs and Forestry (DWAF) Generic Public Participation Guidelines**
  These guidelines were published in September 2001 by what at that time was the Department of Water Affairs and Forestry and lists the following sixteen principles underpinning the public participation process:
  - *Inclusive involvement of stakeholders*: requires all relevant stakeholders have the opportunity to be involved in the initiative.
  - *Integration*: emphasizes the inclusion of both public issues and technical assessments in the public participation process that contributes to decision-making.
  - *Mutual respect among role players*: this principle stresses that role-players should acknowledge and respect each other's knowledge, abilities and inputs.
  - *Continuity in participation*: refers to the participation of role-players throughout the initiative.

- *Consideration of multiple options*: supports stakeholders to consider various alternatives within an initiative.
- *Flexibility*: refers to the need for a public participation process to adapt to different circumstances.
- *Transparency*: to the honest, open and equitable nature of public participation.
- *Accountability and commitment*: stresses that role-players should be encouraged to take responsibility for the process of public participation.
- *Rights and roles*: this principle strengthens role-players' understanding of their own and other role-player's contribution to the success of public participation.
- *Accessibility of information*: enables effective participation by supporting stakeholders to be well-informed and knowledgeable.
- *Awareness creation*: refers to the need to make stakeholders aware of issues affecting them and how they might influence the outcomes of the process.
- *Capacity building and empowerment*: requires that all stakeholders be granted both the opportunity and support to participate meaningfully.
- *Efficiency*: refers to a public participation plan that maintains the momentum of a clear and definite process.
- *Suitability of scale of involvement*: stresses the fact that the intensity of public participation is relative to the impacts of the decision and suitable to the scale and type of initiative

  (Republic of South Africa, Department of Water Affairs and Forestry, 2001, pp. 15-21).

- **Guideline for Involving Social Assessment Specialists in EIA Processes (Barbour, 2007)**

  These guidelines direct the role of social assessments specialists in the Environmental Impact Assessment (EIA) process within the South African context.

- **International Association for Impact Assessment Publications, International Principles for Social Impact Assessment (Vanclay, 2003)**

  This document encapsulates the core values of the international SIA community providing a set of principles to guide SIA practitioners in incorporating the social element into environmental impact assessments.

- **World Commission on Dams: Social Impact Assessment; paper prepared by Vanclay, 2000 for the World Commission on Dams**
  This paper provides " …*best practice recommendations and general principles of social impact assessment that are relevant for large dams* (Vanclay, 2000, p. 1)

- **Involuntary Resettlement Source Book: Planning and Implementation in Development Projects** (The World Bank, 2004)
  This document is regarded by the World Bank as a social and environmental safeguard policy and is utilised here as a best practice guideline.

4. ASSUMPTIONS AND LIMITATIONS

Assumptions:

- It is assumed that the information provided by the project proponents was accurate and that the feasibility study for the Mzimvubu Water Project was undertaken with integrity and is an accurate reflection of the situation on the ground.

- It is assumed that all information provided by the independent environmental assessment practitioner was accurate as was the information provided in other specialist studies used in this report.

- It was assumed that the information gathered through the public participation process was a true reflection of the attitude of the public towards the project and as such was accurately recorded.

Limitations:

- The study is based on data obtained by Statistics SA during Census 2011 which, dating back to October, 2011, is becoming somewhat out dated. To compensate for this limitation data was also acquired from other sources such as the Eastern Cape Socio-Economic Consultative Council (ECSECC) as well as the relevant district and local Integrated Development Plans and Spatial Development Frameworks.

- Although an attempt was made within the available time frame and budgetary constraints to gather as wide a range of data as possible there was a limitation to the data that could be gathered.

- The region is administered through the Traditional Authority Structures making it difficult to freely consult with people who are reluctant to participate outside of these structures.

- Information regarding the up- and down-stream situation for both dams was not available at the time of writing and consequently these effects were not assessed.

5. DESCRIPTION OF THE AFFECTED ENVIRONMENT

The project is located within the Eastern Cape (EC) Province of South Africa which consists of the following 2 metropolitan and 6 district municipalities:

- Buffalo City Metropolitan Municipality (BUF);
- Nelson Mandela Bay Metropolitan Municipality (NMA);
- Cacadu District Municipality (DC10)
- Amatole District Municipality (DC12)
- Chris Hani District Municipality (DC13)
- Joe Gqabi District Municipality (DC14)
- O.R. Tambo District Municipality (DC15) and
- Alfred Nzo District Municipality (DC44).

The district and local municipalities directly associated with the project are;

- Joe Gqabi District Municipality (DC14)
  - Elundini Local Municipality (EC141);
- O.R. Tambo District Municipality (DC15)
  - Mhlontlo Local Municipality (EC156);
- Alfred Nzo District Municipality (DC44)
  - Umzimvubu Local Municipality (EC442)
  - Ntabankulu Local Municipality (EC444)
  - Nyandeni Local Municipality (EC155).

The Ntabelanga – Lalini Conjunctive Scheme, as it relates to the district and local municipal areas, is depicted in **Figure 5 - 1**.

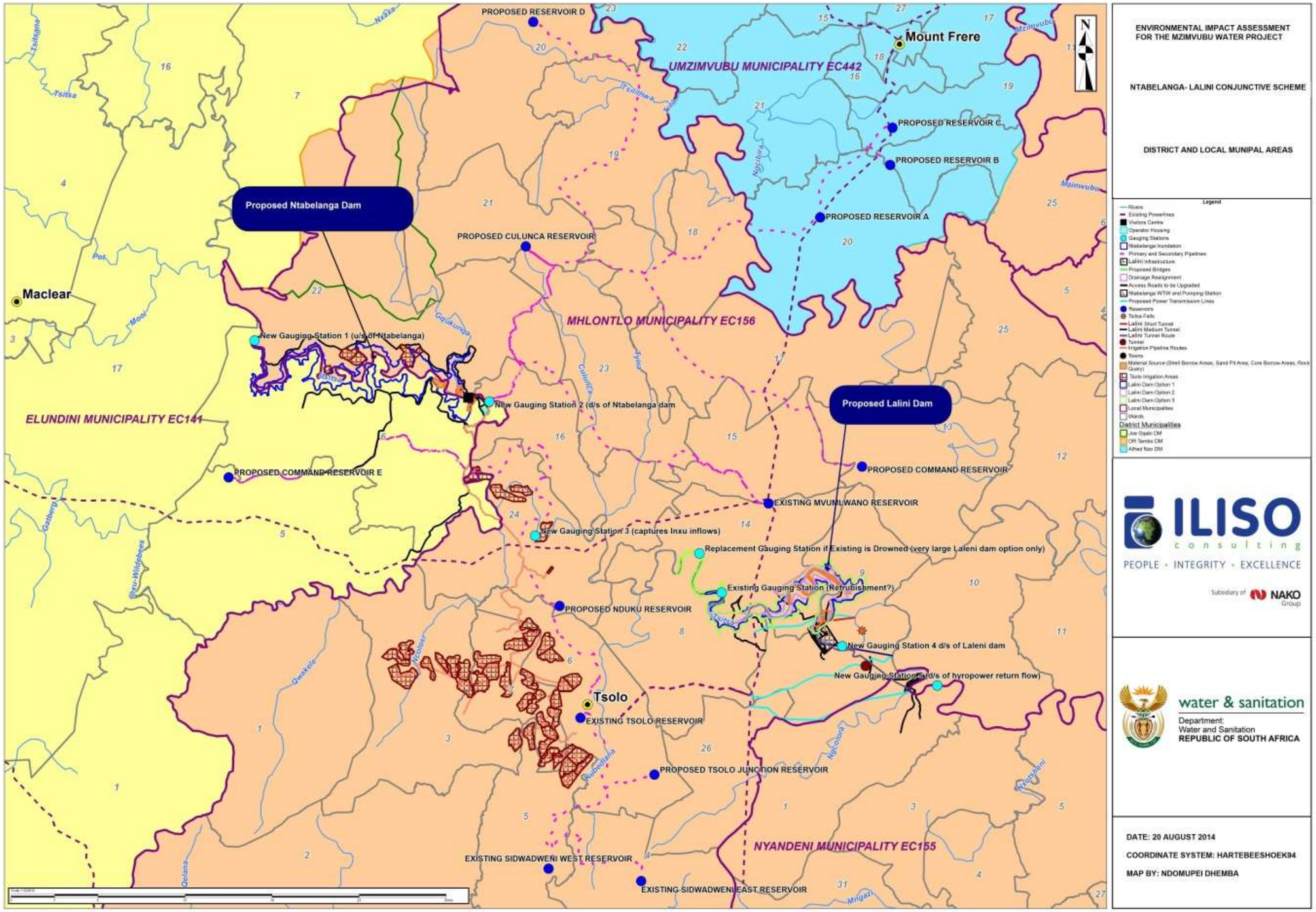
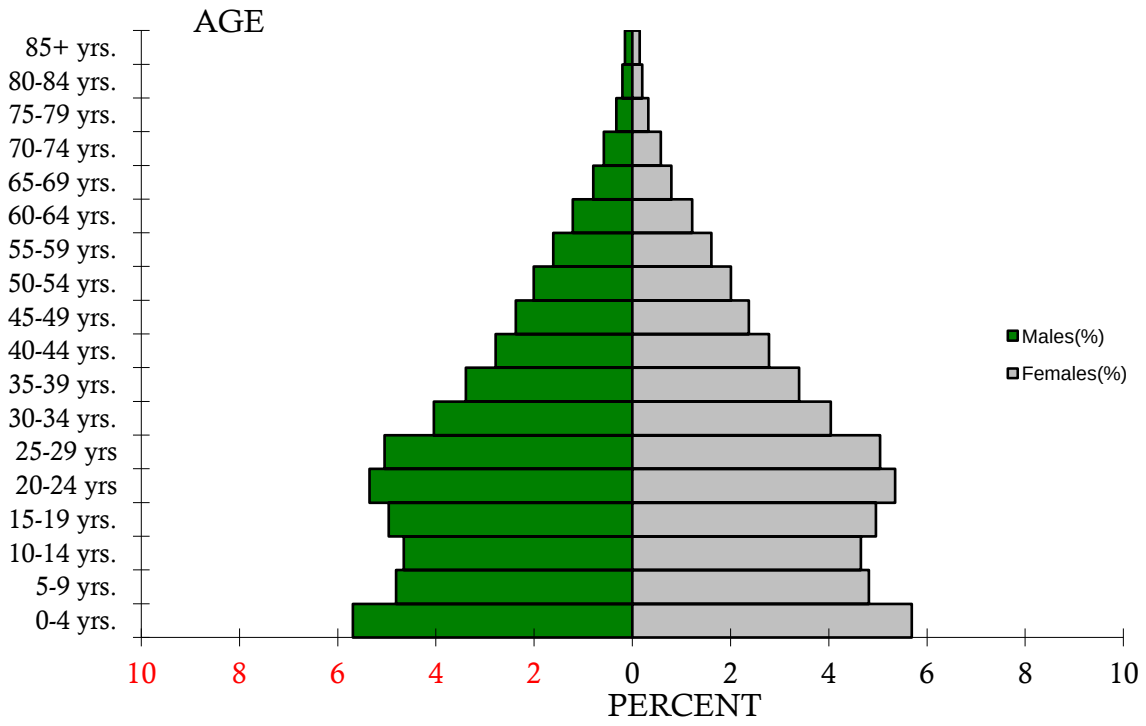


Figure 5 - 1: The Ntabelanga – Lalini Conjunctive Scheme as related to the municipalities

5.1 PROVINCIAL DESCRIPTION

The Eastern Cape Province covers an area of 168 966 km^2 making it the second largest province by geographical area, covering 13.8% of South Africa's total land mass. This is only surpassed by the Northern Cape which covers an area of 372 889 km^2 accounting for 30.5% of the total land area of the country. The total population of the province stood at 6 562 053 people in 2011 (Statistics South Africa, 2012) and was estimated at 6 620 100 people in June, 2013 (Statistics South Africa, 2013, p. 3). Consequently, the province is ranked third in respect of population size and has a population density of 39/km^2. This makes it the sixth densely populated province in South Africa. In respect of age structure, 33.0% of the population is under 15 years of age, while 60.2% is between 15 and 64 years with 6.7% being over the age of 65 years. The population pyramid of the province is illustrated in **Figure 5 - 2**.



Data source: (Statistics South Africa, 2012)

Figure 5 - 2: Population pyramid Eastern Cape Province

In respect of population group 86.3% of the population are black African, 8.3% are coloured, 4.7% are white and 0.4% are Indian or Asian people. Xhosa is spoken by 78.8% of the population followed by Afrikaans, English, and Sotho which are respectively spoken by 10.6%, 5.6% and 2.5% of the population of the Eastern Cape Province.

The dependency ratio of the province, which indicates the burden placed on the population of working age, between 15 and 64 years, who support children under 15

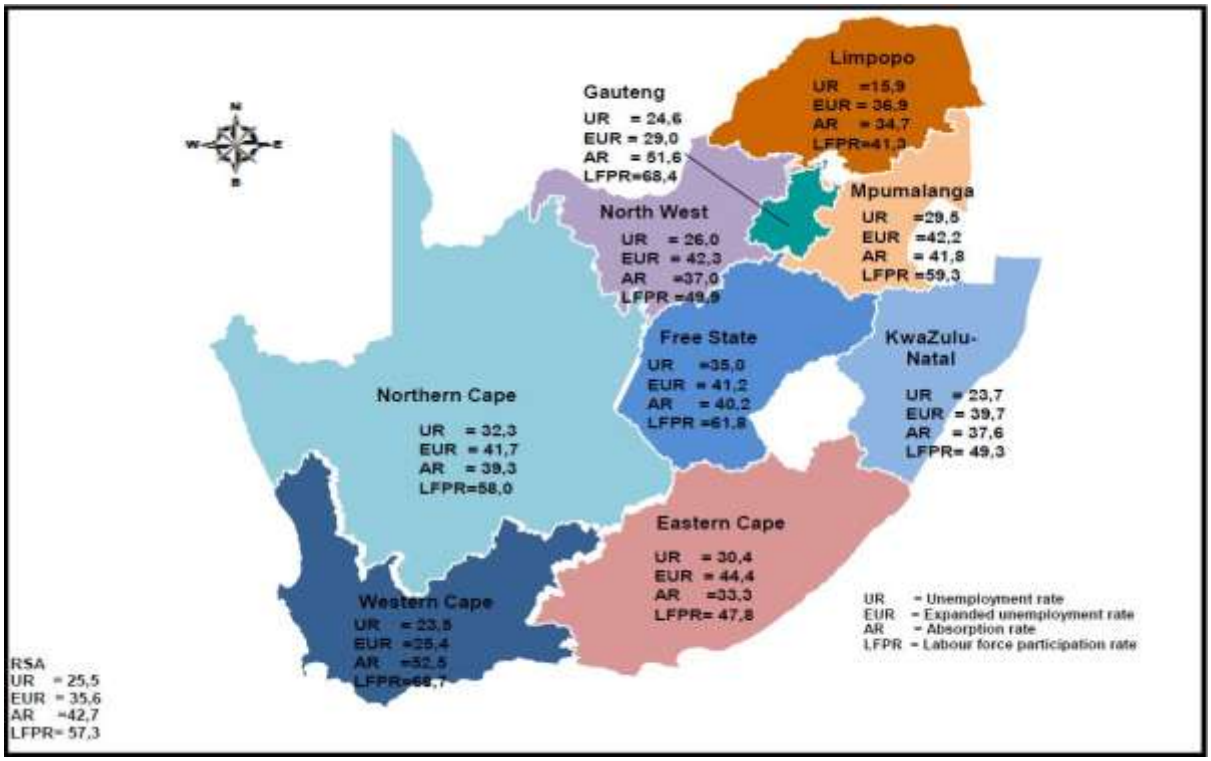
years and people over 65 years, is 66.0. The sex ratio, which measures the proportion of males to females, is 89.0 indicating a higher number of females in the province. Between 1996 and 2001 the population growth rate was 0.46% p.a. while between 2001 and 2011 it was 0.44% p.a.

In 2011 the official unemployment rate in the Eastern Cape was 37.4% with the official unemployment rate amongst the youth, between 15 and 34 years of age, being 47.3%. In the 4th quarter of 2013 the official unemployment rate in the province had dropped to 27.8%. Notwithstanding this, the province had the second highest rate of unemployment in the country, below the Free State which had an official unemployment rate of 33%. This must, however, be considered with caution as the official unemployment rate is defined by Stats SA as follows;

> **"*Unemployed*** *persons are those (aged 15–64 years) who:*
> *a) Were not employed in the reference week* ***and;***
> *b) Actively looked for work or tried to start a business in the four weeks preceding the survey interview* ***and;***
> *c) Were available for work, i.e. would have been able to start work or a business in the reference week* ***or;***
> *d) Had not actively looked for work in the past four weeks but had a job or business to start at a definite date in the future and were available.*" (StatsSA, 2013, p. xviii)

This definition excludes disillusioned work seekers who have given up attempting to find employment.

In the 2nd quarter of 2014 the unemployment rate in the Eastern Cape Province stood at 30.4% while the expanded rate of unemployment, which includes disillusioned work seekers, stood at 44.4%, thus giving the province the highest expanded rate of unemployment in the country. During that period the labour absorption rate in the Eastern Cape was 33.3% while the labour force participation rate was 47.8%. A summary of the labour market indicators illustrated on a comparative basis across South Africa is provided in **Figure 5 - 3**.



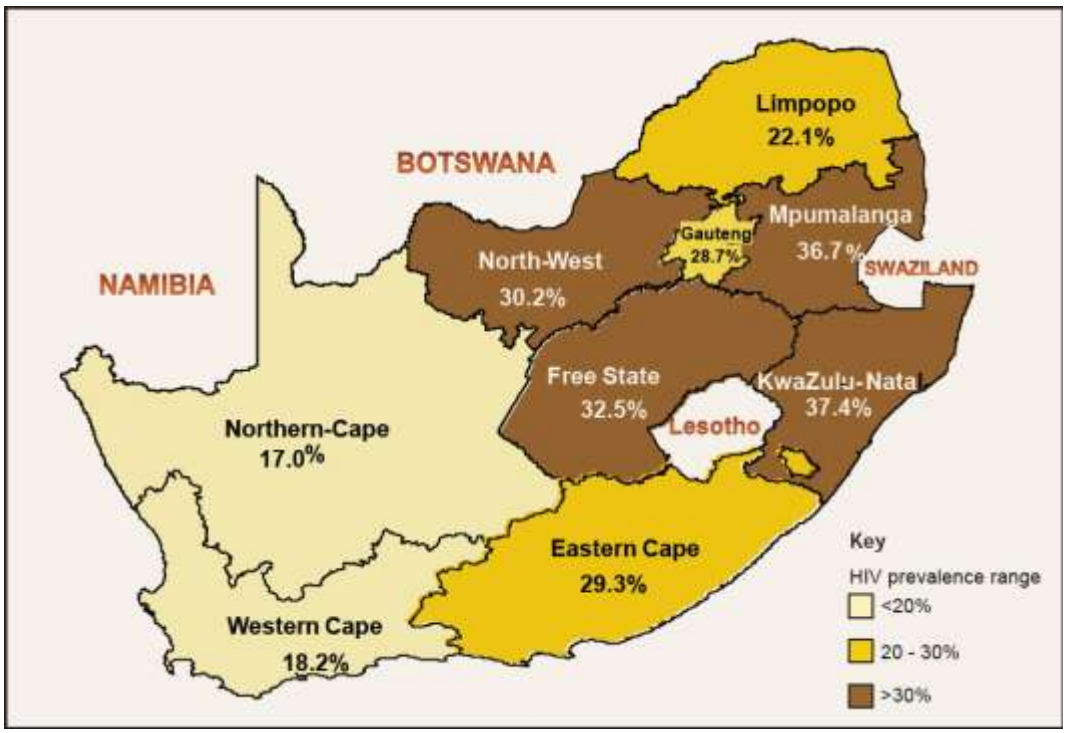
Source: (Statistics South Africa, 2014, p. xvii)

Figure 5 - 3: Labour market indicators 4th Quarter 2013

In respect of households, the 2011 Census indicated that there were 1,687,385 households in the province with an average household size of 3.9. Of these households, 49.6% were female headed, 63.2% lived in formal dwellings and 59.6% either owned or were paying off their dwelling.

Regarding household services in 2011, 40.4% of households in the Eastern Cape had flush toilets connected to the sewerage system while 41% had their refuse removed on a weekly basis. Piped water was delivered to 32.8% of households and 75% of Eastern Cape households used electricity as a means of energy for lighting.

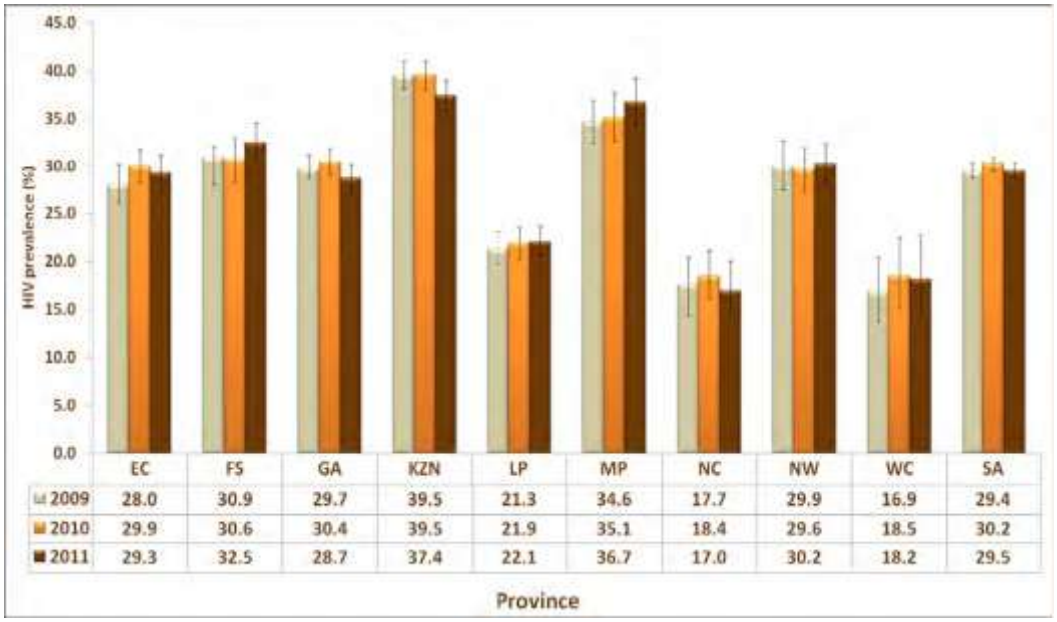
Concerning HIV prevalence amongst prenatal women in the province, in 2011 the Eastern Cape had the fifth highest rate in South Africa at 29.3% compared to that of the Northern Cape at 17.0% and the Western Cape at 18.2%, which had the lowest rates. HIV prevalence amongst antenatal women across South Africa is illustrated in **Figure 5 - 4**. At that point the highest level of HIV prevalence amongst antenatal women was in KwaZulu-Natal at 37.4% while the national rate was 29.5%.



Source: (National Department of Health, 2012, p. 14)

Figure 5 - 4: Prevalence of HIV amongst antenatal women - 2011

Having increased from 28.0% in 2009 to 29.9% in 2010, the HIV prevalence rate amongst antenatal women in the Eastern Cape decreased marginally to 29.3% in 2011. The fluctuation of these rates, between 2009 and 2011, as they appear across the country is illustrated in **Figure 5 - 5**.



Source: (National Department of Health, 2012, p. 14)

Figure 5 - 5: HIV prevalence trends: Antenatal women by province 2009 – 2011

A further issue concerning health in the province relates to cancer. It is indicated that "[t]*he rate of cancer in the Eastern Cape is six times the national average*" (Stassen, 2011) and new research is linking this with the processing of home-grown maize and the silica from the grid stones that may cause throat irritations (Sewram, 2011).

Although on the social and political front the province is currently undergoing major change, this change must be considered against a background of underdevelopment, limited skills and high levels of unemployment and poverty amongst the local people. This scenario has resulted in a migration from the rural to the urban area, as people search for employment opportunities. The inequity in the province is highlighted in a report generated by the Stockholm Resilience Centre which indicates that.

> "*While parts of the Eastern Cape remain poor and underdeveloped without sanitation or electricity, other areas are prospering through large scale growth and development plans, luxury coastal resorts and a burgeoning ecotourism industry. At the same time, land degradation, droughts, a downturn in the livestock sector, and a struggling rural economy are reinforcing human migration patterns to overflowing urban centres and a dependence of rural communities on grants and welfare*" (Hamann, et al., 2012, p. 3).

This description encapsulates the current social situation in the province rather aptly and attention will now be turned towards a more in-depth demographic description of the study area at the municipal levels.

5.2 MUNICIPAL DESCRIPTION

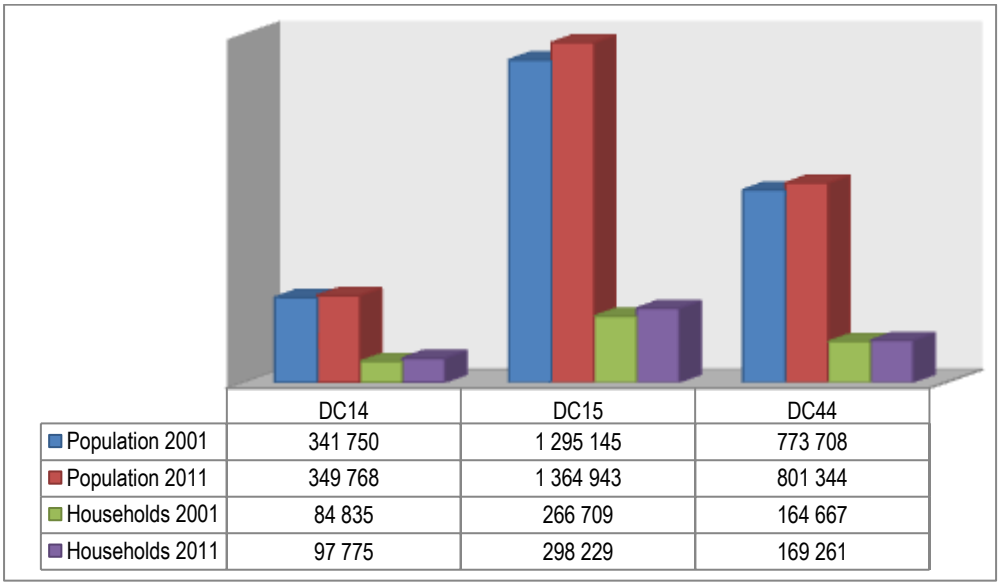
The project impacts the three district municipalities of Joe Gqabi, O. R. Tambo and Alfred Nzo. Of these districts Joe Gqabi covers the greatest land area and has the lowest population density across the region at 14/km^2 while O. R. Tambo has the largest population and the highest population density at 110/km^2. With regard to population group, black African people are the dominant group across all districts at over 90%. Xhosa is the dominant language spoken in the area ranging between 70.5 and 94.2 percent. This data is represented in **Table 5 - 1**.

Table 5 - 1: Demographic data district level

	Joe Gqabi DC14	O. R. Tambo DC15	Alfred Nzo DC 44
Geographical area	25,663 km^2	12,096 km^2	10,731 km^2
Population	349,768	1,364,943	801,344
Density	14/km^2	110/km^2	75/km^2
Population group			
Black African	93.8%	99.0%	99.1%
Coloured	3.5%	0.5%	0.4%
Indian/Asian	0.2%	0.2%	0.1%
White	2.4%	0.2%	0.2%
Language			
Xhosa	70.5%	94.2%	84.6%
Sotho	20.2%	0.27%	8.8%
English	1.4%	2.7%	2.3%
Afrikaans	5.9%	0.17%	0.84%
Zulu	0.25%	0.49%	1.2%
Other	1.8%	3.1%	3.1%

Data source: (Statistics South Africa, 2012)

The difference between the populations and households of the districts as they occurred in 2001 and 2011 are compared **Figure 5 - 6**.

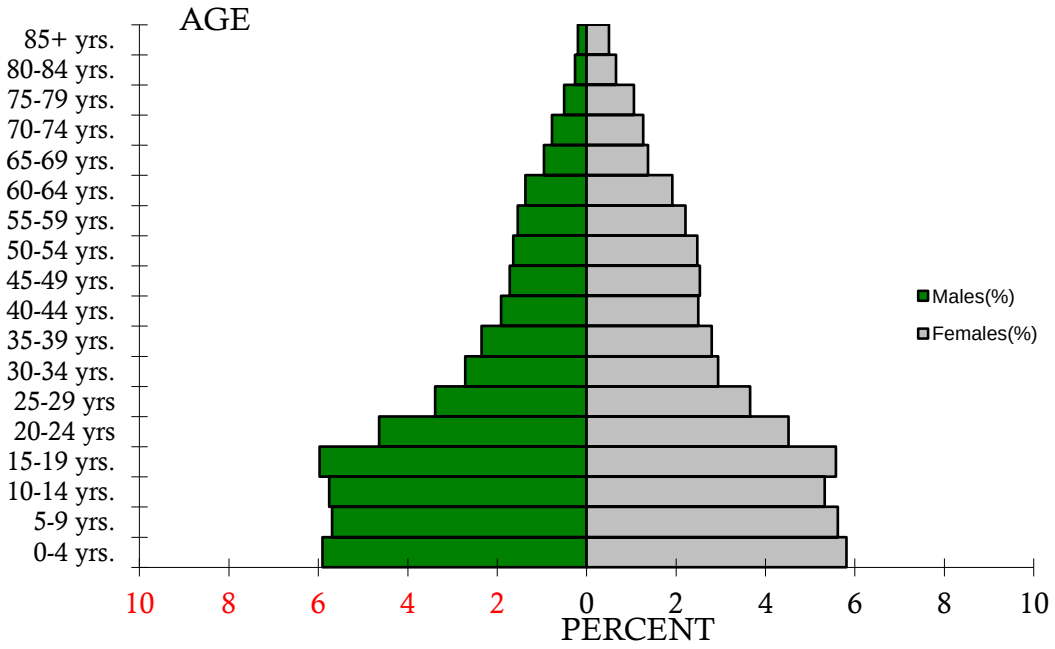


Data source: (Statistics South Africa, 2012)

Figure 5 - 6: Population and households 2001 and 2011 across districts

According to Census 2011, in the Joe Gqabi district 34.1% of the population was under 15 years of age while 58.4% was between 15 and 64 years and 7.5% were 65

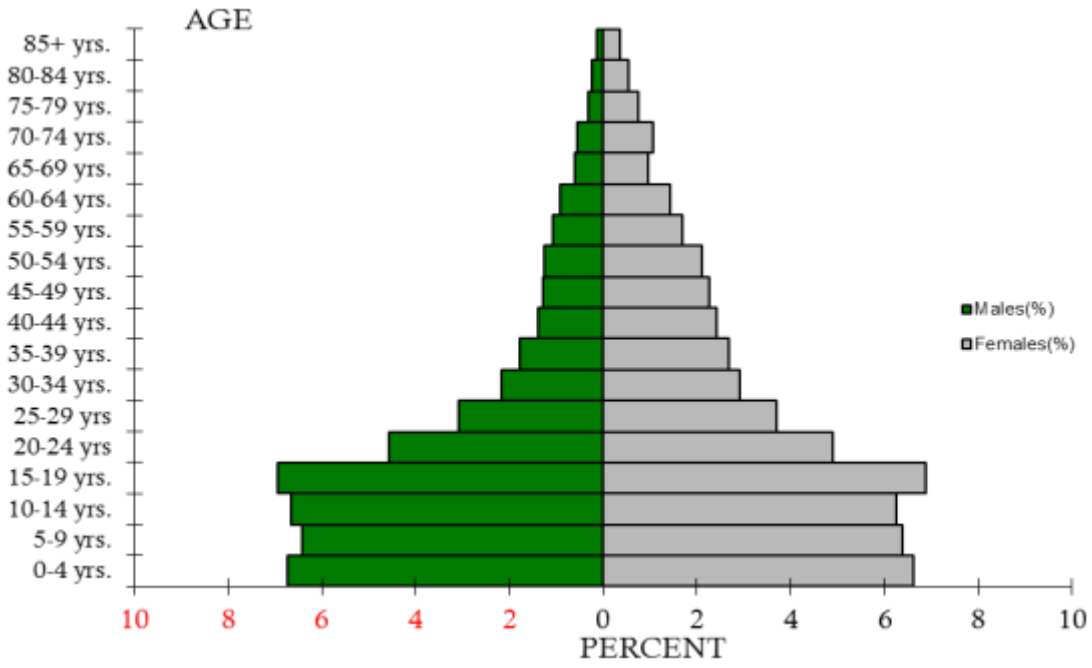
years or older. The population pyramid for the Joe Gqabi District Municipality is illustrated in **Figure 5 - 7**.



Data source: (Statistics South Africa, 2012)

Figure 5 - 7: Population pyramid Joe Gqabi District Municipality DC14

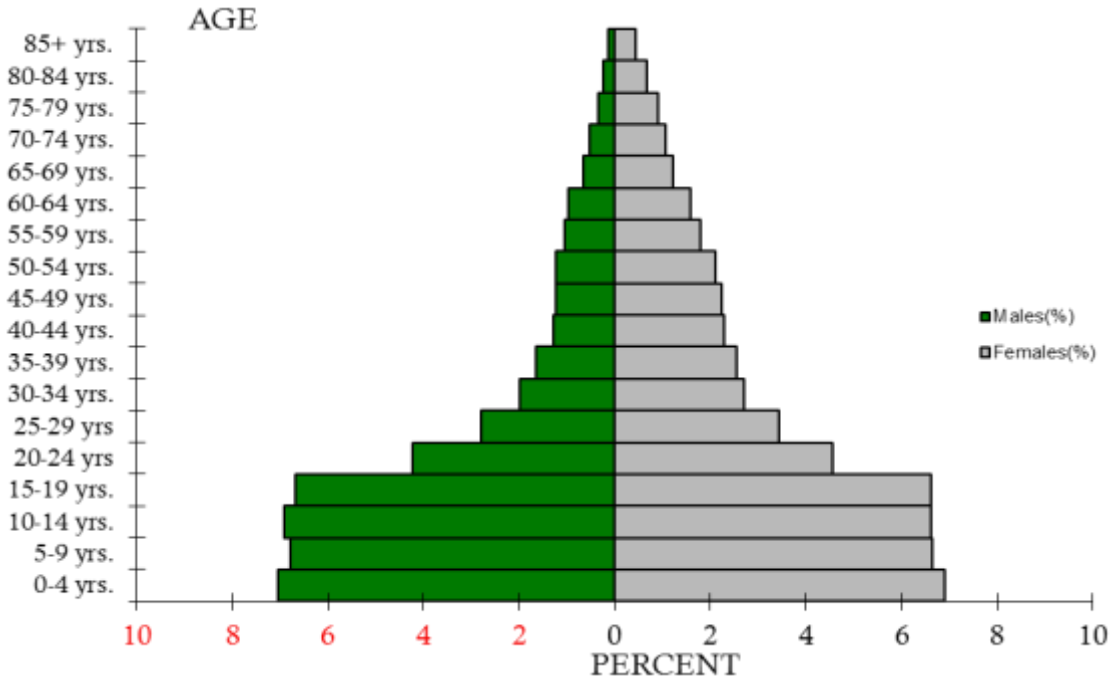
In O. R. Tambo 39.0% of the population are under 15 years of age while 55.4% are between 15 and 64 years and 5.6% are over the age of 64. This data is represented in **Figure 5 - 8**.



Data source: (Statistics South Africa, 2012)

Figure 5 - 8 Population pyramid O. R. Tambo District Municipality DC15

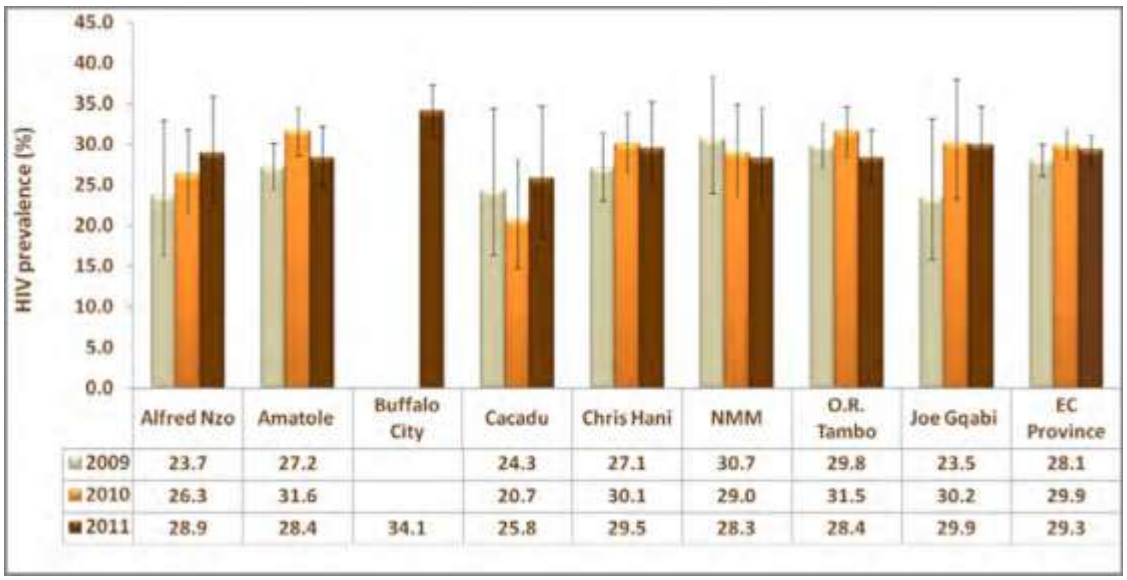
With regard to age structure, 40.9% of the population of Alfred Nzo are under 15 years of age while 52.9% are between 15 and 64 years. That section of the population who are 65 years and older constitute 6.2% of the population of the Alfred Nzo district as illustrated in **Figure 5 - 9**.



Data source: (Statistics South Africa, 2012)

Figure 5 - 9: Population pyramid Alfred Nzo District Municipality DC44

Concerning the HIV prevalence rate amongst antenatal women, in 2011 as assessed across the affected districts, Joe Gqabi had the highest prevalence rate at 29.9%. This is followed by the Alfred Nzo District Municipality at 28.9% and O. R. Tambo at 28.4%. Across both metropolitan and district municipalities in the Eastern Cape Province, Buffalo City had the highest prevalence rate at 34.1% while Cacadu had the lowest at 25.8%. This is illustrated in **Figure 5 - 10**.



Source: (National Department of Health, 2012, p. 23)

Figure 5 - 10: HIV prevalence trends: Antenatal women by district 2009 – 2011

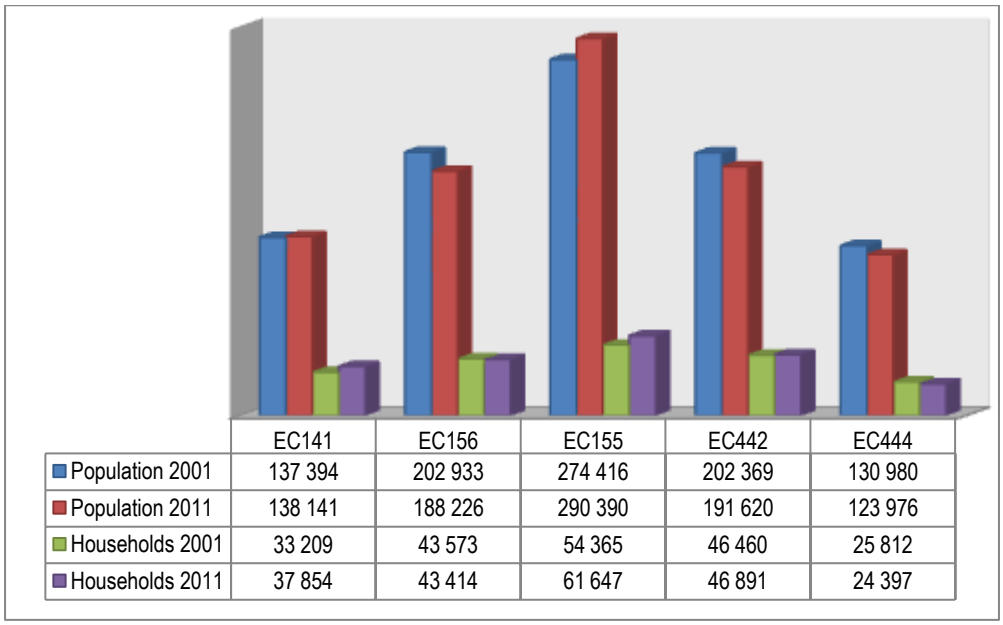
At the local municipal level the project impacts the following 5 local municipalities, Elundini, Mhlontlo, Umzimzubu, Ntabankulu and Nyandeni. Of these municipalities Elundini covers the greatest geographical area at 5,065 km^2 and Ntabankulu the smallest area at 1,385 km^2. With a population of 290,390 people Nyadeni has the highest population and population density at 120/km^2. Umzimvubu has the second highest population with 191 620 people living within the municipal area. At over 98% black African people are the biggest population group across all municipalities and Xhosa is the dominant language spoken. This data is represented in **Table 5 - 2** .

Table 5 - 2: Demographic data local municipalities

	Elundini EC141	Nyandeni EC155	Mhlontlo EC156	Umzimvubu EC442	Ntabankulu EC444
Geographical area	5,065 km^2	2,474 km^2	2,826 km^2	2,577 km^2	1,385 km^2
Population	138,141	290,390	188,226	191,620	123,976
Density	27/km^2	120/km^2	67/km^2	74/km^2	90/km^2
Population group					
Black African	98.1%	99.4%	99.4%	99.4%	99.4%
Coloured	1.0%	0.3%	0.2%	0.3%	0.4%
Indian/Asian	0.1%	0.1%	0.1%	0.1%	0.1%
White	0.7%	0.1%	0.2%	0.1%	0.1%
Language					
Xhosa	70.1%	95.3%	94.9%	93.1%	95.2%
Sotho	24.8%				
English	1.6%	2.0%	2.3%	2.6%	1.4%
Afrikaans	1.7%				
Other	1.8%	2.7%	2.8%	4.3%	3.4%

Data source: (Statistics South Africa, 2012)

The difference between the populations and households of the local municipalities as they occurred in 2001 and 2011 are compared in **Figure 5 - 11**.

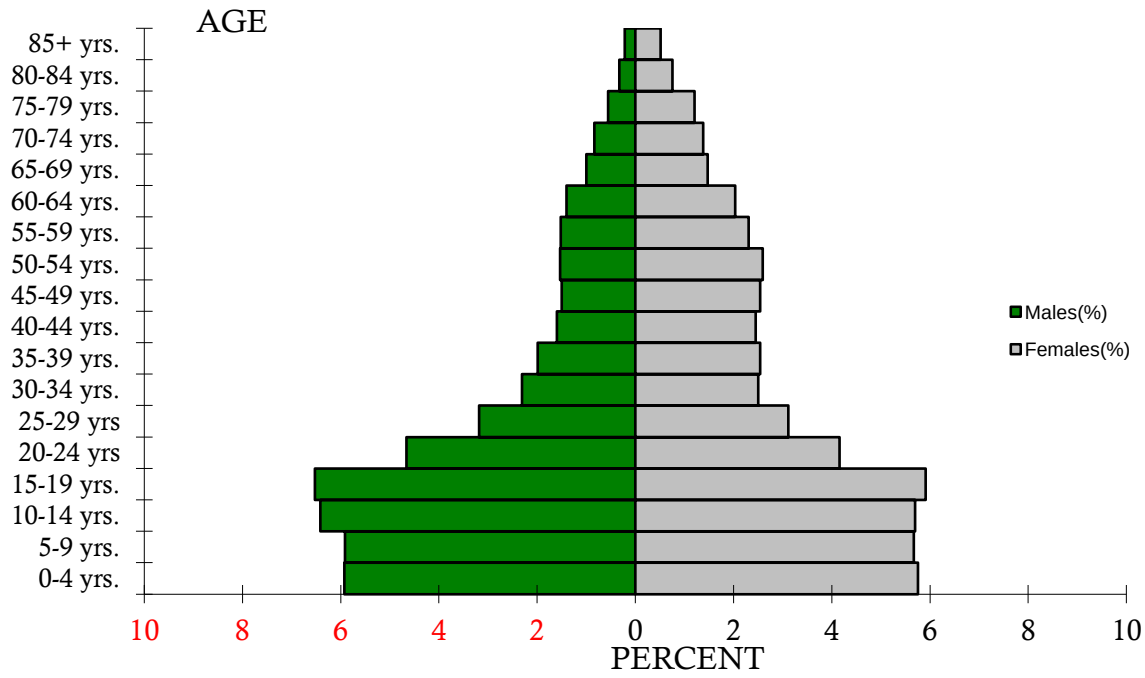


	EC141	EC156	EC155	EC442	EC444
Population 2001	137 394	202 933	274 416	202 369	130 980
Population 2011	138 141	188 226	290 390	191 620	123 976
Households 2001	33 209	43 573	54 365	46 460	25 812
Households 2011	37 854	43 414	61 647	46 891	24 397

Data source: (Statistics South Africa, 2012)

Figure 5 - 11: Population and households 2001 and 2011 across municipalities

In the Elundini Local Municipality, 35.4% of the population is under 15 years of age while 56.4% are between 15 and 64 years and 8.3% are 65 years and older. The population pyramid of Elundini is illustrated in **Figure 5 - 12**.



Data source: (Statistics South Africa, 2012)

Figure 5 - 12: Population pyramid Elundini Local Municipality EC141

Regarding the age structure of the population of Nyandeni Local Municipality 40.6% are under 15 years of age, 54.0% are between 15 and 64 years while 5.4% are over 64 year. The population pyramid of Nyandeni is illustrated in Figure 5 - 13.

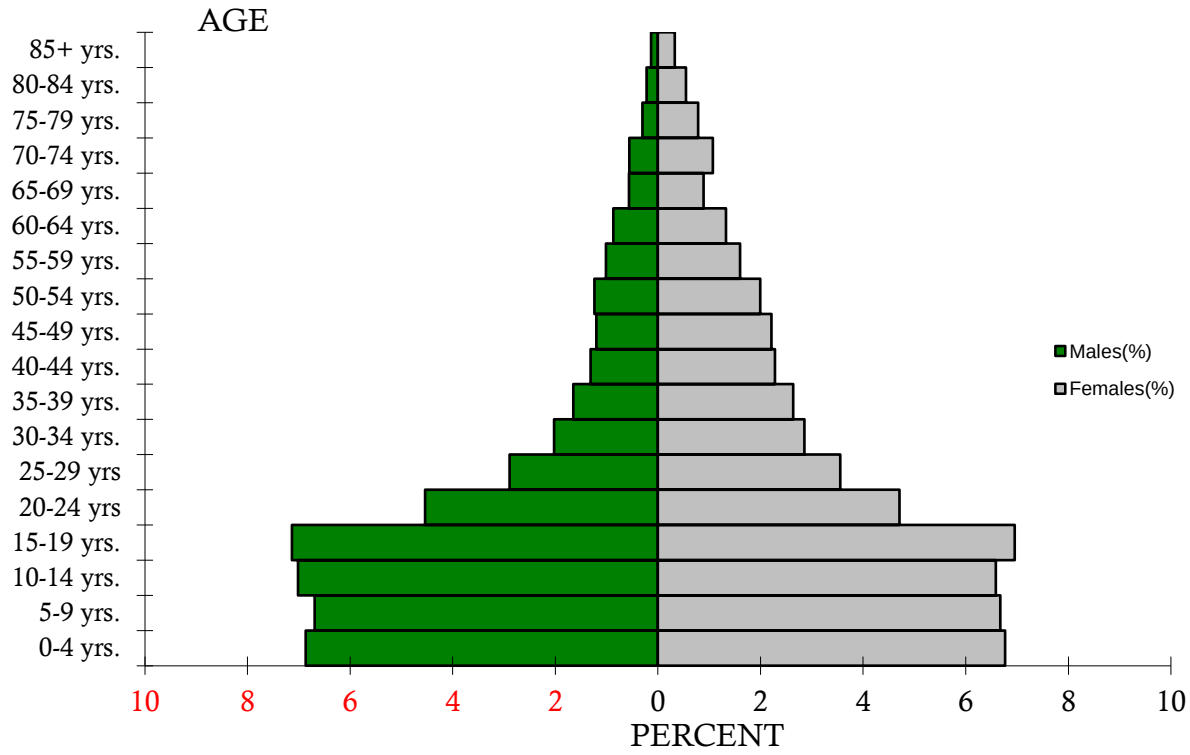
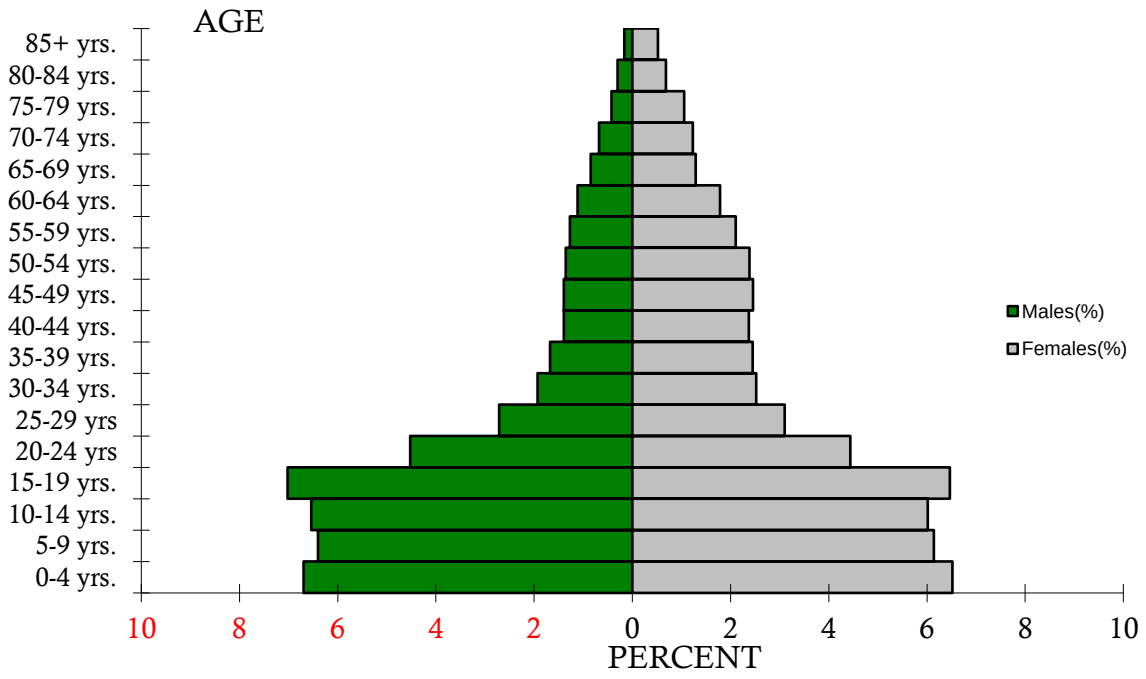


Figure 5 - 13: Population pyramid Nyandeni Local Municipality EC155

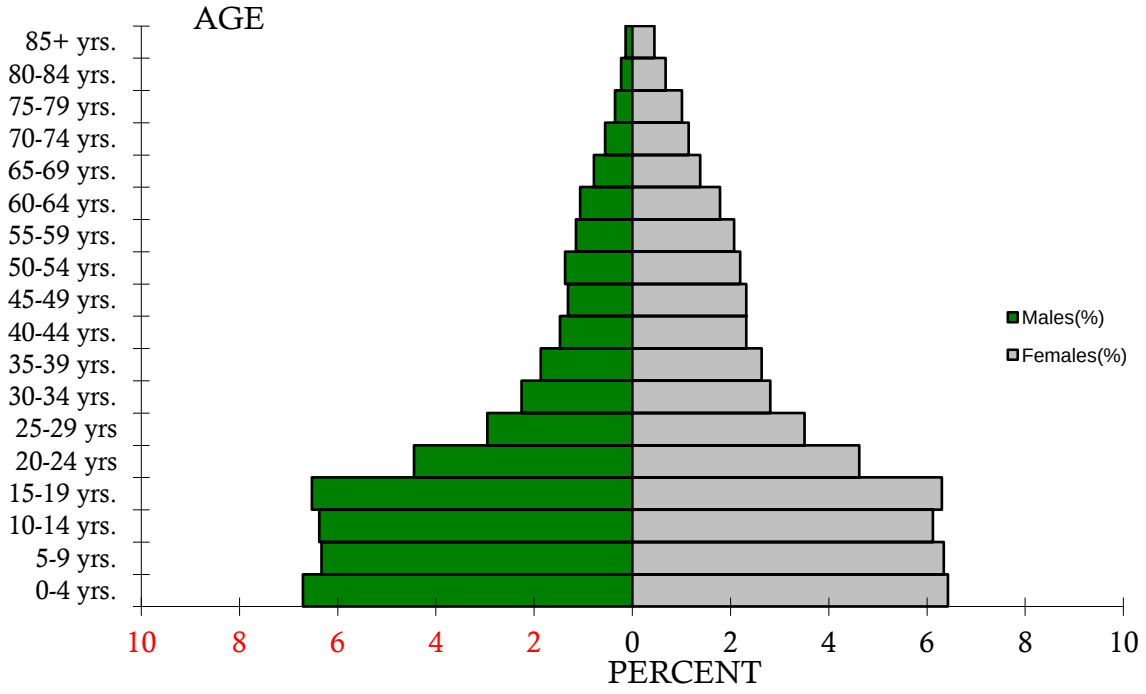
In respect of the age structure of the Mhlontlo Local Municipality 38.3% are under 15 years of age, 54.4% are between 15 and 64 years and 7.2% are 65 years and older. The population pyramid of Mhlontlo is illustrated in **Figure 5 - 14**.



Data source: (Statistics South Africa, 2012)

Figure 5 - 14: Population pyramid Mhlontlo Local Municipality EC156

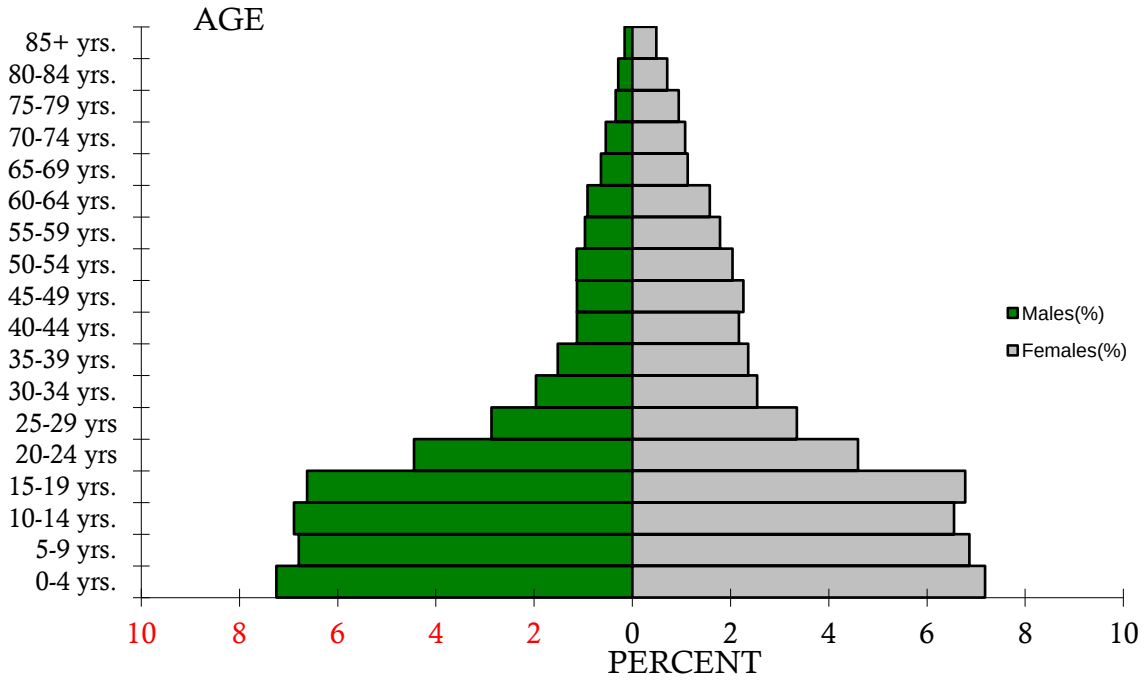
As far as the population of the Umzimvubu Local Municipality is concerned, 38.3% are younger than 15 years, 55% are between 15 and 65 and 6.7% are 65 and older. The population pyramid of Umzimvubu is illustrated in **Figure 5 - 15**.



Data source: (Statistics South Africa, 2012)

Figure 5 - 15: Population pyramid Umzimvubu Local Municipality EC442

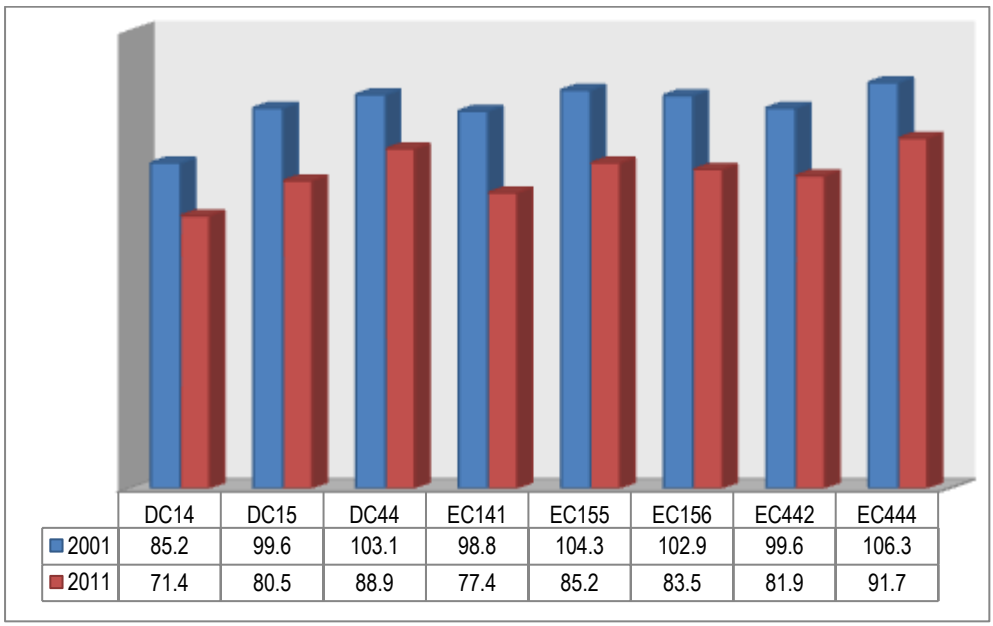
Ntabankulu has the youngest population across all municipalities with 41.5% being under 15 years of age and 52.2% falling between the ages of 15 and 64 years and 6.3% being 65 years and older. The age and gender distribution in the Ntabankulu municipality is illustrated through the population pyramid in **Figure 5 - 16**.



Data source: (Statistics South Africa, 2012)

Figure 5 - 16: Population pyramid Ntabankulu Municipality EC444

Attention is now given to a comparison of the population characteristics of the study area with emphasis on the district and local municipalities. The study area is characterised by a high dependency ratio which indicates the burden of supporting children under 15 years and people over 65 years placed on the working population aged 15–64 years. Although there has been some improvement across all areas, between 2001 and 2011, the burden still remains heavy, with it being greatest in Ntabankulu at 91.7 and lowest across the Joe Gqabi District Municipality at 71.4. This data is illustrated in **Figure 5 - 17**.

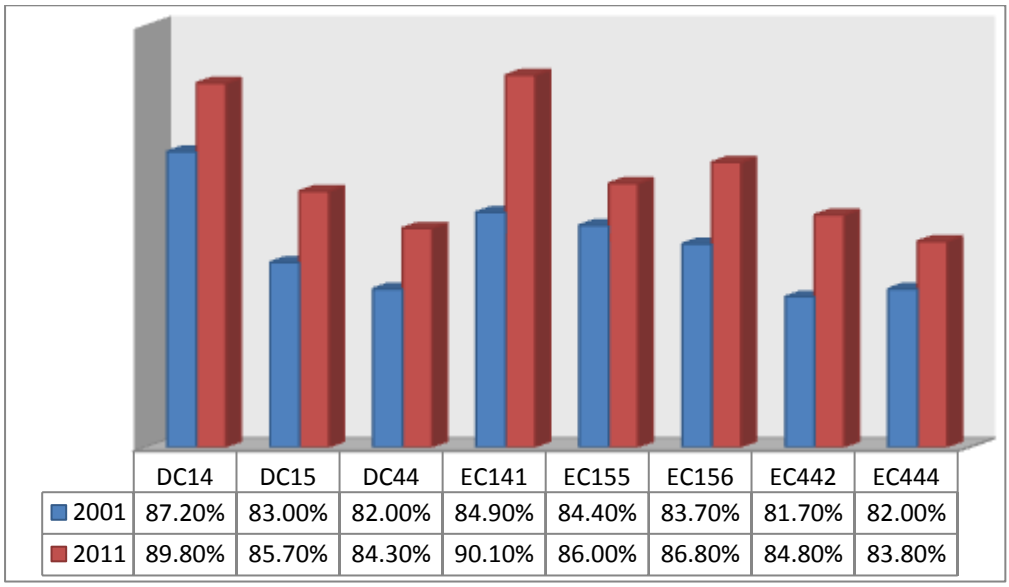


	DC14	DC15	DC44	EC141	EC155	EC156	EC442	EC444
2001	85.2	99.6	103.1	98.8	104.3	102.9	99.6	106.3
2011	71.4	80.5	88.9	77.4	85.2	83.5	81.9	91.7

Data source: (Statistics South Africa, 2012)

Figure 5 - 17: Dependency ratio

The sex ratio across all areas indicates a higher number of females compared to males with Ntabankulu having the highest proportion of females to males at 83.8% and Elundini the lowest at 90.1% as illustrated in **Figure 5 - 18**.

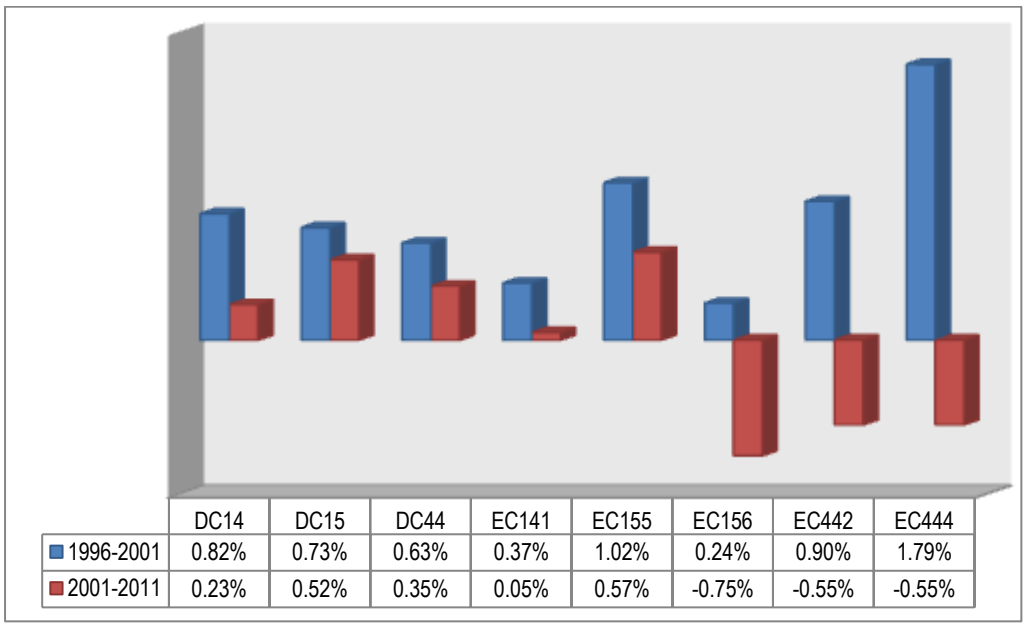


	DC14	DC15	DC44	EC141	EC155	EC156	EC442	EC444
2001	87.20%	83.00%	82.00%	84.90%	84.40%	83.70%	81.70%	82.00%
2011	89.80%	85.70%	84.30%	90.10%	86.00%	86.80%	84.80%	83.80%

Data source: (Statistics South Africa, 2012)

Figure 5 - 18: Sex ratio

Between 2001 and 2011 Mhlontlo, Umzimvubu and Ntabankulu all showed a negative population growth with the O. R. Tambo district having the highest population growth at 0.52%. This is illustrated in in **Figure 5 - 19**.

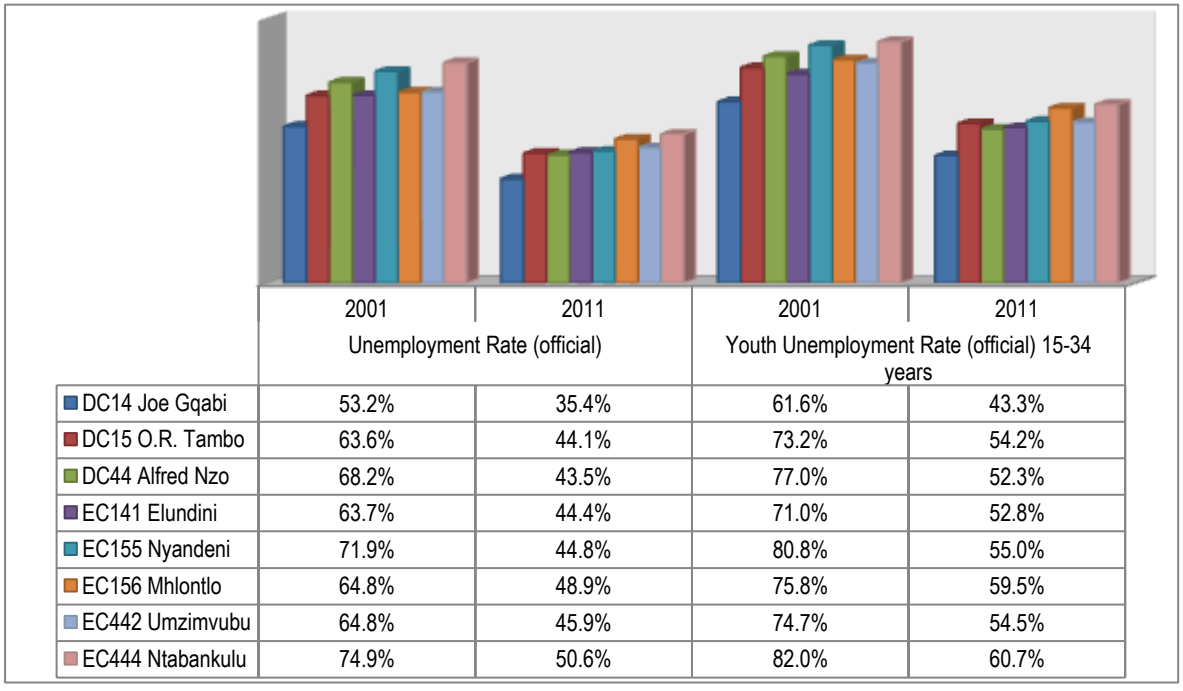


	DC14	DC15	DC44	EC141	EC155	EC156	EC442	EC444
1996-2001	0.82%	0.73%	0.63%	0.37%	1.02%	0.24%	0.90%	1.79%
2001-2011	0.23%	0.52%	0.35%	0.05%	0.57%	-0.75%	-0.55%	-0.55%

Data source: (Statistics South Africa, 2012)

Figure 5 - 19: Population growth rate % p.a.

In respect of the labour market, at 50.6% the highest level of official unemployment is found in Ntabankulu with the lowest level being found in in the Joe Gqabi district at 35.4%. Amongst the youth between 15 and 34 years of age Ntabankulu also has the highest rate of unemployment at 60.7% with Joe Gqabi again having the lowest at 43.3%, as illustrated in **Figure 5 - 20**.

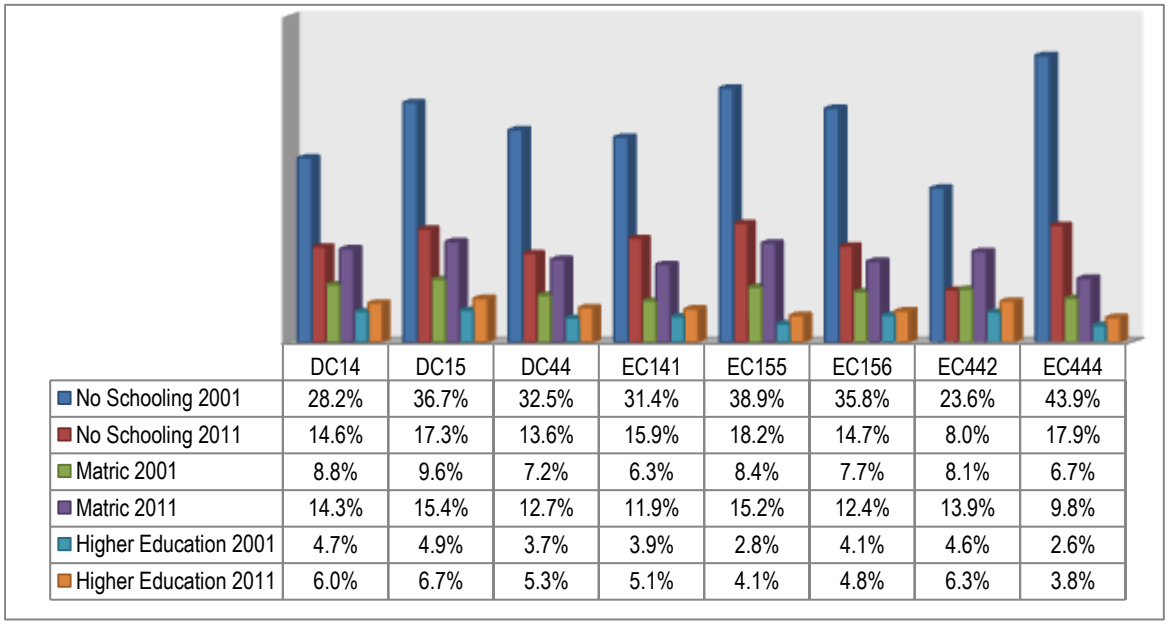


	2001	2011	2001	2011
	Unemployment Rate (official)		Youth Unemployment Rate (official) 15-34 years	
DC14 Joe Gqabi	53.2%	35.4%	61.6%	43.3%
DC15 O.R. Tambo	63.6%	44.1%	73.2%	54.2%
DC44 Alfred Nzo	68.2%	43.5%	77.0%	52.3%
EC141 Elundini	63.7%	44.4%	71.0%	52.8%
EC155 Nyandeni	71.9%	44.8%	80.8%	55.0%
EC156 Mhlontlo	64.8%	48.9%	75.8%	59.5%
EC442 Umzimvubu	64.8%	45.9%	74.7%	54.5%
EC444 Ntabankulu	74.9%	50.6%	82.0%	60.7%

Data source: (Statistics South Africa, 2012)

Figure 5 - 20: Official unemployment and youth unemployment rate

The situation regarding schooling in the area improved somewhat between 2001 and 2011. Notwithstanding this, however, there is still a need to improve the situation even further with areas such as Ntabankulu, Nyandeni and the O. R. Tambo district still having over 17% of the population over 20 years of age not having attended school. At a provincial level, 10.5% of the population aged 20+ has had no schooling, 19.8% have a matric and 8.7% have a higher education. All the district and local municipalities, apart from Umzimvubu, have a higher percentage of the population having not attended school than is the situation across the province. In Umzimvubu the situation is reversed with 8% of the population having no schooling compared to the 10.5% across the Eastern Cape. Education across the area is illustrated in **Figure 5 - 21**.

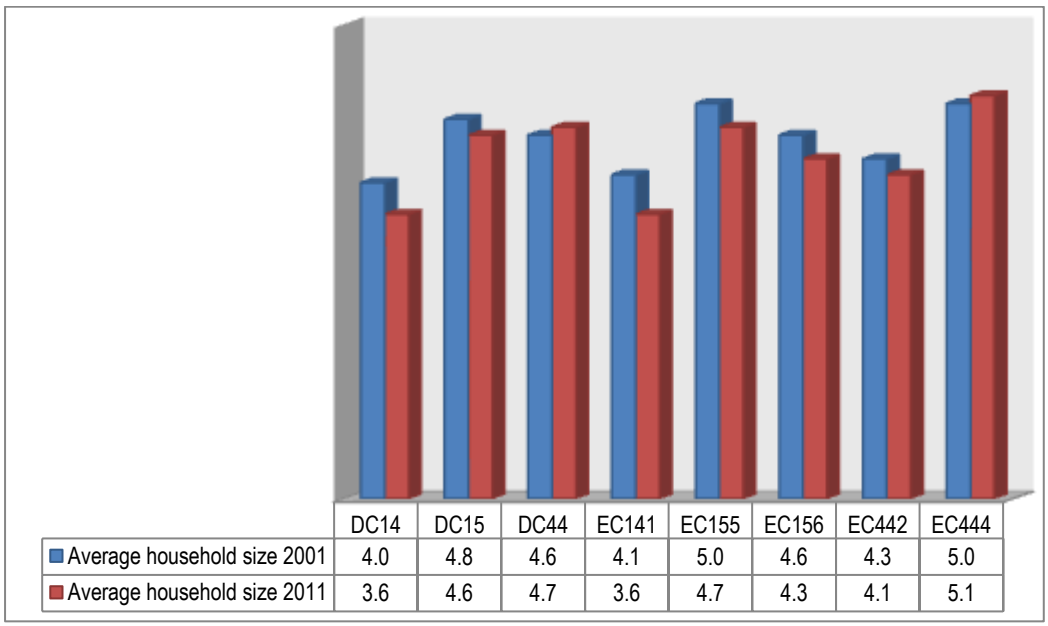


	DC14	DC15	DC44	EC141	EC155	EC156	EC442	EC444
No Schooling 2001	28.2%	36.7%	32.5%	31.4%	38.9%	35.8%	23.6%	43.9%
No Schooling 2011	14.6%	17.3%	13.6%	15.9%	18.2%	14.7%	8.0%	17.9%
Matric 2001	8.8%	9.6%	7.2%	6.3%	8.4%	7.7%	8.1%	6.7%
Matric 2011	14.3%	15.4%	12.7%	11.9%	15.2%	12.4%	13.9%	9.8%
Higher Education 2001	4.7%	4.9%	3.7%	3.9%	2.8%	4.1%	4.6%	2.6%
Higher Education 2011	6.0%	6.7%	5.3%	5.1%	4.1%	4.8%	6.3%	3.8%

Data source: (Statistics South Africa, 2012)

Figure 5 - 21: Education over 20 years of age

The average size of households in the area ranges between 3.6 in Elundini and 5.1 in Ntabankulu and is illustrated in **Figure 5 - 22**.

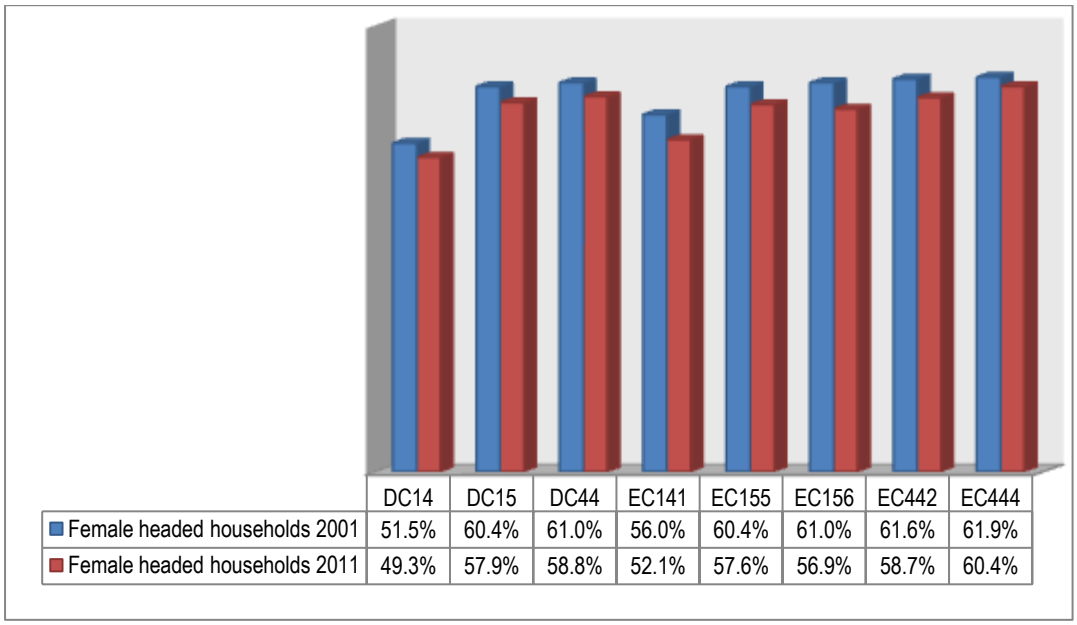


	DC14	DC15	DC44	EC141	EC155	EC156	EC442	EC444
Average household size 2001	4.0	4.8	4.6	4.1	5.0	4.6	4.3	5.0
Average household size 2011	3.6	4.6	4.7	3.6	4.7	4.3	4.1	5.1

Data source: (Statistics South Africa, 2012)

Figure 5 - 22: Average household size

Apart from the Joe Gqabi district, where 49.3% of the households are female headed, all other areas have a higher percentage of female than male headed households, with the greatest percentage of female headed households, at 60.4%, being found in Ntabankulu. Most formal dwellings are found in the Joe Gqabi district with the lowest percentage of formal dwellings, at 24.3%, being found in Ntabankulu. At 64.4% the local municipality of Ntabankulu has the highest percentage of housing being owned or being paid off with the lowest percentage, 53.9%, being found in Mhlontlo. This data is illustrated in **Figure 5 - 23**.

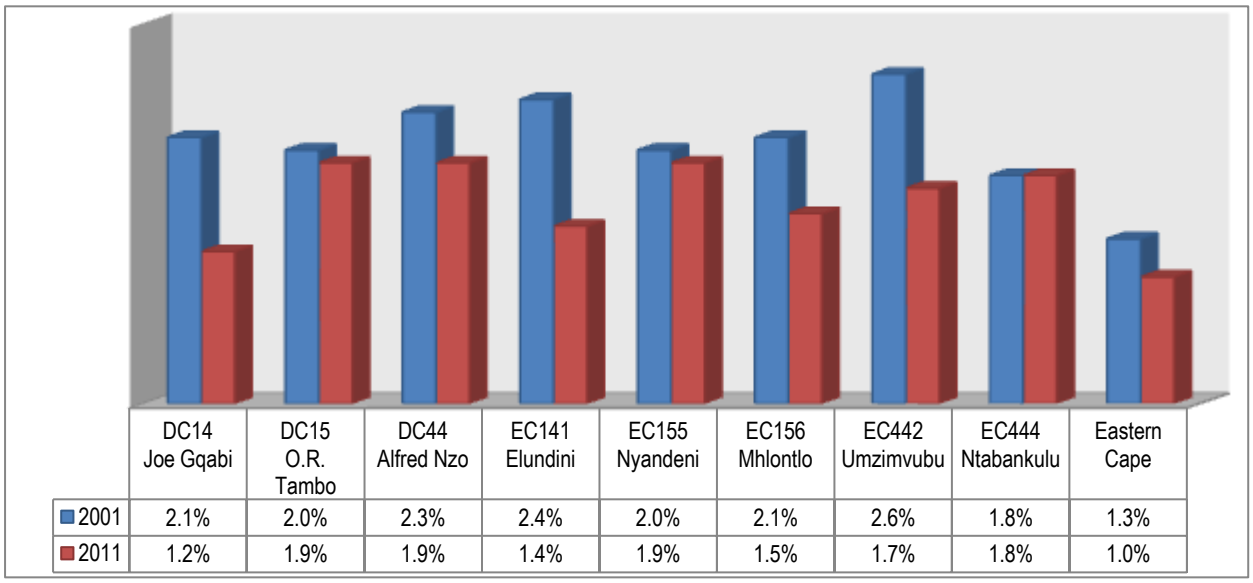


	DC14	DC15	DC44	EC141	EC155	EC156	EC442	EC444
Female headed households 2001	51.5%	60.4%	61.0%	56.0%	60.4%	61.0%	61.6%	61.9%
Female headed households 2011	49.3%	57.9%	58.8%	52.1%	57.6%	56.9%	58.7%	60.4%

Data source: (Statistics South Africa, 2012)

Figure 5 - 23: Household dynamics

When compared on a provincial level with the Eastern Cape Province at 1.0%, the study area has a relatively high percentage of child headed households. In the O.R. Tambo and Alfred Nzo districts 1.9% of households are headed by children under 18 years of age while in the Joe Gqabi district the figure is 1.2%. Apart from in Nyandeni were it is at 1.9%, the percentage of child headed households is marginally lower across the local municipalities, ranging between 1.4 and 1.8 percent, as is indicated in Figure 5 - 24.

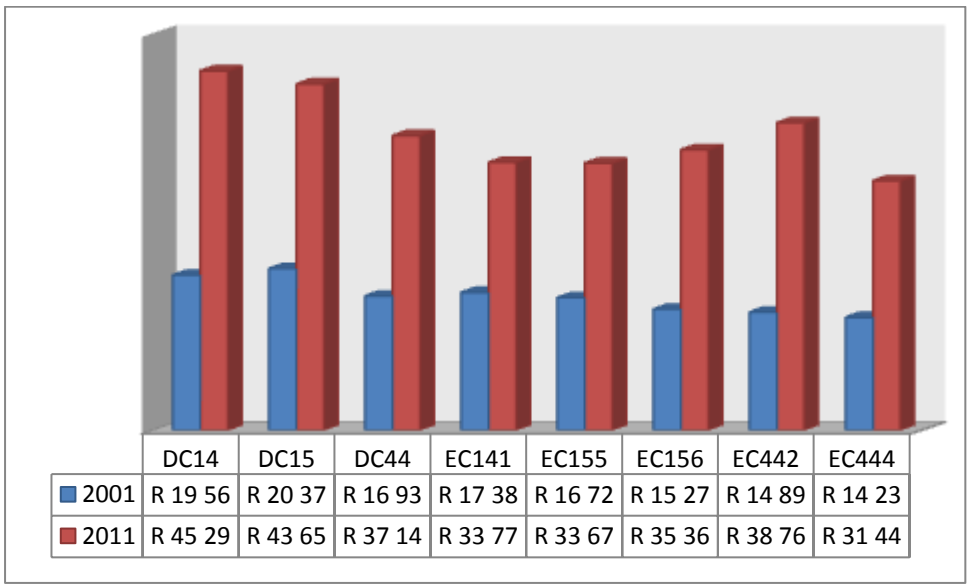


	DC14 Joe Gqabi	DC15 O.R. Tambo	DC44 Alfred Nzo	EC141 Elundini	EC155 Nyandeni	EC156 Mhlontlo	EC442 Umzimvubu	EC444 Ntabankulu	Eastern Cape
2001	2.1%	2.0%	2.3%	2.4%	2.0%	2.1%	2.6%	1.8%	1.3%
2011	1.2%	1.9%	1.9%	1.4%	1.9%	1.5%	1.7%	1.8%	1.0%

Data source: (Statistics South Africa, 2012)

Figure 5 - 24: Child headed households

Regarding household income, with an average household income of R37 147 per annum Alfred Nzo has the lowest average household income in respect of all district municipalities. Amongst the local municipalities Ntabankulu has an average household income of R31 446 making it the municipality with the lowest average income overall. The highest average income, at R45 295, is found in the Joe Gqabi district as illustrated in **Figure 5 - 25**.

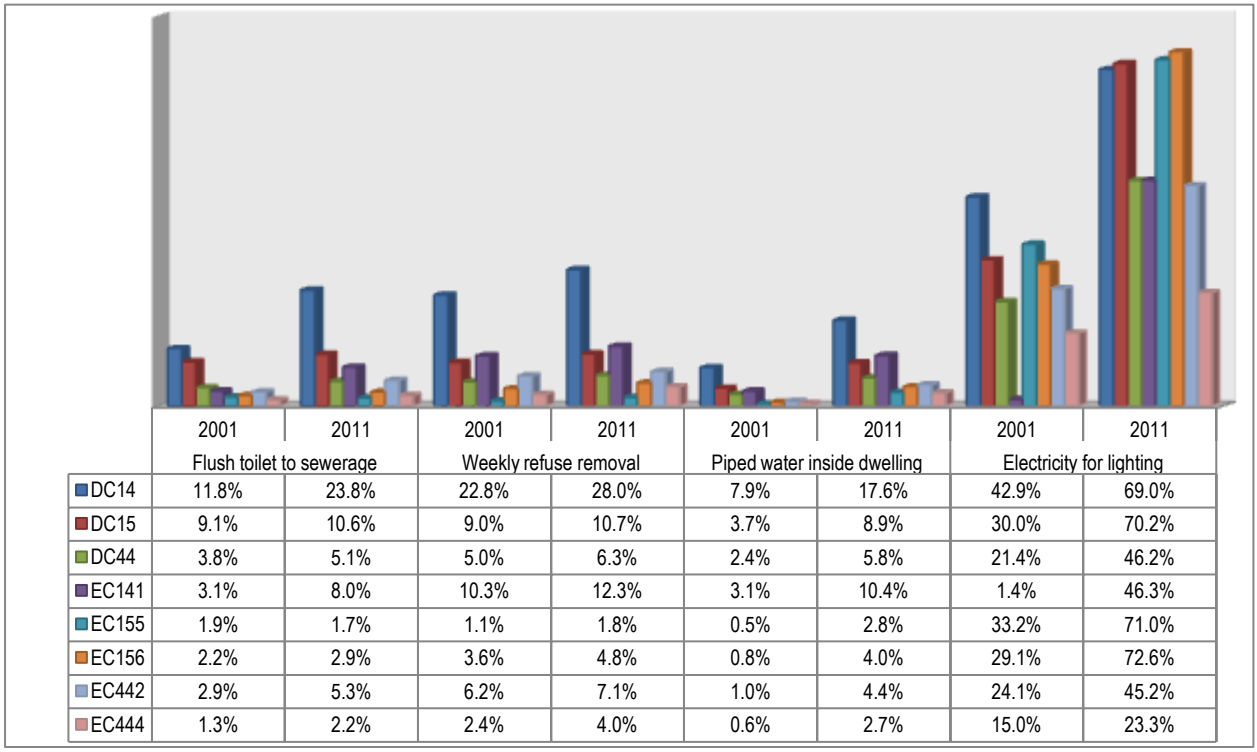


	DC14	DC15	DC44	EC141	EC155	EC156	EC442	EC444
2001	R 19 56	R 20 37	R 16 93	R 17 38	R 16 72	R 15 27	R 14 89	R 14 23
2011	R 45 29	R 43 65	R 37 14	R 33 77	R 33 67	R 35 36	R 38 76	R 31 44

Data source: (Statistics South Africa, 2012)

Figure 5 - 25: Average household income

In respect of household services, apart from electricity as a source of lighting, where it is surpassed by both the Mhlontlo local and O. R. Tambo district municipalities, on a general basis the Joe Gqabi Local Municipality has the highest level of service delivery. Ntabankulu has the lowest level of service delivery across all indicators. The indicators of household services are illustrated in **Figure 5 - 26**.

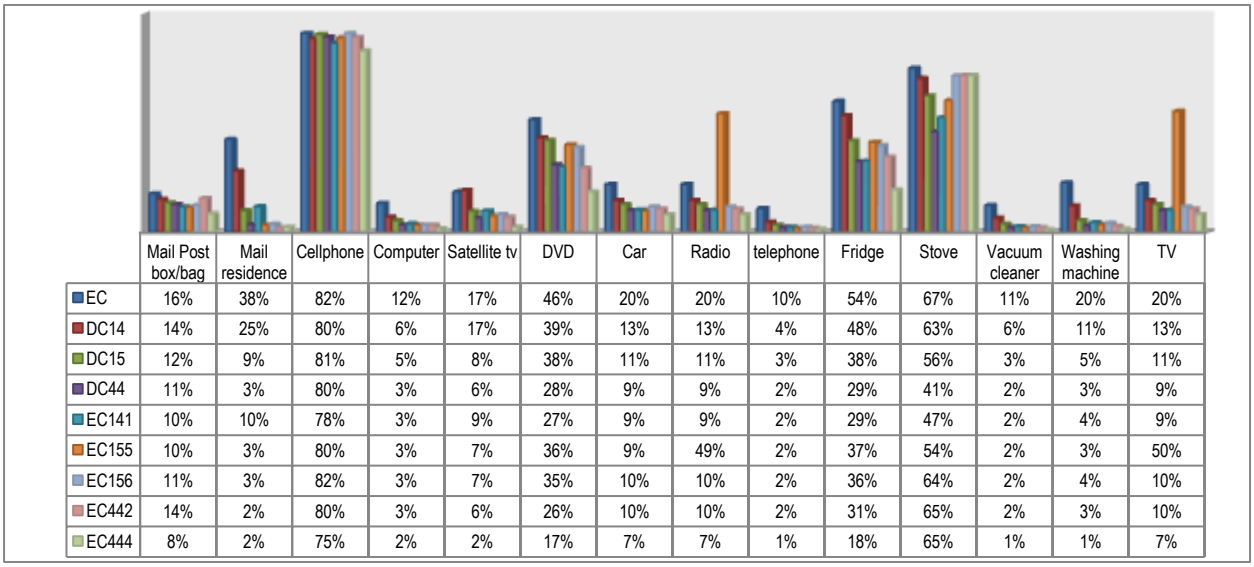


	2001	2011	2001	2011	2001	2011	2001	2011
	Flush toilet to sewerage		Weekly refuse removal		Piped water inside dwelling		Electricity for lighting	
DC14	11.8%	23.8%	22.8%	28.0%	7.9%	17.6%	42.9%	69.0%
DC15	9.1%	10.6%	9.0%	10.7%	3.7%	8.9%	30.0%	70.2%
DC44	3.8%	5.1%	5.0%	6.3%	2.4%	5.8%	21.4%	46.2%
EC141	3.1%	8.0%	10.3%	12.3%	3.1%	10.4%	1.4%	46.3%
EC155	1.9%	1.7%	1.1%	1.8%	0.5%	2.8%	33.2%	71.0%
EC156	2.2%	2.9%	3.6%	4.8%	0.8%	4.0%	29.1%	72.6%
EC442	2.9%	5.3%	6.2%	7.1%	1.0%	4.4%	24.1%	45.2%
EC444	1.3%	2.2%	2.4%	4.0%	0.6%	2.7%	15.0%	23.3%

Data source: (Statistics South Africa, 2012)

Figure 5 - 26: Household services

The proportion of households owning household goods across the area is lower than that of the province. On a general basis, households in the Joe Gqabi municipality own a greater proportion of household goods than do those across the other municipalities with households in Ntabankulu owning the lowest proportion of household goods. The distribution of household goods across the study area is illustrated in **Figure 5 - 27**.



	Mail Post box/bag	Mail residence	Cellphone	Computer	Satellite tv	DVD	Car	Radio	telephone	Fridge	Stove	Vacuum cleaner	Washing machine	TV
EC	16%	38%	82%	12%	17%	46%	20%	20%	10%	54%	67%	11%	20%	20%
DC14	14%	25%	80%	6%	17%	39%	13%	13%	4%	48%	63%	6%	11%	13%
DC15	12%	9%	81%	5%	8%	38%	11%	11%	3%	38%	56%	3%	5%	11%
DC44	11%	3%	80%	3%	6%	28%	9%	9%	2%	29%	41%	2%	3%	9%
EC141	10%	10%	78%	3%	9%	27%	9%	9%	2%	29%	47%	2%	4%	9%
EC155	10%	3%	80%	3%	7%	36%	9%	49%	2%	37%	54%	2%	3%	50%
EC156	11%	3%	82%	3%	7%	35%	10%	10%	2%	36%	64%	2%	4%	10%
EC442	14%	2%	80%	3%	6%	26%	10%	10%	2%	31%	65%	2%	3%	10%
EC444	8%	2%	75%	2%	2%	17%	7%	7%	1%	18%	65%	1%	1%	7%

Data source: (Statistics South Africa, 2012)

Figure 5 - 27: Distribution of household goods

Although there have been some improvements across the region, the area remains one of the poorest parts of the country, characterised by high poverty and out-migration resulting in sex ratio imbalances, a high proportion of female headed households and a low population growth rate. At large the population lacks basic amenities and relies heavily on subsistence farming, illustrated in **Figure 5 - 28**, which is not really successful.

Figure 5 - 28: Typical midrange housing structures and crop planting activities

This situation is somewhat similar to that across the province which reflects that;
"*The province is one of the poorest parts of the country. This is evident in all poverty indices and labour market statistics that are currently available. …*

The prevailing population profile in the province is to a large extent, a product of complex demographic reactions to the crisis of poverty, especially among the historically disadvantaged population groups" (Ed. Makiwane & Chimere-Dan, 2010, p. 21). The poverty level of the Eastern Cape is 70.6% with only the Limpopo Province having a higher poverty level at 78.9%. The poverty level of Mpumalanga is just below that of the Eastern Cape at 67.1%.

Regarding agriculture, on a provincial basis 37.7% of households in the Eastern Cape engaged in agricultural activities over the period June 2011 – June 2012. Of these households 24.8% were involved with poultry production, 20.5% with livestock production, 19% with grains and food crops, 19.9% with fruit and vegetables and only 0.2% with industrial crops (Statistics South Africa, 2012, pp. 2-3). Examples of the type agricultural activities found in the study area are illustrated in **Figure 5 - 28** and **Figure 5 - 29**.

Figure 5 - 29: Upper level housing structures and crop planting activities

Of the households in the Eastern Cape involved with different crop planting activities, 23.8% were in backyard gardens, 0.2% in communal gardens and 0.1 in school gardens with the other 75% being on a somewhat larger scale.

The percentage of households classified as food access adequate was 72% while 19.4% were food access inadequate and 8.8% of households in the province were food access severely inadequate. Although in this respect there are no statistics specific to the study area, it is unlikely that the situation in the study area will be significantly different. This is probably also applicable in respect of health in the area and the high rate of cancer across the province. Consideration is now turned towards the project footprint and those elements under direct threat and at risk as a result of the project.

The study area is characterised by a high dependency ratio with a high percentage of female headed households at an average of 56.9%. The population growth rate is low with the local municipalities of Mhlontlo (-0.75%), Umzimvubu (-0.55%) and Ntabankulu (-0.55%) all showing negative growth rates. The population is also very young with close to 40% being under 15 years. The unemployment rate is high and youth unemployment even higher ranging between 43.3% in Joe Gqabi and 60.7% in Ntabankulu. The average household income of the area is low with a weighted average household income for the three district municipalities of R41 800 per annum. In the mid-60s the study area changed from scattered rural homesteads to nuclear villages with agricultural land being apportioned, through the traditional authorities, to heads of household. Although a system of communal land ownership and land management was introduced at the time this has since fallen into disuse.

Nevertheless, allocated fields still retain a value through folk memory and this needs to be carefully considered and addressed through the traditional authority structures to ensure equitable compensation. In this respect refer to the Heritage Report and Relocation Action Plan (RAP).

Turning towards the areas directly affected by the project, it has been identified by means of a field survey that, with regard to the Ntabelanga Dam Basin, 62 structures and 19.9136 km^2 of cultivated land will be lost. The Lalini Dam Basin, technically preferred Option 1 will result in the loss of 12 dwellings, 2 being abandoned, and 7.59 km^2 of cultivated land. In total, it has been established that 160 structures and 0.69 km^2 of cultivated land could be lost as a result of the linear infrastructure components of the project.

Apart from the structures and cultivated areas that will be lost as a result of the project 124 structures have also been identified as being within 5 m of the project and therefore are at risk. The facilities at risk are largely associated with the linear components of the project which include access roads, pipelines and power lines and, as a relatively wide servitude is currently being used for the purpose of identifying these components, it is possible to re-align the routes to avoid the majority, if not all of these structures at risk. The primary mitigation measures applied in these instances is avoidance and considering that the pipeline will be buried it is possible that the servitudes can be restored to their original condition after construction. The facilities within the project servitude/footprint, and those at risk, will be addressed more specifically below as associated with each of the various components of the project.

6. CONSULTATION PROCESS

Apart from the public consultation process a number of focus group meeting were held across the region to specifically engage with the public in an effort to identify the social issues. The consultation processes followed are described below.

6.1 PUBLIC CONSULATION PROCESS FOLLOWED

Engagement with Interested and Affected Parties (I&APs) forms an integral component of the EIA process. I&APs have an opportunity at various stages throughout the EIA process to gain more knowledge about the proposed project, to provide input into the process and to verify that their issues and concerns have been addressed.

The proposed project was announced in April 2014 to elicit comment from and register I&APs from as broad a spectrum of public as possible. The announcement was done by the following means:

- The distribution of Background Information Documents (BIDs) in English and IsiXhosa;
- Placement of site notices in the project area and Municipal offices (Tsolo and Qumbu);
- Placement of advertisements in one regional (The Herald) and two local (Daily Dispatch and the Mthatha Fever) newspapers; and
- Publication of all available information on the DWA web site (www.dwa.gov.za/mzimvubu).

The Draft Scoping Report (DSR) was made available for a 30 day public comment period in May 2014. All documents were uploaded to the web, notification letters were sent out, the summary of the DSR was translated into isiXhosa, distributed to all registered stakeholders and hardcopies of the full report and translated summary report were available at public places. Additionally, three public meetings were held in the affected areas, Siqhungqwini, Tsolo and Lalini respectively. An Authorities Forum Meeting with all relevant authorities was held in Eastern London on 28 May 2014. This was to assist the authorities with commenting on the relevant documentation.

Comments received from stakeholders were captured in the Issues and Response Report (IRR) which formed part of the Final Scoping Report (FSR). The FSR was made available to the public for a 21 day comment period on 13 June 2014 and was submitted to the Department of Environmental Affairs (DEA). Comments received during the Final Scoping public comment period were compiled and an updated IRR was submitted to DEA on 8 July 204 and uploaded to the website. The FSR was accepted by DEA with certain conditions on 15 July 2014. Following this, a newsletter was compiled and translated to isiXhosa, explaining everything that has happened to

date as well as what is to come. Both the English and isiXhosa versions were electronically distributed to all registered stakeholders and hardcopies were distributed by the local facilitators in the affected areas.

The Draft Environmental Impact Assessment Report (DEIR), its summary (translated into isiXhosa), the various specialist studies, the Environmental Management Programmes (one for the construction and operation of the project, and one for the borrow areas and quarries) as well as the Water Use Licence Application will be made available for a period of thirty (30 days) for stakeholders to comment. Hardcopies will be made available at the same venues as the DSR and all documents will be uploaded to the website. The availability of these documents as well as the announcement of the upcoming public meetings in Siqhungqwini, Tsolo and Lalini will be advertised on the Eastern Cape SABC radio station, Umhlobo Wenene FM, which has a listenership of over 4 million people. Another Authorities Forum Meeting is scheduled for September 2014.

In addition to the public participation process a field trip was undertaken across the project area between 24 June and 11 July 2014. During this time various community meetings were held as indicated below.

Date	**Venue**	**Time**
28 June 2014	Shukunxa Village	12:13
30 June 2014	Ngqongweni	10:20
10 July 2014	Mpetsheni	09:45
10 July 2014	Sibomvaneni Village	10:15 & 11:40
10 July 2014	Ntabelanga Dam Basin	12:00 & 12:40
10 July 2014	Mawasa Location	15:00
11 July 2014	Lalini Dam Basin	08:00, 09:20 & 09:50

Stakeholder comments will be taken into consideration with the preparation of the final documents. The availability of the final documents will be announced prior to submission to the decision-making authority. Once a decision has been made by the DEA, all stakeholders will again be notified.

6.2 SUMMARY OF COMMENTS RECEIVED

The following comments, related to the social environment, were obtained from the Issues and Responses Report Final Version, 1 July 2014, which accompanied the final Scoping Report submitted to DEAT:

General Construction

- The upgrading of access roads is needed.
- It was asked if jobs would be created through the construction of the dams.
- Concern regarding the efficiency of the consultative process.
- Mzimvubu River is critical for water supply.
- How will completion of the tertiary infrastructure be aligned with completion of the bulk infrastructure? Will there be a way for communities to access water while construction is taking place (through boreholes for example)?
- Stakeholder explained that this project is long overdue. In 1959 a group of people came to investigate the Tsitsa River, at Qamata. The project was subsequently aborted due to land ownership and compensation issues. He expressed his hope that this project does not get cancelled again.

Project Launch

- It was asked why the sod turning, on 11 April 2014 was not done in the area where the dam wall is being constructed.
- Reference is made to 'Presidential launch' of the project – does that mean the decision has already been made, irrespective of the EIA findings?
- The Government have already indicated that the dam is going forward. How much will this influence any outcomes of the EIA? Will it be possible to come with a different view from what has already been published by Government? There has already been a sod turning even though the community had not yet been consulted for this development. The president's speech on the 17 June 2014 reiterated that the dam is going ahead. That is why I wonder whether the EIA processes will truly influence the government's decisions.

Access Roads

- Concern was expressed about the access road to Lalini as it already has potholes. What will be done about this road?

Public Participation

- This project is a very large project and the newspapers used to advertise were not sufficient. The Daily Dispatch is recommended to be used for future advertisements. There are not many people in the area that will read the

documents provided and it is therefore recommended that the project be announced via the communal radios to announce meeting dates

- How do communities in the catchment get involved/what processes are in place to involve them?
- There is a protocol through the Traditional Affairs and they should be informed to assist with informing the public.
- It was asked where hardcopies of the draft Scoping Report were available for the local people to review.
- The venues selected by the consultants have a tremendous limiting effect on creation of a wider and direct interactive opportunity with them. Our place is highly rural and with high illiteracy rates and local communities close to the site of development are not the only ones who are affected or stand to gain from this huge project. A decision to simply distribute documents wider in urban centres does not promote adequate consultation.
- Mzimvubu Dam stands out as a project that will not only affect the life of people where construction will take place, but it also stands to unlock the economic potential of this region as well for the entire resident population of our district. As such, a transparent consultative process that is opened to informed inputs from all interested stakeholders would assist to raise pertinent strategic questions, and provide answers.
- Has the Mzimvubu Catchment Forum been engaged with?
- Concern was expressed that no meetings have been held in the upper part of the Ntabelanga Dam catchment. That area is not part of the water supply area.
- Concern was expressed about efficiency of the consultation process with the tribal authorities.
- Various parties do have special interest in this project.
- In order for the project to prosper without any difficulties, conflicts will need to be dealt with upfront.
- Stakeholder asked how the authority's forum meetings related to the other public participation activities, such as the stakeholder forums.

Social implications

- It was asked if the residents of the area would benefit from this project.
- Would the young people receive training for the construction of the dam in order for them to apply for jobs as part of this project?

- Clarity was requested about permanent and temporary job creation. Job creation will improve the livelihood of the community.
- Majority of the youth in the area are unemployed. Will this project provide work for the youth so that they do not spend all their time drinking alcohol?
- The youth need to be first priority as they suffer the most.
- Will people within the community be allowed to rent their houses to the Contractors/construction workers during the construction of the dam?
- Cold wind will come off the dam. This will affect the people living close to the dam site.
- I wish you to consider geohydrological impacts; as well as in line with social impacts consider the possible influx of people for jobs as this may have implications for the municipality (services, etc.). Impacts on terrestrial plants to consider search and rescue of protected plants including where they will be relocated to (Rescue Plan for Plants). Many dams in the Transkei have been silted up how do you take care of this?

Safety

- Concern was expressed about the young children that will be endangered by the dam. There will be many dangers during construction as well as once the dam is operational, as it would be a large expanse of open water, posing a threat for potential drowning.
- It was asked that the dam be fenced off and closed on top.
- Stakeholder stated that Safety needs to be addressed in the EIA process.

Positive Feedback

- I appreciate you letting such a good project in my community, It will help us find job opportunities and uplift the standard of living.
- Appreciation for the project was expressed. This project will benefit the community, especially with the roads being upgraded. The hydropower plant may also, at a later stage, help the community get electricity. The positive benefits seem to outnumber the negatives and this pleases the community.
- The community were encouraged to submit comments on the project, because if they do not, the project could be delayed, whereas the community want the project to start as soon as possible.
- This project will have positive spin offs for the area. He looks forward to this project and that he is in favour of it.

- The project will be beneficial to the community, in terms of job creation as there is a high number of unemployed youth in the area and will reduce alcohol abuse.
- The project will assist in relieving poverty and create job opportunities.
- The community will experience growth through the creation of these dams and through water development.
- This project will help everyone in South Africa, not only the people in the surrounding community. People will also benefit from the jobs that will be created.
- Stakeholder stated he is proud of the project as it will provide the people with better water.

Relocation and Compensation

- What will happen to structures (houses) near or within the project footprint?
- Are there any set measurements regarding the area that would become inundated so that people who may need to be relocated can prepare themselves to be moved.
- The project will affect the communities, people's homesteads, grazing lands and agricultural fields. What are the plans to compensate for this?
- The land at the site of the Lalini Dam is used as a grazing area. What compensation will be given to the community?
- Stakeholder asked about the reimbursement for the land and houses that will be affected by the dam. It was asked how this would be compensated for.
- The following questions need to be answered:
    - What economic opportunities will be unlocked by the dam during implementation, and how local people will be positioned to take advantage of the opportunities?
    - What opportunities will be available during planning and execution of this project? Here we have a lot of unemployed graduates, in all fields who could benefit through internships, short-term employment associated with big companies that would be employed to execute the project.
    - How will the project affect households and communities?

- In previous cases, alien vegetation growth that was flooded caused a lot of unhappiness with communities, as the plants were being used by people and

because people derived an income from removing the vegetation through, for example, Working for Water. He asked how this aspect was being dealt with in the EIA.

- Stakeholder asked how the homes that have graves will be moved. Culturally, a cow needs to be slaughtered to apologise to the ancestors if a grave is to be removed.

Agriculture, irrigation and drinking water

- Fencing for the agricultural fields was requested.
- What areas will be irrigated?
- Request for additional equipment such as tractors to help the people plant crops.
- It was asked whether aquiculture could be developed as part of the project.
- Concern was expressed about the impact of the Department of Water Affairs' plan to reduce/remove the subsidy on water for agriculture as proposed in the Pricing Strategy.
- Another EIA may be required to establish commercial agriculture in the area (e.g. to apply for vegetation clearance).
- Are there any plantations in the area?
- Stakeholder expressed appreciation for the project and that it would assist to fulfil the community's need for water for both the households and the businesses. It was asked if permission would be needed in order to utilize water while the EIA is underway.
- Stakeholder stated that drinkable water is a scarce resource in the project area and asked if this dam would provide clean drinking water for the people.
- A request was made to supply purified water to the rural areas.

Other

- It was asked if the impacts on tourism have been considered, especially at the Tsitsa Falls, and what the impact of the dams will be on the flow regime.
- An enquiry was made about the dynamics of land ownership in the area and asked if there was any land owned privately.
- Mention is made that the Department of Water Affairs will only be responsible for primary and secondary infrastructure, and tertiary infrastructure will be for the Municipalities – as experienced with other such projects, there are never guarantees/contracts/ budgets in place in Municipalities in order to do so! Please clarify how this will be addressed / assured?

- There is quite some momentum building around how best to integrate climate change concerns into EIA processes (in SA as well as elsewhere) especially in large infrastructure projects with long lifetimes, such as dams – are there any specific requirements in the Terms of Reference on this?
- Will the project consider any offset programmes?
- Although the Catchment Rehabilitation is a separate project but in respect of any suggestions on Biodiversity offset it presents an opportunity.
- Stakeholder stated that the downstream communities who use the river for various purposes need to be considered, there are no bridges so any stream flow changes can significantly impact on them. This links to flooding due to climate change and dam management/operations. In Mthatha the Dam opening during the 2013 April floods negatively affected the downstream land users.
- Heritage Assessment: I refer you to The Distribution of Early Iron Age Settlements in Eastern Cape … by J. Feely, et al.

7. CATEGORIES AND SOCIAL IMPACTS VARIABLES

The social impact variables considered across the project are in accordance with Vanclay's new list of social impact variables which are clustered in the following seven main categories (Vanclay, 2002; Wong, 2013).

1. Health and social well-being impacts
2. Quality of the living environment (Liveability) impacts
3. Economic impacts and material well-being impacts
4. Cultural impacts
5. Family and community impacts
6. Institutional, legal, political and equity impacts
7. Gender relations impacts.

These categories are not exclusive and at times will tend to overlap with each other as certain processes may have an impact within more than one category. For instance changes to the division of labour, as discussed under the category gender relations, will also have an impact on the family and community. In much the same manner increased demand on existing infrastructure, facilities and social service, addressed under the category institutional, legal, political and equity, will have some bearing on the quality of the living environment.

With regard to large dam projects most social impacts are experienced during the construction phase, as this is when processes such as relocation and construction related activities resulting in the influx of labour and requiring the use of heavy machinery and explosives occur (Vanclay, 2000, pp. 7-9). The seven categories listed above are now addressed below as they apply across the project as a whole.

7.1 HEALTH AND SOCIAL WELL-BEING RELATED IMPACTS

The health and social wellbeing impacts related to the project include.

- Annoyance, dust and noise
- Fear of crime
- Increased actual crime
- Increased risk of HIV and AIDS
- Increased social tensions, conflict or serious divisions within the community
- Presence of construction workers
- Reduced actual personal safety, increased hazard exposure.

These impacts are addressed separately below.

7.1.1 Annoyance, dust and noise

Annoyance, dust and noise will relate to the construction phase of the project as construction activities will result in the generation of dust and noise from construction vehicles and equipment. Blasting will also generate dust and noise and

will at times extend some way beyond the construction site dependant on weather conditions at the time.

7.1.2 Fear of crime

With the influx of construction workers into the area, people in the local communities are likely to fear that crime levels will rise in the area. This is likely to have a psychological effect on some people who may fear that they have become vulnerable due to the increase in activities. Many of these people have lived a relatively isolated existence and recognise the people living in the area. Any strangers moving about the area may raise the anxieties of these people and this may lead to undue stress due to uncertainty. Families with young children may be particularly concerned in this regard. Fear of crime is likely to have subsided by the time the project becomes operational.

7.1.3 Increased risk of HIV and AIDS

The prevalence of HIV and AIDS amongst antenatal women in the area is relatively high with a prevalence rate of 29.9% in Joe Gqabi in 2011. The aim is to recruit workers from within the area which will reduce the risk to some extent. However, the increased risk will be associated with the gathering of construction workers in a concentrated area and the availability of disposable income which may attract prostitution which is discussed below under increased actual crime. The World Bank (Gender in Agriculture Sourcebook, 2009, pp. 367-368) indicates that there is a strong link between infrastructure and health and that:

> "*Transport, mobility, and gender inequality increase the spread of HIV and AIDS, which along with other infectious diseases, follow transport and construction workers on transport networks and other infrastructure into rural areas, causing serious economic impacts*."

Apart from the influx of construction workers into the area, transport workers will also be active with an increase in the delivery of construction materials, goods and services into the area.

7.1.4 Increased actual crime

It is possible that actual crime levels will increase as it is likely that the project will not only result in an influx of construction workers but that there will also be an influx of job seekers and other informal enterprises attracted by the opportunities and perceived opportunities generated by construction activities. It is also well documented that construction activities attract prostitution (Meintjes, Bowen, & Root, 2007), particularly in areas with high poverty which can also increase the risk of actual crime in the area. In 2013 the following statistics, reflecting total crime, were available for the surrounding areas (Crime Stats SA , 2013).

Precinct	**2013**
Kat-Kop	347
Maclear	731
Qumbu	1 234

Tsolo	1 264

Crime levels should have stabilised by the time the dams become operational. However, if tourism increases due to the recreational attraction offered by the dams and if a significant number of construction workers remain in the area and are unable to find employment crime, particularly opportunistic crime, may persist if not specifically addressed.

What may help in limiting the potential of increased crime in the area is the control that the Traditional Authorities exert over the region, which may prevent a significant number of work seekers flooding the area and occupying land in the hope of gaining employment. It is envisaged that employment opportunities will be managed in collaboration with the Traditional Authorities and Ward Councillors. The Traditional Authorities and Ward Councillors would also have an important part to play in curbing crime associated with tourism in the vicinities of the dams.

7.1.5 Increased social tensions, conflict or serious divisions within the community

In the event of the Traditional Authorities and Ward Councillors not retaining control over the distribution of jobs and illegal settlement in the area social tension, conflict and divisions may occur. These tensions are likely to be between local communities and work seekers as well as opportunists looking for opportunities to set up micro enterprises, such as food stalls in the area. Any opportunity associated with the operational phase of the project would also need to be closely monitored and managed to reduce the risk of social tension.

7.1.6 Presence of construction workers

It is estimated by the Economic Specialist that the peak construction workforce will amount to approximately 3 114 directly related jobs of which 2 476 will be semi and low-skilled (Department of Water and Sanitation, South Africa, 2014a). The intention is to recruit a large number of construction workers from communities within close proximity of the project and to transport these workers to and from site on a daily basis. The aim of this is to limit the size of the construction camp by reducing the need for onsite staff accommodation. Although this will limit the number of construction workers living on site, the actual extent of this is unclear as, at time of writing, no clear indication is available as to exactly how many employees will be locally recruited. Estimates based on past experience with projects of a similar size and nature indicates that approximately 50% of the semi and low-skilled workforce will be locally recruited. This would amount to about 1 238 workers being locally recruited which, including the skilled workforce of 638 people, would result in 1 877 people coming into the area to work.

7.1.7 Reduced actual personal safety, increased hazard exposure

With the use of heavy equipment and vehicles and an increase in vehicle traffic within the vicinity of all construction sites the risk to the personal safety of people in

the area will increase. Of particular concern are increased hazards faced by pedestrians, cyclists and motorists with emphasis on vulnerable groups such as children and the elderly. Excavation work and trenches also pose a hazard to the safety of people, particularly children and animals, who may fall into these works and have difficulty in getting out. There will also be an increased risk of fires brought about due to construction workers lighting fires to cook and for warmth in winter.

During the operational phase of the project there will be a risk of drowning due to there being a large body of water. The risk of fires may also be associated with maintenance teams as well as with leisure activities around the dams.

Recommended mitigation:

- Apply the dust suppression and noise reduction mitigation measures recommended in the EMPR.
- Ensure that construction workers are clearly identifiable. All workers should carry identification cards and wear identifiable clothing.
- Fence off all construction sites and control access to these sites.
- Clearly mark any hazardous areas and regularly monitor these areas to ensure that people and animals avoid these areas.
- Liaise with the South African Police Services (SAPS) and Community Policing Forums to ensure that construction sites are monitored.
- Encourage local people to report any suspicious activity associated with the construction sites.
- Prevent loitering within the vicinity of the construction camp as well as construction sites.
- Ensure that an onsite HIV and AIDS policy is in place and that construction workers have easy access to condoms.
- Draw up a recruitment policy in conjunction with the Traditional Authorities and Ward Councillors of the area and ensure compliance with this policy.
- Communicate the limitation of opportunities created by the project through the Traditional Authorities and Ward Councillors.
- Ensure all construction equipment and vehicles are properly maintained at all times.
- Ensure that operators and drivers are properly trained and make them aware, through regular toolbox talks, of any risk they may pose to the community. Place specific emphasis on the vulnerable sector of the population such as children and the elderly.
- Ensure that fires lit by construction staff are done in designated areas and that safety precautions, such as not lighting fires in strong wilds and that fires are completely extinguished before being left unattended, are strictly followed.
- Make staff aware of the dangers of fire during regular tool box talks.
- During operation consider the viability of having life guard facilities available, particularly if recreational facilities associated with the dam are developed.

- Encourage/facilitate swimming lessons within the communities surrounding the dam basins.
- During the operational phase ensure that fires are only lit in designated areas and not during the windy season. All fires must also be extinguished before being left unattended. In this regard warning signs must be placed in appropriate areas.

7.2 QUALITY OF THE LIVING ENVIRONMENT IMPACTS

The following quality of the living environment impacts are related to the project.

- Disruption of daily living
- Increased population density and crowding
- Reduced adequacy of community social infrastructure
- Reduced adequacy of physical infrastructure
- Reduced quality of housing
- Reduction in perceived quality of life.

7.2.1 Disruption of daily living

With the loss of a potential 234 structures and 28.72612 km^2 of cultivated land the project will result in the disruption of daily living patterns of a number of people which may even lead to changes in family structures. Consequently, people having to be resettled will experience high levels of disruption and uncertainty that will have negative psychological effects manifesting in stress and anxiety.

This impact will also be experienced by people who may not be directly but who are indirectly affected by construction activities. The movement patterns of people will be altered with disruptions to the access of a number of facilities such as schools, clinics, and disruption of access to other community members such as family and friends. Access to grazing land and water may also be altered resulting in the temporary and permanent loss of these facilities with the commencement of construction. With the possible fencing of the dams during the operational phase access to water for both people and animals could be obstructed.

7.2.2 Increased population density and crowding

With an estimated peak workforce of 2 299 (Department of Water and Sanitation, South Africa, 2014a, pp. 7-1) the rural isolated ambiance of the area will be disrupted. This will be most significant in the vicinities of the dams and construction camps and will be disruptive to people who are accustomed to a quieter rural environment. The increased population density in the area may also lead to stress and anxiety amongst some sectors of the population (Boyko & Cooper, 2014).

There are assumptions that recreational tourism, associated with the creation of the Ntabelanga Dam water body, will develop which could result in an estimated 6 000 visitors per annum. It is, however, not clear at this stage what facilities, if any, will be

constructed to cater for these recreational tourists. These facilities depend on possible future developments around the dams, which have not yet been identified. At this stage it is noted that there is a possibility of an increased number of tourists visiting the area during the operational phase but the extent of this is vague and difficult to assess.

7.2.3 Reduced adequacy of community social infrastructure

Construction work may impact on the adequacy of social infrastructure, particularly in respect of the Ntabelanga Dam Basin with the following community social infrastructure needing to be relocated:

Irrigation Area	
Ablution facility (school)	1
Ntabelanga Dam Basin	
Dipping tank	1
Pre-school	1
Water pump station	1
Ntabelanga Road	
Bus stop	1
Pipelines (if not re-aligned)	
Bridge	1
Bus stop	1
Church	4
Hostel	1
Kraal	1
Micro business	2
Pre-school	1
Reservoir	1
School	2
Telkom tower	1
Vacant land	1
Water pump station	2
Re-alignment of road north of Lalini	
Water purification plant	1
Total	**24**

This will result in the need to replace this infrastructure which will take some time. Mitigation for the pipelines and roads is to implement minor local realignments making it possible to avoid virtually all structures under threat. This, however, is not possible in respect of the dam walls and basins which are fixed. The finer adjustments in this regard will be done during the detailed design stage, and were not available at time of writing.

7.2.4 Reduced adequacy of physical infrastructure

Construction activities may lead to temporary or even permanent damage to existing infrastructure such as water, electricity, telecommunications and sewerage facilities in the area. Although this would have an adverse effect on the quality of the living environment for those people living and working close to the construction sites, this should only last over a short period.

During the operational phase of the project the influx of recreational tourism associated with the Ntabelanga Dam and Tsitsa Falls could place pressure on existing infrastructure. However, at this stage the extent of this is vague and as a consequence difficult to assess.

7.2.5 Reduced quality of housing

With the extent of relocations, particularly associated with the Ntabelanga Dam Basin, there is some danger that the quality of housing could be compromised due to poor workmanship. Apart from this, the importance that people attach to their dwellings often extends beyond the economic value of the dwelling and is associated with many other factors, such as the history attached to the dwelling, the locality as well as the proximity to family, friends transport, and various other amenities.

7.2.6 Reduction in perceived quality of life

With a high level of construction activities occurring within the area the perception may emerge that the quality of life associated with a rural setting has been compromised. This may be reinforced if communities are inconvenienced in that their movement patterns and consequently their daily living environment are disrupted.

Recommended mitigation:

- Ensure that any dwellings that are replaced are equal to, or better, than the original dwelling that it replaces.
- Ensure that, at all times, people have access to their properties as well as to social facilities such as schools, churches, transport and shops.
- Appoint a Professional Service Provide to establish and facilitate an independent forum for communication and liaison, consisting of representatives of the Traditional Authority, municipalities, ward councillors and communities to address any concerns or grievances that community members may have regarding the project, and to facilitate relocation and other activities affecting the community. This forum will from here on be referred to as ‘The Forum’ under other sections of this report.
- Consult The Forum in an effort to reduce the impact that the project may have on the movement patterns of people. This should be done, in an attempt to retain these patterns as far as is possible.

- Alert local businesses to the fact that with the arrival of construction workers the population of the area will increase and they are likely to be faced with a higher demand and will need to purchase sufficient stock.
- Establish channels of communication between local communities and contractors to ensure that construction workers behave in a manner acceptable to these local communities.
- Put procedures and regulations in place to control loitering and the construction of informal dwellings in the vicinity of the construction camp and sites.
- Monitor the effect that construction is having on infrastructure on a regular basis and immediately report any damage to infrastructure to the relevant authority to carry out maintenance and repairs.
- Where damage has been reported regularly follow up to ensure rapid repair.
- Investigate and consult local communities on the need to provide suitable hard access points around the dam basin for people and animals.

7.3 ECONOMIC AND MATERIAL WELL-BEING IMPACTS (NEGATIVE)

The negative economic and material well-being impacts associated with the project include.

- Relocation of households
- Deteriorating economic situation
- Decreased autonomy, independence, security of livelihoods.

7.3.1 Relocation of households

A maximum of 202 dwellings could be relocated as a result of the project. This number will, however, vary depending on the number of dwellings that can be saved through adjustments to the realignment of the pipelines and access roads and the final size selected for the Lalini Dam. The differences in number of structures affected across the project associated with the various Lalini Dam size alternatives is as follows.

Lalini Dam Options	Structures	Cultivated land
1	12	7.58762 km^2
2	1	4.9539 km^2
3	77	12.08256 km^2

The relocation of households will have a multifaceted impact on those being resettled and despite all attempts to replace dwellings and facilities at an ‘equal to or better than’ level those relocated may still remain at risk of impoverishment, particularly in respect of marginal communities and vulnerable groups such as women, the youth and the elderly (The World Bank, 2009, p. 368). The disruption of social networks for example not only has traumatic psychological and social consequences but also has economic consequences. For instance the loss of child care support networks that are family or community based may result in higher financial costs after relocation.

The World Bank (2004, pp. 71-91) points out that the poor and vulnerable sectors of the population are more severely affected and less able to recover than other groups and these vulnerable sectors should receive special forms of assistance.

7.3.2 Deteriorating economic situation

Following on from the above discussion, it is widely recognised that relocation has a negative economic impact on households as the vast majority of those displaced by large development projects fail to retain the same standard of living that they had enjoyed prior to being relocated. The reality is that most slid into greater impoverishment due to relocation (Cernea, 1999; Nogendra, 2000; The World Bank, 2004; Ajnali, et al., 2008; The World Bank, 2009; Bennett & McDowell, 2013; Luis & Hilhorst, 2014). In this regard The World Bank points out that:

> "*Bank experience indicates that involuntary resettlement under development projects, if unmitigated, often gives rise to severe economic, social, and environmental risks: production systems are dismantled; people face impoverishment when their productive assets or income sources are lost; people are relocated to environments where their productive skills may be less applicable and the competition for resources greater; community institutions and social networks are weakened; kin groups are dispersed; and cultural identity, traditional authority, and the potential for mutual help are diminished or lost*" (The World Bank, 2004, p. 35).

With the extent of the relocations attached to the Ntabelanga Dam Basin, in particular, the deterioration of the economic situation of marginal and vulnerable groups is of some concern. This situation is aggravated in that, apart from moving a relatively large number of people into an existing community, this will occur at the time that the population of the area is also likely to increase with the arrival of construction workers. The increase in population is likely to result in an escalation in consumer demands and associated price increases that will place greater economic pressures on displaced communities.

7.3.3 Decreased autonomy, independence, security of livelihoods

With the inundation of the dam basins there is likely to be changes to the access to natural resources that sustain livelihoods. These resources include wood collected for fuel for cooking and heating, bush hunting and gathering for food, the collection of medicinal herbs and plants and access to grazing for livestock. The greatest impact in this respect will be experienced by marginal and vulnerable groups and in this sense the importance of providing an opportunity for all groups to participate in decisions that affect their lives is paramount (World Commission on Dams, 2000, p. xxxiii).

Recommended mitigation:

- Afford both displaced persons and host communities opportunities to participate in planning.
- Ensure that the Relocation Action Plan (RAP) takes the risk of impoverishment fully into account and includes support structures aimed at minimising such risks.
- Keep family units, and where possible, social networks intact.
- Residents should be sufficiently compensated and assisted throughout the relocation process and resettlement period.
- The Forum should consider the feasibility of establishing a trust fund to assist affected households in re-establishing themselves. Particular emphasis should be placed on marginal and vulnerable groups.
- Assist with the relocation of livestock and, where feasible, after construction swiftly rehabilitate the land to its original condition.
- Where land cannot be rehabilitated within a reasonable period of time ensure that stock feed or an acceptable alternative is provided in consultation with The Forum.

7.4 ECONOMIC AND MATERIAL WELL-BEING IMPACTS (POSITIVE)

The positive economic and material well-being impacts associated with the project include:

- Increases in employment opportunities
- Increased opportunities for SMMEs.

Other economic changes which will occur during construction and which will lead to positive impacts are addressed in the Economic Specialist's report (Department of Water and Sanitation, South Africa, 2014a). Amongst these impacts are.

- Economic stimulation of the area
- Increased tax revenue
- Income and expenditure (tax revenue).

7.4.1 Increased employment opportunities

The Eastern Cape Province, and in particular, the district municipalities are plagued with slow economic growth and high levels of unemployment. Official unemployment ranges between 35.4% in Joe Gqabi and 44.10% in the O. R. Tambo district with the Alfred Nzo district having an official unemployment rate of 52.3%. Unemployment amongst the youth is even higher with the official rate ranging between 43.3% and 54.3%. It has been estimated in the Economic Specialist's report (Department of Water and Sanitation, South Africa, 2014a) that 3 114 direct, 1 334 indirect and 1 640 induced jobs will be created during the peak of the construction phase of the project. When seen against this background it becomes apparent that the employment opportunities created during the construction phase of the project will have a significantly positive impact.

In addition to approximately 140 jobs associated with the operation and maintenance of the dams and associated infrastructure, the Economic Specialist estimates that, during the operational phase, 4 000 jobs will be created through the irrigation scheme, albeit that not all of these irrigation related jobs will be permanent.

7.4.2 Increased economic opportunities

During the construction phase, there are likely to be increased opportunities for small and medium businesses in the area, which will result in the economic sustainability of these businesses at least over the construction period. This should have a short to medium-term positive impact on the confidence of the owners of these businesses providing them with a basis on which they could build their businesses and develop over the longer term. The findings of the Economic Specialist indicate that, over the construction phase, the project will result in a positive impact on the Gross Domestic Production at both a national and provincial level.

Turning towards the operational phase of the project, the economic report also indicates that;

> "*It is believed that a well-managed commercial orientated 2 800 hectare irrigation area will over time lead to the development of a number of private support entities that can only be to the advantage of the Tsolo area*" (Department of Water and Sanitation, South Africa, 2014a, pp. 8-4).

This will have a significantly positive impact on an area currently sorely lacking in economic opportunities and growth potential.

Recommended optimisation measures:

- Local residents should be recruited to fill semi and unskilled jobs.
- Women should be given equal employment opportunities and encouraged to apply for positions.
- A skills transfer plan should be put in place at an early stage and workers should be provided the opportunity to develop their skills which they can use to secure jobs elsewhere post-construction.
- A procurement policy promoting the use of local business should, where possible, be put in place to be applied throughout the construction phase.
- Careful consideration must be given to the suitability of the crop selection for the irrigation development.
- A well-constructed agricultural development training and support system focused on assisting the new farmers will need to be implemented.
- The assistance of the Department of Rural Development and Agrarian Reform, Tsolo Agricultural College, and Jongiliswe Agricultural College for Traditional Leaders must be enlisted to train, mentor and support developing farmers.

- This training must include business training and training in project planning, monitoring and evaluation.

7.5 CULTURAL IMPACTS

The heritage structures and sites associated with the project identified by the Heritage Specialist (Department of Water and Sanitation, South Africa, 2014e, pp. 6-2 - 6-7) include.

- Places, buildings and structures: 6
- Graves and burial grounds: 8
- Archaeological places: 2

All of which will have high significance for communities as people in the area have certain obligations to their departed ancestors which they are obliged to honour. Consequently the customs, social rituals and traditions of local communities need to be recognised and respected. These issues are dealt with in detail in the Heritage Specialist's report.

On a social basis the following processes will be considered:

- Diminished cultural integrity
- Loss of rights over and access to natural resources
- Changes in movement patterns
- Loss or negative influences on sites of archaeological, cultural, and/or historical significance.

7.5.1 Diminished cultural integrity

The greatest risk to cultural integrity will result from an influx of construction workers from other areas. The intention, however, is to recruit about 50% of the semi and unskilled workers from surrounding areas through the Traditional Authorities and Ward Councillors, and consequently, at least these workers will have the same or similar cultural background as the local communities. This should help to some extent in limiting the impact on local culture. Nevertheless, most of the skilled workers and many semi and unskilled workers may have to be sourced from outside the region due to the lack of local skills. What is not clear at this point is the actual number of skilled workers who will need to be recruited and from where they will be recruited. Consequently, it is not possible to provide any accurate ideas as to what effect this may have on local culture aside from noting it here as a risk.

As the project settles down over the operational phase, the threat to cultural integrity should diminish.

7.5.2 Loss of rights over and access to natural resources

Traditional healers, herbalists, traditional doctors and elderly people of the area rely on at least 35 species of plants for medical, food, pastoral, cultural and religious purposes (Bhat, 2014, pp. 293-296). With the inundation of the dam basins access to

these resources will be lost. However, according to the finding of the Ecology and Wetlands Specialist the medicinal plants identified are abundant in the area and finding replacement areas to harvest them should not be a problem (Department of Water and Sanitation, 2014c).

7.5.3 Changes in movement patterns

The construction and inundation of the dams will result in the loss of access to graves and burial sites. If family members are no longer able to visit these sites this will interfere with ritual obligations and should be avoided as far as possible. Where avoidance is not possible (dam basins) the relocation of the graves should be done in consultation with the families and with due regard for cultural beliefs and traditions.

7.5.4 Loss or negative influences on sites of archaeological, cultural, and/or historical significance

According to the Heritage Specialist, (Department of Water and Sanitation, South Africa, 2014e) the inundation of the Ntabelanga Dam will result in the loss of the following.

- Two stone walled stock pens
- Livestock byre extant
- Three Abandoned homestead site >1966
- Eight possible grave sites
- An archaeological site in the form of a LSA knapping floor

While the inundation of the Lalini Dam Basin will result in the loss of an archaeological site in the form of an EIA smelting site c. 900 AD.

Recommended mitigation:

- Sensitise construction workers from outside the area to the traditions and practices of local communities.
- Provide communication channels and mechanisms through which local communities and construction workers can address their expectations and concerns.
- Consult traditional healers, herbalists, traditional doctors and elderly people of the area to ensure that any lost access to natural resources is restored to former levels.
- Follow the mitigation measures suggested by the Heritage Specialist.

7.5.5 Family and community impacts

Both the displacement of people as well as the influx of construction workers will have an impact on families and the sense of community within the vicinity of the project. These impacts are likely to include:

- Disruption to family structures and social networks
- Changed attitudes towards local communities, level of satisfaction with the neighbourhood.

7.5.6 Disruption to family structures and social networks

The influx of construction workers has the potential to disrupt family structures and social networks as the new arrivals interact with local communities. Although a large section of the workforce will be recruited from surrounding communities, part of the workforce, particularly the skilled and semi-skilled sectors, will need to be brought in. This will raise the potential for relationships to form between local residents and construction workers as many construction workers will be isolated from their families and are likely to seek new relationships to fill theses gaps.

7.5.7 Changed attitudes towards local community, level of satisfaction with the neighbourhood

The arrival of construction workers may result in the formation of a subculture that could manifest in antisocial behaviour which conflicts with the expectations of local communities. This may result in these local communities, who are accustomed to a quiet rural environment, becoming dissatisfied with the neighbourhood.

In addition to the above, people being displaced will need to be resettled, which will in turn have an effect on host communities. The strategy to be employed is to identify the host communities and undertake these resettlements through the traditional authority structure, in an effort to ease the process. Nevertheless, the sudden influx of people imposed on these host communities may invoke a negative response from the host communities who feel that their community cohesion and identity is threatened and with it their sense of place disrupted. At the point of writing, these host communities had not been identified and consequently, due to a lack of detail, this issue is merely raised rather than addressed in any detail.

Once the dam basins have been inundated the sense of place of the area will change. This will have an impact on communities living in close proximity of the dams and for people travelling through the area.

Recommended mitigation:

- Include a section in the induction programme for construction workers that cover local traditions and practices.
- Regularly reinforce, amongst construction workers, the importance of respecting local traditions and practices through toolbox talks. In this regard encourage the participation of locally recruited construction workers to assist in reinforcing this point.
- Provide a communication channel through The Forum through which local communities can voice their experiences and expectations of construction workers.
- Avoid involuntary resettlement wherever possible.

- Where feasible encourage displaced people to resettle themselves and support them throughout the process.
- Undertake consultations with displaced people about acceptable alternatives and strategies and include them in the planning, implementing and monitoring processes.
- Choose the relocation site to ensure that the minimum disruption to displaced families as well as host communities occurs.
- Sensitise host communities to the pending arrival of the displaced communities.
- Establish a forum or resettlement committee through which resettlement and integration can be controlled by those affected.
- A formal accessible grievance procedure should be implemented and communicated to both the displaced and host communities.
- Address all grievances swiftly, fairly and in a transparent manner.
- Provide swift and honest feedback in response to all queries.
- Ensure the infrastructure and social facilities within the host communities will not be compromised with the arrival of additional people into the area.

7.6 INSTITUTIONAL, LEGAL, POLITICAL AND EQUITY IMPACTS

The institutional, legal political and equity impacts associated with the project include:

- Increased demand on existing infrastructure facilities and social services
- Attitude formation towards project
- Increased opportunity for corruption
- Decreased level of community participation in decision making, loss of empowerment
- Disaster management

7.6.1 Increased demand on existing infrastructure facilities and social services

A total of 202 dwellings are potentially under threat of relocated as a result of the project, of which five seem to be abandoned. It is expected that not all of these dwellings will need to be relocated as there is scope for adjustments to the alignment of the pipeline routes and access roads. The people living in these dwellings will be resettled through the traditional authority structures. The process will need to be carefully managed to prevent any undue pressure being placed on the existing infrastructure facilities and social services currently available within the host community. If this is not done there is a risk that competition for these amenities will emerge between the host and resettled communities, which will have the potential to result in tension and culminate in service delivery protests.

7.6.2 Attitude formation towards project

No negative attitudes towards the project have been identified. However, the situation has been difficult to assess as access to the communities has been strictly

controlled by the Traditional Authority. The impression given by the people consulted was that they were positive towards the project as they felt that it would provide jobs during the construction phase. What is often the case with projects the size of this is that interest groups form attitudes towards the project at an early stage which to this point has not been identified.

Certain expectations have been identified amongst some people who expect to benefit through the project but who are not directly affected and who will not receive the new houses that they expect to receive. This problem, which is particularly relevant in the Nandoni Dam project in Limpopo, needs to be promptly addressed through a communication and consultation process where the situation is made clear to them. Any delay in doing this is likely to result in the situation becoming more difficult to handle.

7.6.3 Increased opportunity for corruption

A development of the size of the Mzimvubu Water Project will carry the risk of increased opportunism and corruption in the area. It is most likely that this opportunism and corruption will be most intense during the construction phase of the project. There have already been a large number of approaches made by various service providers to secure contracts.

During the operational phase of the project corruption could materialise in relation to the supply of domestic water and the irrigation scheme, particularly considering the need to fund these processes over a long period (Department of Water and Sanitation, South Africa, 2014a, pp. 8-4) and in the selection of beneficiaries.

7.6.4 Decreased level of community participation in decision making, loss of empowerment

With the relocation of a relatively large group of people, the risk exists that separate interest groups could form between resettled and host communities and that some people will be excluded from the community participation and decision making process. This could result in a loss of self-esteem and empowerment particularly amongst the more vulnerable groups in society, such as amongst the poor, women, children and the elderly.

7.6.5 Disaster management

With the construction of two dams the potential for a disaster as a result of flooding, or geological event causing failure of the dam wall must be considered, regardless of the low risk. If it does occur it has a high impact. Such a catastrophic event, should it happen, will have a significant impact on the lives of a vast number of people, both up and down river of the dams, as well as on those who may depend on water supplied from the dams. As a result of global warming the risk of severe weather extremes continues to increase, and with it the risk of floods (Schiermeier, 2011, p.

316; Arnell, 2014). In this regard the World Commission on Dams (2000, p. 15) points out that.

> "*The last two decades have seen a thorough re-evaluation of what constitutes the appropriate mix of prevention, defence and mitigation against flood disasters. As a result, the focus on controlling floodwaters, dominant in the 1950s–1960s, has lost ground to more environmentally based and integrated approaches.*"

This would need to be considered the disaster management plan, which is a requirement of the Dam Safety Regulations, to deal with any dam break or other emergencies.

Recommended mitigation:

- Ensure that the receiving environment is prepared and has adequate infrastructure, facilities and social services to support both the displaced and host communities, prior to moving the displaced communities.
- Ensure that the facilities and services available to both displaced and host communities are equitable.
- Ensure equitable access to common resources such as water, grazing land and forests.
- Set up a grievance committee comprising of host and displaced community representatives as well as representatives of the responsible authorities.
- Provide a channel through which both the host and resettled communities can route grievances or concerns regarding service delivery.
- Swiftly address any grievance raised concerning service delivery in a transparent and equitable manner.
- Regularly monitor the effect that the resettlement has had on existing infrastructure facilities and social services within the host community.
- Promptly deal with any raised expectations amongst communities regarding perceived benefits, through a process of communication and consultation.
- Ensure that the appropriate procurement policies are put in place and closely followed.
- Any contravention of the procurement policies must be swiftly, transparently and appropriately dealt with.
- Assist both displaced and host communities to become self-reliant thus raising their self-esteem and empowering them.
- During both construction and operation implement surveillance and monitoring programmes, and undertake regular dam break safety inspections.
- Implement a disaster management plan that includes a well-developed public communication process and evacuation plan.
- Ensure that all communication and warning systems are regularly tested and maintained.

7.7 GENDER RELATIONS IMPACTS

Gender refers to the characteristics attributed to males and females by society and is associated with available power and resources. These characteristics, together with the associated power and resources, vary widely between cultures and tend to change over time. Consequently, culture will have an important impact on gender relations together with other factors such as gender of household head.

The study area is typical of a rural patriarchal society with women having less access to productive services and opportunities, such as land, livestock, financial services, education and job opportunities than those available to men. In this regard the Food and Agricultural Organisation (FAO) of the United Nations indicates that;

> "*Numerous studies underscore the social costs of rural women's lack of education and assets, linking it directly to high rates of undernutrition, infant mortality and - in some countries - HIV/AIDS infection. There are also high economic costs: wasted human capital and low labour productivity that stifle rural development and progress in agriculture, and ultimately threaten food security - both for women and men*."

And goes further to point out that;

> "*Gender equality makes good economic and social sense. The FAO State of Food and Agriculture 2010-11 report shows that if female farmers had the same access as male farmers to agricultural inputs and services, they could substantially increase the yields on their farms. A World Bank report concluded that reducing gender inequality leads to falling infant and child mortality, improved nutrition, higher economic productivity and faster growth. For the global community, gender equality is also a commitment, embedded in international human rights agreements and in the United Nations Millennium Development Goals.*"

The gender relationships associated with the project may include.

- The burden of resettlement
- Cultural resistance towards women
- Division of labour.

7.7.1 Burden of resettlement

There is some evidence indicating that resettlement results in the changing of gender role and that the burden of change is greater for women than it is for men (Thukral, 1996; Koenig, 1995; Mehta & Srinivasan, 2000). With the high number of female headed households it is possible that women will carry a heavy burden as a result of the project, particularly if competition for resources within the host community is high and women continue to have less access to economic resources than men.

The different institutional positions of women, both formal and informal, will also impact on the ability for women and women headed households, to cope and resume

their lifestyles. Women's role within the participatory and decision making process will also be influenced by cultural principles and if women do not fully participate within this process the family's health and wellbeing may be placed at risk. In this regard numerous studies have highlighted the importance of moving beyond merely compensating for the monetary loss of land and ensuring that the interests of vulnerable communities such as women and children are considered at a much deeper level (Thukral, 1996; Mehta & Srinivasan, 2000).

7.7.2 Cultural resistance towards women

It is quite possible that some form of cultural resistance towards the employment of women on the construction sites may emerge. The issue of land rights within the area also has gender related implications. Consequently, the resettlement of displaced communities as well as the allocation of land with regard to the farming units may also face some resistance associated with gender bias. With regard to commercial farming units Mehta and Srinivasan (2000, p. 9) point out that

> " *…greater reliance on market, capital, fertilisers and so on, may lead to an exclusion of women from decision-making processes because they may not be explicitly targeted to receive these benefits".*

7.7.3 Division of labour

The division of labour is a critical aspect that will lead to various impacts during both the construction and operational phases of the project. During the construction phase women will be integrated into the workforce, however, this will come with various challenges. Women and men work on different tasks, have different biological, sex, gender and health needs, and have different roles within the family, all of which need to be considered in order to create a workplace, without discrimination, that is accessible to both women and men (World Health Organization, 2006).

The operational phase of the project will result in significant changes in the division of labour within the family as well as across the broader community, which will have far reaching impacts on a more permanent basis. In many cases women bear the responsibility of collecting water and fuel for domestic use, a task that is extremely time consuming. With the provision of domestic water to households these women will be freed to some extent to be able to perform other tasks and possibly even to enjoy more leisure time.

However, the reverse may occur in respect of the irrigated areas. As Mehta and Srinivasan point out, " *…irrigated agriculture is known to increase women's work-load due to double or triple cropping and the gendered division of labour which assigns tasks such as weeding to women* (Mehta & Srinivasan, 2000, p. 9). Apart from this in these areas the issue of child labour will become a concern with 70% of child labour occurring in agriculture, according to the International Labour Organisation (ILO) (The World Bank, 2009, p. 322).

Recommended mitigation:

- Ensure that all consultation is gender inclusive.
- Promote equal job opportunities for women and men during the construction process.
- Ensure gender inclusivity and equity with respect to all compensation.
- Prioritise gender inclusivity and equity in access to resources, goods, services and decision making with the aim of empowering women.
- Prioritise and articulate gender inclusivity and equity in the project documents by including specific strategies and guidelines for implementation.
- The project documents should also include clear mechanisms through which the actual implementation of the activities and the impact on the ground can be monitored and evaluated.
- Develop a grievance procedure to specifically address gender matters.
- Factors such as culture should be considered when planning for gender activities since they play a great role in influencing gender relations.
- In implementing the project consider the gender equity objectives of the Food and Agricultural Organisation (FAO) these objectives to be obtained by 2025 include.

  "*1. Women participate equally with men as decision-makers in rural institutions and in shaping laws, policies and programs.*

  2. Women and men have equal access to and control over decent employment and income, land and other productive resources.

  3. Women and men have equal access to goods and services for agricultural development and to markets.

  4. Women's work burden is reduced by 20% through improved technologies, services and infrastructure.

  5. Percentage of agricultural aid committed to women/gender-equality related projects is increased to 30% of total agricultural aid" (Food and Agricultural Organization of the United Nations, 2012, pp. 4-5).
- An important aspect of programme design is to gain an understanding of the differing roles, responsibilities, capacities, and constraints of women and men in the region.
- Ensure that strategies are put in place to monitor and prevent child labour from emerging in the area.

Attention will now be turned towards assessing these impacts in relation to the various components and phases of the project.

8. IMPACT ASSESSMENT

This Chapter presents the findings of the social impact assessment of the various project components and associated activities. The activities assessed include:

- **Dams and associated water infrastructure** (DEA Ref no. 14/12/16/3/3/2/677) comprising of:
  - The Ntabelanga and Lalini Dams;
  - Five flow gauging weirs;
  - Primary and secondary bulk potable water infrastructure:
    - Primary infrastructure: main water treatment works, including four major treated water pumping stations and three minor treated water pumping stations, main bulk treated water rising mains, and eight Command Reservoirs that will supply the whole region;
    - Secondary distribution lines: conveying bulk treated water from Command Reservoirs to existing and new District Reservoirs;
  - Bulk raw water conveyance infrastructure (abstraction, pipelines, one raw water pumping station, one reservoir and two booster pumping stations) for irrigated agriculture (raw water supply up to field edge);
  - Impact of commercial agriculture in earmarked irrigation areas;
  - WWTWs at the Ntabelanga and Lalini Dam sites;
  - Accommodation for operational staff at the Ntabelanga and Lalini Dam sites;
  - Eight construction materials quarries and borrow pits;
  - River intake structures and associated works;
  - Information centres at the two dam sites; and
  - Miscellaneous construction camps, lay-down areas, and storage sites.

- **Electricity generation and distribution related activities** (DEA Ref no. 14/12/16/3/3/2/678) which include:
  - Pipeline and tunnel (including tunnel alternatives) at the proposed Lalini Dam;
  - Generation of hydro power and feeding of this power into the existing grid; and
  - A 18.5 km powerline from the Lalini Dam hydropower plant.

- **Road infrastructure** (DEA Ref no. 14/12/16/3/3/1/1169) which involves:
  - Upgrading and relocation of roads and bridges.

As a result of these activities and taking option one of the Lalini Dam as the technically preferred option into account, 74 structures will need to be relocated as they fall within the two dam basins. A further three dwellings are located within 5 m of the project footprint and need to be carefully considered with the aim of avoiding these structures. Apart from the structures that will be lost, 27.50122 km^2 of

cultivated land will be inundated with a further 0.5 km^2 being lost as a result of the associated infrastructure requirements for both dams. The approximate areas for the appropriation lines for the dams are as follows.

Ntabelanga Dam: 3571.79 ha
Lalini Option 1: 1700.09 ha
Lalini Option 2: 1145.05 ha
Lalini Option 3: 2495.09 ha

In addition to this 134 structures lie within the currently proposed servitudes of the pipelines and 26 within the road reserve resulting in a total of 234 structures. A list of these potentially affected structures is indicated in **Table 7 - 1**.

Table 7 - 1: Structures and cultivated land affected by dams, pipelines and associated infrastructure

Lalini Dam Basin option 1	**Within footprint**	**Within 5 m**
Cultivated land	7.58762 km^2	
Dwellings	10	
Dwelling abandoned	2	
Lalini Dam Basin option 2		
Cultivated land	4.9539 km^2	
Dwelling	1	
Lalini Dam Basin option 3		
Cultivated land	12.08256 km^2	
Structures	77	
Lalini Hydro Pipeline Area		
Dwelling		1
Ntabelanga Dam Basin		
Cultivated land	19.9136 km^2	
Dipping pit	1	
Dwellings	57	1
Dwelling abandoned	2	
Pre-school	1	
Water pump station	1	
Drainage Realignment		
Dwelling	1	1
Water purification plant	1	
Pipelines (if not re-aligned)		
Bridge	1	
Bus stop	1	
Church	4	2
Dwellings	113	95
Dwelling abandoned	3	4
Dwelling & business		3
Dwellings demolished		1
Equipment storage		1
Grave yard		1

Hostel	1	
Kraal	1	
Micro business	2	5
Pre-school	1	
Reservoir	1	2
School	2	
Telkom tower	1	1
Toilet		2
Tuck shop		1
Vacant land	1	
Water pump station	2	
Ntabelanga Road		
Cultivated land	0.19 km²	
Bus stop	1	
Dwellings	22	3
Dwelling abandoned	2	
Water purification plant	1	

An illustration of some of the structure listed as directly affected by the Ntabelanga Dam Basin in **Table 7 - 1** is provided in **Figure 7 - 1Error! Reference source not found.**

In undertaking this assessment consideration is also given to the electricity generation and distribution related activities as well as the road infrastructure as, on a social level, these activities cannot be seen in isolation. The extent of the project is such that it is important to consider the demographic, economic, social and cultural change processes associated across the entire project on a cumulative basis rather than various components in isolation. The specific issues associated with the electricity generation and distribution related activities as well as the road infrastructure are addressed in specific terms under the appropriate section below.

Dwelling at coordinates 31 09.2492S 28 52.1921E

Pre-school at coordinates 31 12.5844 S 28 65.7729E

Dipping pit at coordinates 31 09.8899S 28 64.1133E

Water pump at coordinates 31 08.8654S 28 66.0927E

Figure 7 - 1: Structures within the Ntabelanga Dam Basin

The inundation of the dam basins will also result in a need for Eskom to move a number of 22 kV power lines. **Figure 7 - 2** illustrates those power lines associated with the Ntabelanga Dam Basin that will need to be removed while power lines associated with the Lalini Dam Basin are illustrated in **Figure 7 - 3**.

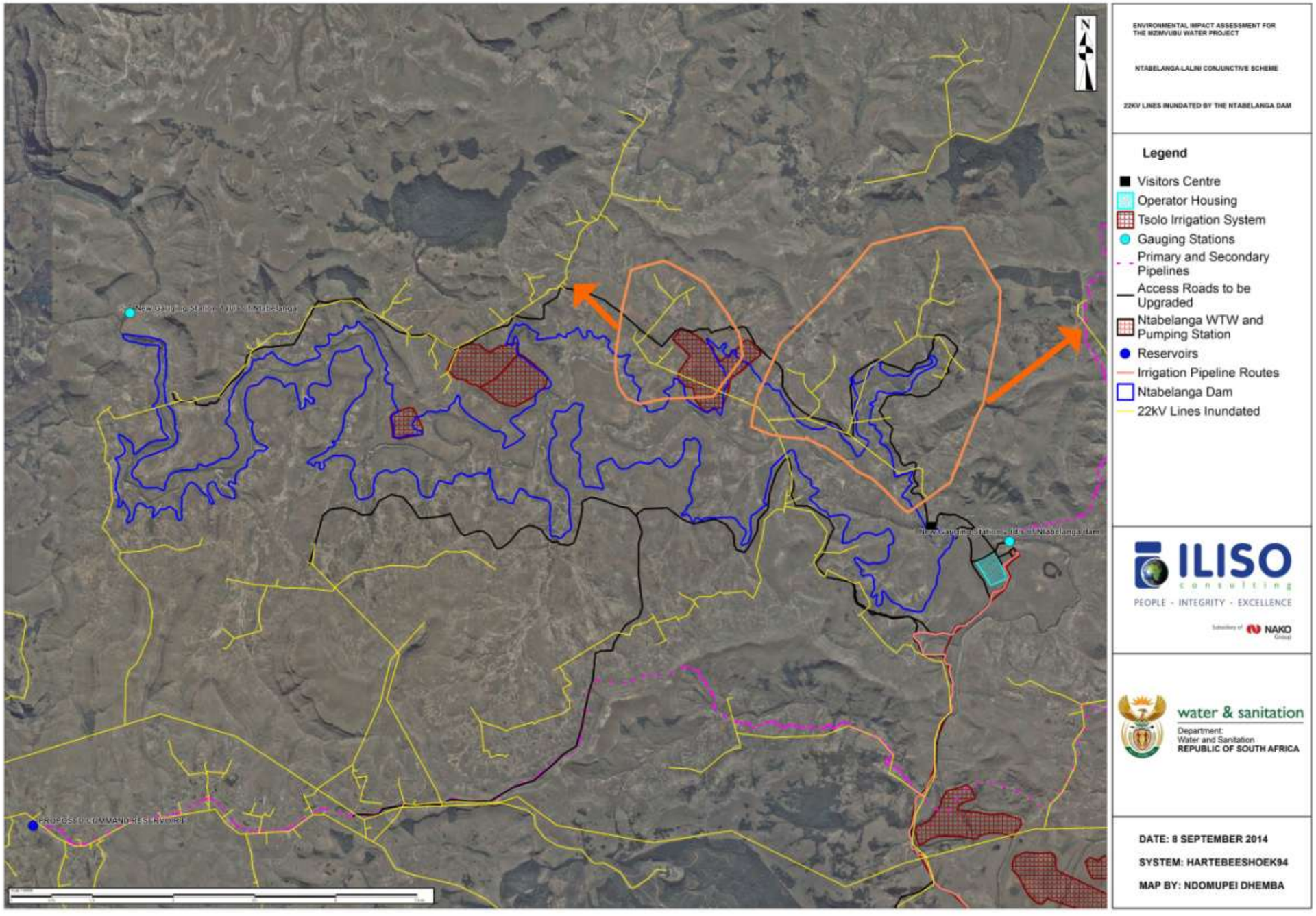


Figure 7 - 2: Eskom power lines inundated by the Ntabelanga Dam Basin

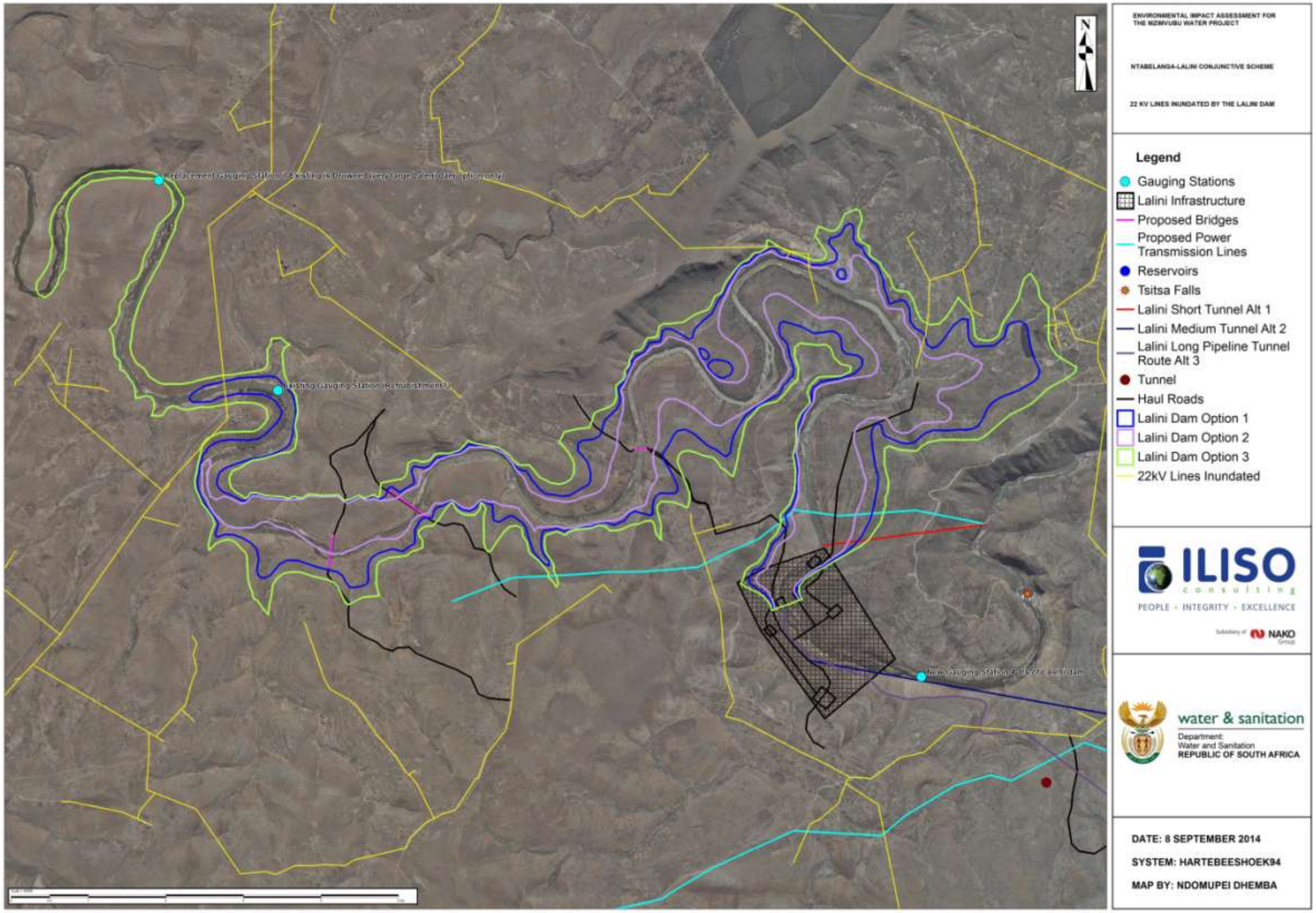


Figure 7 - 3: Eskom power lines inundated by the Lalini Dam Basin

8.1 CONSTRUCTION PHASE

In this section the impacts related to the construction phase of the project are considered. These processes are assessed in accordance with the impact descriptions and mitigation/optimisation measures provided under section 7. Categories and social impact variables include:

1. Health and social well-being impacts
2. Quality of the living environment (Liveability) impacts
3. Economic impacts and material well-being impacts
4. Cultural impacts
5. Family and community impacts
6. Institutional, legal, political and equity impacts
7. Gender relations impacts .

8.1.1 Health and social well-being impacts

The health and social well-being impacts related to the construction of the Ntabelanga and Lalini dams as well as the associated water infrastructure include:

- Annoyance, dust and noise
- Fear of crime
- Increased actual crime
- Increased risk of HIV and AIDS
- Increased social tensions, conflict or serious divisions within the community
- Presence of construction workers
- Reduced actual personal safety, increased hazard exposure.

One of the routes between the borrow pits and the Lalini Dam construction site will go through the town of Lalini as indicated in **Figure 7 - 4**. Due to increased traffic hazards, dust and noise, this would increase the level of health and safety risks. Consequently a proposed mitigation measure is to identify an alternative route, which is being considered.

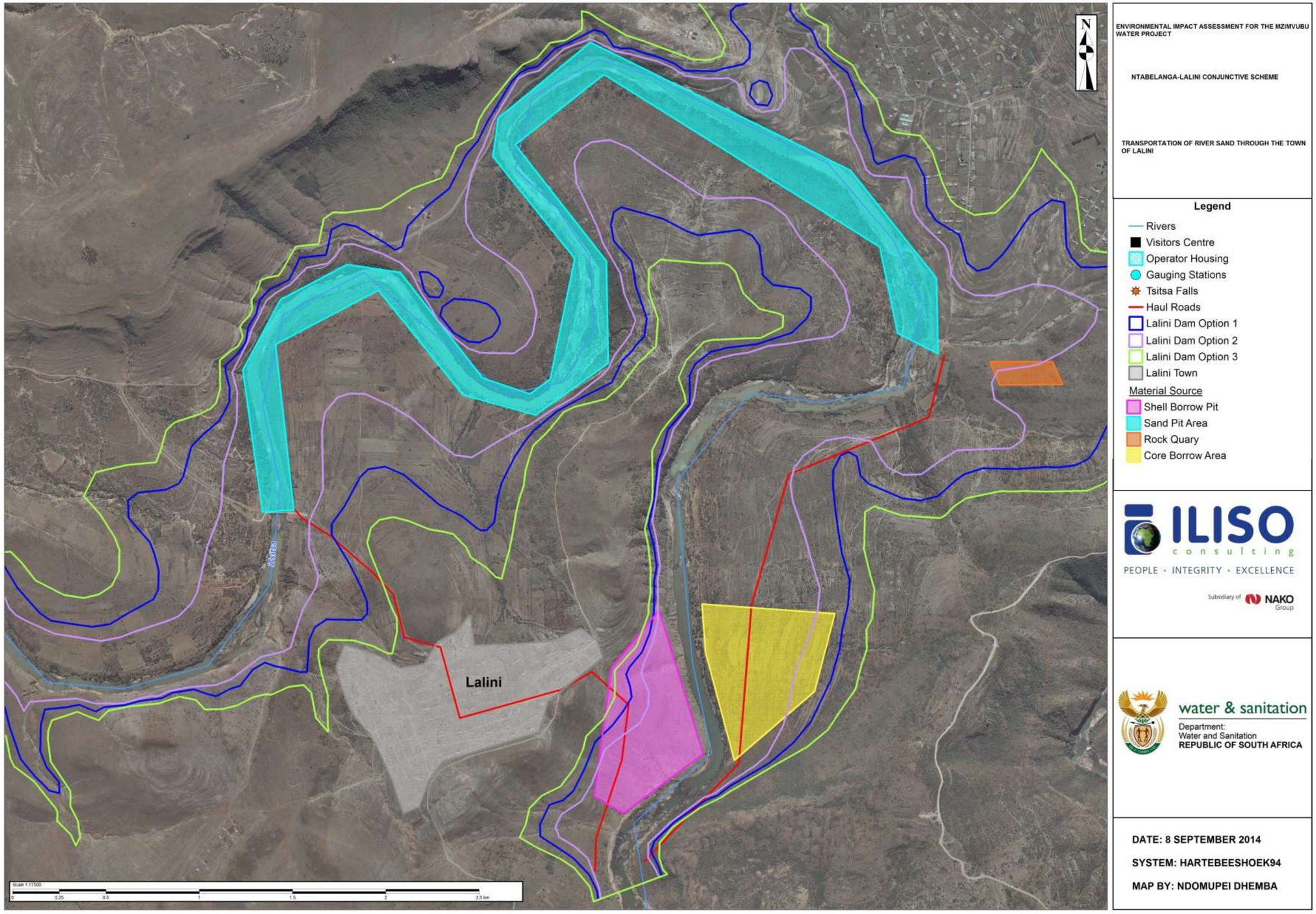


Figure 7 - 4: Route between borrow pit and Lalini Dam construction site

The health and social well-being impacts are most prominent during the construction phase of the project as it is during this time that most of the disruptive activities occur. However, the impact of these activities can be managed to some degree with carefully considered and successfully applied mitigation measures. With this in mind the health and social well-being impacts are assessed below:

Health and social well-being impacts	Nature	Extent	Duration	Intensity	Potential for irreplaceable loss of resources	Probability	Confidence	Significance
Without Mitigation	Negative	Regional	Medium term	High	Medium	Definite	Medium	High (-)
With Mitigation	Negative	Regional	Medium term	Medium	Medium	Definite	Medium	Medium-high
Cumulative Impact – The area is poor and there is a high degree of malnutrition and food insecurity (Dlamini, 2013, pp. 10-11) that could exacerbate the health risks particularly those related to HIV & AIDS. There is a high level of crime across the county with 1 264 crimes being recorded in Tsolo in 2013 (Crime Stats SA , 2013).								

8.1.2 Quality of the living environment (liveability) impacts

The following quality of the living environment impacts related to the construction of the Ntabelanga and Lalini dams as well as the associated water infrastructure include.

- Disruption of daily living
- Increased population density and crowding
- Reduced adequacy of community social infrastructure
- Reduced adequacy of physical infrastructure
- Reduced quality of housing
- Reduction in perceived quality of life.

The peak workforce across the project is estimated at 3 114 people with about 1 238 being recruited locally and 1 877 coming into the area. This relatively sudden increase in population will result in pressures being placed on the district and local authorities to supply adequate facilities in the area. These authorities, having underperformed for some time now (Department of Cooperative Governance and Traditional Affairs, 2009) will find it extremely difficult to deliver the required service, which is likely to have a negative effect on the quality of the living environment as assessed below:

Quality of the living environment (liveability) impacts	Nature	Extent	Duration	Intensity	Potential for irreplaceable loss of resources	Probability	Confidence	Significance
Without Mitigation	Negative	Regional	Medium term	Very high	High	Definite	Medium	High
With Mitigation	Negative	Regional	Medium term	High	High	Definite	Medium	High
Cumulative Impact – The area is relatively quiet and with the arrival of a large workforce the population of the area will suddenly increase thus initiating a number of impacts associated with this demographic change process.								

8.1.3 Economic and material well-being impacts (negative)

The negative economic and material well-being impacts associated with the construction of the Ntabelanga and Lalini dams, as well as the associated water infrastructure include:

- Relocation of households
- Deteriorating economic situation
- Decreased autonomy, independence, security of livelihoods.

A substantial number of households are to be relocated as a result of the project and this will have a significant negative economic effect on both these household as well as the host communities. Apart from this the livelihoods of hunters, who use packs of hunting dogs as observed by the Fauna Specialist (Department of Waterand Sanitation, South Africa, 2014d) in the vicinity of the Lalini Dam Basin, may be threatened with the inundation of the dam basin. These negative economic and material well-being impacts are assessed below:

Economic and material well-being impacts	Nature	Extent	Duration	Intensity	Potential for irreplaceable loss of resources	Probability	Confidence	Significance
Without Mitigation	Negative	Regional	Long term	Very high	High	Definite	Medium	High
With Mitigation	Negative	Regional	Long term	High	Medium	Definite	Medium	High
Cumulative Impact – People in the area are poor which will result in a range of financial difficulties as people respond to relocations. Vulnerable communities are less able to care for themselves (The World Bank, 2004, p. 72) and are susceptible to a number of knock on impacts such as a decreased food security, threats to sustainable livelihoods and access to social services.								

8.1.4 Economic and material well-being impacts (positive)

The positive economic and material well-being impacts associated with the construction of the Ntabelanga and Lalini dams, as well as the associated water infrastructure include:

- Increases in employment opportunities
- Increased opportunities for SMMEs.

Other economic changes leading to positive impacts during the construction phase addressed in the Economic Specialist's report (Mosaka Economic Consultants cc, 2014) are:

- Economic stimulation of the area
- Increased tax revenue
- Income and expenditure (tax revenue).

With an estimated 3 114 direct, 1 334 indirect and 1 640 induced jobs being created during the peak of the construction phase of the project this will have a significant **positive impact** and is assessed below as **positive**. Taking the findings of the Economic Specialist regarding the macro economy into account (Department of Water and Sanitation, South Africa, 2014a, pp. 7-5 and 8-3) these impacts are assessed here at a national level:

Economic and material well-being impacts (positive)	Nature	Extent	Duration	Intensity	Potential for gain of resources	Probability	Confidence	Significance
Without Optimisation	Posative	National	Medium term	Very high	High	Definite	Medium	Very high
With Optimisation	Posative	National	Medium term	Very high	High	Definite	Medium	Very high
Cumulative Impact – The creasing of a large number of jobs within an area that has a high level of unemployment and few development opportunities will result in a number of impacts such as the development of skills and a more secure household income albeit over a 3 to 10 years period.								

8.1.5 Cultural impacts

The heritage structures associated with the dams and associated water infrastructure identified by the Heritage Specialist (Department of Water and Sanitation, South Africa, 2014e, pp. 6-2 - 6-7) includes:

- Places, buildings and structures
- Graves and burial grounds
- Archaeological sites

These sites are identified and addressed in the Heritage Specialist's report and will be assessed here at a social level and in this respect the following processes will be considered:

- Diminished cultural integrity
- Loss of rights over and access to natural resources
- Changes in movement patterns
- Loss or negative influences on sites of archaeological, cultural, and/or historical significance.

The loss of burial sites will be of significant importance to communities relocated from within the Ntabelanga Dam Basin as there are three abandoned homesteads with possible grave sites and five existing homesteads with grave sites within the area.

Where necessary the relocation of grave sites will need to be undertaken in consultation with the next-of-kin. The cultural impacts of the construction of the dams and associated water infrastructure are assessed below:

Cultural impacts	Nature	Extent	Duration	Intensity	Potential for irreplaceable loss of resources	Probability	Confidence	Significance
Without Mitigation	Negative	Regional	Medium term	High	Medium	Definite	Medium	High
With Mitigation	Negative	Regional	Medium term	Medium	Medium	Definite	Medium	Medium-high
Cumulative Impact – The rate of globalisation in the area may be accelerated through the arrival of construction companies and workers which could have significant consequences for local culture.								

8.1.6 Family and community impacts

Both the displacement of people as well as the influx of construction workers will occur during the construction phase of the project and will have lasting effects well into the operational phase, and have an impact on families and the sense of community within the vicinity of the project. These impacts are likely to include:

- Disruption to family structures and social networks
- Changed attitudes towards local communities, level of satisfaction with the neighbourhood.

Although the intention is to recruit as many workers as is possible from amongst the local communities, it is still likely that somewhere around 50 percent of the workforce will have to be brought into the area. Considering this, at peak construction and taking into account the intention to recruit locally, some 1 877 outside construction workers coming into the area may disrupt the family structures and social networks of local communities. The arrival of what is a significant number of people may also result in changing attitudes towards local communities and dissatisfaction with the neighbourhood. These impacts are assessed here in respect of the construction of the Ntabelanga and Lalini dams, as well as the associated water infrastructure:

Family and community impacts	Nature	Extent	Duration	Intensity	Potential for irreplaceable loss of resources	Probability	Confidence	Significance
Without Mitigation	Negative	Regional	Permanent - mitigated	Very high	High	Definite	Medium	Very high
With Mitigation	Negative	Regional	Permanent - mitigated	High	High	Definite	Medium	High
Cumulative Impact – Changes in family structure and social networks as well as changes with regard to the satisfaction with the neighbourhood are likely to extend well beyond the construction phase of the project, particularly if a number of construction workers choose to remain in the area after the construction phase, which has been the experience with other South African dam projects (Rossouw, 2008, p. 10). This will result in result in a number of impacts that will last over a long period.								

8.1.7 Institutional, legal, political and equity impacts

The institutional, legal political and equity impacts associated with the construction of the Ntabelanga and Lalini dams, as well as the associated water infrastructure include.

- Increased demand on existing infrastructure, facilities and social services
- Attitude formation towards project
- Increased opportunity for corruption
- Decreased level of community participation in decision making, loss of empowerment.

The main issue with the construction of the dams and associated water infrastructure is that there is likely to be a rapid increase in demand placed on the infrastructure, facilities and social services in the area. The area already suffers from poorly maintained and inadequate social facilities due to years of neglect (Masualle, 2014, pp. 11-12) and any additional strain will make it rather difficult for the municipal and provincial authorities to meet increased demands. The institutional, legal, political and equity impacts associated with the construction of the Ntabelanga and Lalini dams and associated water infrastructure are assessed here as follows:

Institutional, legal, political and equity impacts	Nature	Extent	Duration	Intensity	Potential for irreplaceable loss of resources	Probability	Confidence	Significance
Without Mitigation	Negative	Regional	Medium term	High	Medium	Definite	Medium	High
With Mitigation	Negative	Regional	Medium term	Medium	Medium	Definite	Medium	Medium-high
Cumulative Impact – The speed with which the project unfolds will have an effect on a number of impacts as the social and institutional environment is unlikely to cope well with too rapid a development.								

8.1.8 Gender relations impacts

The gender relationships associated with the construction of the Ntabelanga and Lalini dams, as well as the associated water infrastructure includes:

- The burden of resettlement
- Cultural resistance towards women
- Division of labour.

Undoubtedly, considering the gender distribution of the area and the high number of female headed households, women will carry the greatest burden of resettlement, a factor that needs to be considered. The patriarchal nature of the culture of the area is also likely to result in a degree of resistance against women entering the workforce.

The division of labour associated with the construction phase of the project relates to the integration of women into the workforce and the need to create a workforce

accessible to both women and men. The challenge will be in accommodating the biological, sex, gender and health need requirements of women and for the different roles occupied by women and men within the family structure. The gender relations impacts associated with the construction of the Ntabelanga and Lalini dams and associated water infrastructure are assessed here as follows:

Gender relations impacts	Nature	Extent	Duration	Intensity	Potential for irreplaceable loss of resources	Probability	Confidence	Significance
Without Mitigation	Negative	Regional	Medium term	High	Medium	Definite	Medium	High
With Mitigation	Negative	Regional	Medium term	Medium	Medium	Definite	Medium	Medium-high
Cumulative Impact – There is likely to be a cultural resistance to women entering the workforce which may even take a passive form and manifest in unintended consequences such as resistance within the family as the nurturing and domestic roles of women are seen to be compromised.								

8.1.9 Lalini Dam alternatives

With regard to the Lalini Dam there are three dam size options to be considered. Option 1 will result in 12 structures having to be relocated and 7.58762 km^2 of cultivated land being inundated. Option 2 will result in 1 dwelling having to be relocated with 4.9539 km^2 of cultivated land being inundated. Option 3 will result in the most severe impacts being experienced with 77 structures and 12.08256 km^2 of cultivated land being lost.

Consequently, the socially preferred option is Option 2 as it results in the least loss of cultivated land and structures. The least socially preferred option is Option 3 as it has the greatest negative impact on the social environment. The technically preferred option is Option 1 which, on a social level with mitigation, is acceptable. The various options considered in respect of the Lalini Dam, indicating the structures associated with each option, are indicated in **Table 7 - 1**.

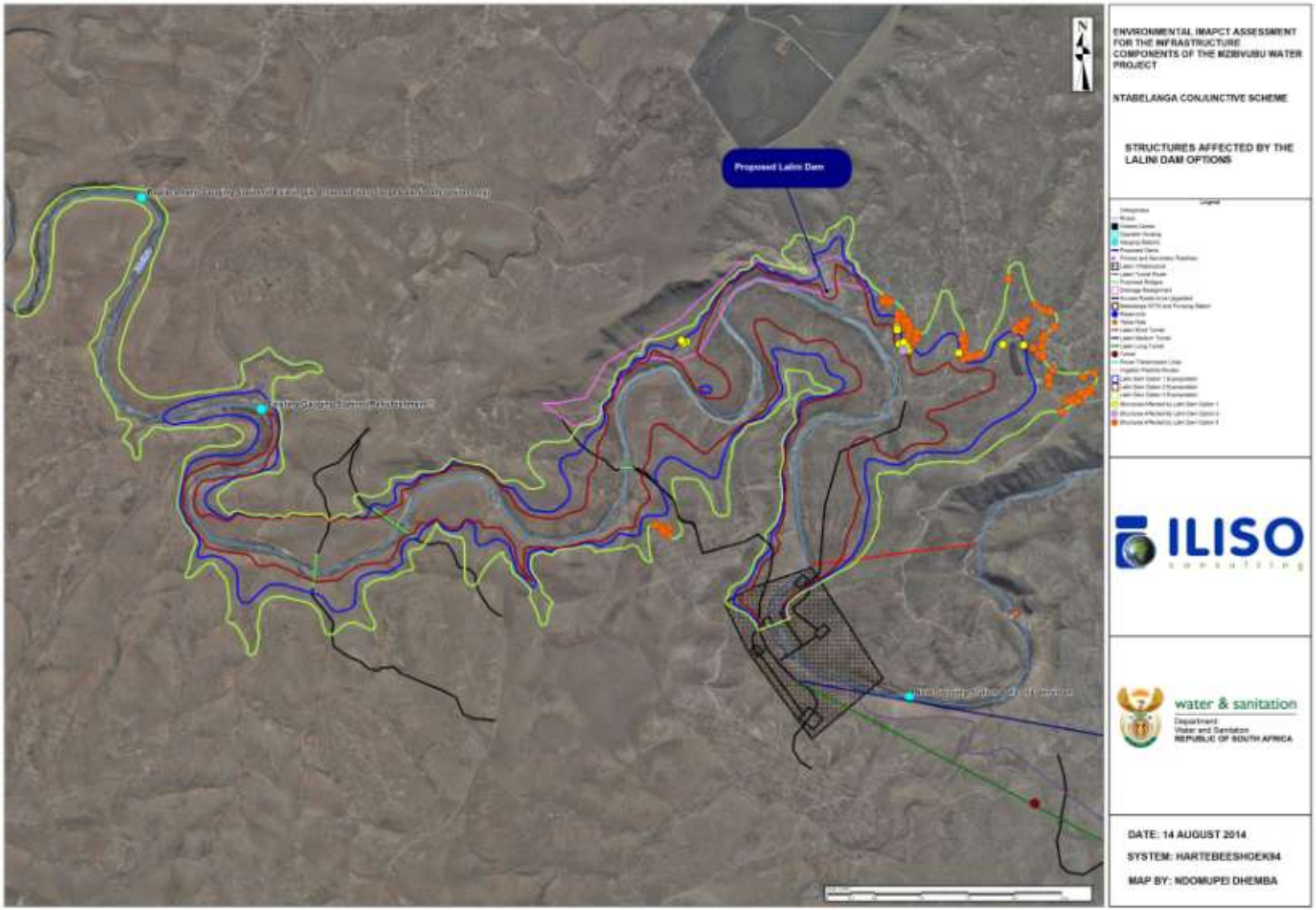


Figure 8 - 1: Structures affected by the Lalini Dam Options

The three Lalini Dam Options are assessed below as follows:

Lalini Dam alternatives	Nature	Extent	Duration	Intensity	Potential for irreplaceable loss of resources	Probability	Confidence	Significance
Proposed Project with Lalini Dam size 1 (preferred alternative)								
Without Mitigation	Negative	Regional	Medium term	High	High	Definite	Medium	High
With Mitigation	Negative	Regional	Medium term	Medium	Medium	Definite	Medium	Medium-high
Proposed Project with Lalini Dam size 2								
Without Mitigation	Negative	Regional	Medium term	Medium	Medium	High	Medium	Medium high
With Mitigation	Negative	Regional	Medium term	Low	Medium	High	Medium	Medium-low
Proposed Project with Lalini Dam size 3								
Without Mitigation	Negative	Regional	Medium term	Very high	High	Definite	Medium	High
With Mitigation	Negative	Regional	Medium term	Very high	High	Definite	Medium	Medium-high

In accordance with this assessment Option 2, with only 1 dwelling having to be relocated and 4 9539 km² of cultivated land being inundated emerges as the socially preferred option. Notwithstanding this, however, considering the fact that Option 1 is preferred on a technical basis, which will result in greater long term benefits being derived from the project, there is, on a social basis, no compelling reason to reject Option 1. This, however, is with the proviso that the appropriate mitigation measures are efficiently and effectively applied.

8.2 OPERATION PHASE

Most of the activities that cause disruption to communities will have taken place during the construction phase of the dam and, as Vanclay (Environmental and Social Assessment for large dams, 2000, p. 9) points out [a]*lthough there may have been profound change to the community, and there may exist some remaining maintenance staff, it is a time when communities return to a period of 'normalisation'.*" During the operational phase the benefits of the project become apparent with a relatively limited number of negative impacts that need to be mitigated when compared against the construction phase. These impacts, both positive and negative include:

1. Health and social well-being impacts
2. Quality of the living environment (Liveability) impacts
3. Economic impacts and material well-being impacts
4. Cultural impacts
5. Family and community impacts
6. Institutional, legal, political and equity impacts
7. Gender relations impacts.

8.2.1 Health and social well-being impacts

The health and social well-being risk related to the operation of the dams and associated water infrastructure include:

- Increased actual crime
- Increased social tensions, conflict or serious divisions within the community
- Presence of construction workers
- Reduced actual personal safety, increased hazard exposure.

If a number of construction workers remain in the area after construction and are unable to secure employment, then it is possible that crime could rise. An increase in tourism may also aggravate the situation as it provides an opportunity for opportunist crime. Any remaining construction workers competing with the local communities could also result in an increase in tensions and conflict within the community. With the inundation of the dams a large body of water will emerge creating a risk of drowning for communities living close to and visiting the dam. This risk will be most severe for children and people unable to swim. The health and social well-being impacts are assessed as follows:

Health and social well-being impacts	Nature	Extent	Duration	Intensity	Potential for irreplaceable loss of resources	Probability	Confidence	Significance
Without Mitigation	Negative	Regional	Long term	High	Medium	High	Medium	Medium high
With Mitigation	Negative	Regional	Long term	Medium	Medium	High	Medium	Medium-high
Cumulative Impact – If a significant number of construction workers remain in the area, which has been the experience with other projects (Rossouw, 2008, p. 4), competition between these remaining workers and local communities could intensify resulting in conflict.								

8.2.2 Quality of the living environment (liveability) impacts

The following quality of the living environment impacts apply to the operational phase of the dams and associated water infrastructure:

- Increased population density and crowding
- Reduced adequacy of community social infrastructure
- Reduced adequacy of physical infrastructure
- Reduced quality of housing
- Quality of life.

If a significant number of construction workers choose to remain in the area and if the recreational potential of the dams materialises, there will probably be an increase in the population in the areas around the dams. This will place pressure on social and physical infrastructure in the area and if not adequately addressed may result in frustrations. Although these frustrations may have the potential to reduce the quality

of life they can be mitigated. Conversely, the aesthetic value of dams also has the potential to increase property values and improve the quality of life.

In areas where access to water for people and animals is disrupted due to the fencing of the dams it may be necessary to construct suitable access points. In this regard further investigation may be required during implementation, in consultation with local communities, to determine the need for and details of suitable access points.

According to the Feasibility Study some 539 000 people initially, estimated to rise to 730 000 by 2025, will be supplied with domestic water through the scheme. In addition to this approximately 2 900 ha of land will also be irrigated as a result of the Ntabelanga Dam with a potential to create an estimated 1 976 full time jobs (Department of Water and Sanitation, South Africa, 2014a, pp. 7-6). All this will undoubtedly have a significantly positive effect on the quality of life of these people. In the light of this the quality of the living environment impacts are assessed on a **positive** basis below:

Quality of the living environment (liveability) impacts	Nature	Extent	Duration	Intensity	Potential for gain of resources	Probability	Confidence	Significance
Without Optimisation	Positive	Regional	Permanent - no mitigation	High	High	High	Medium	High
With Optimisation	Positive	Regional	Permanent - no mitigation	Very high	High	High	Medium	High
Cumulative Impact – Any influx of people into the area on a more permanent basis will have various developmental related impacts. Successful implementation of the project will drastically improve the quality of life of a large number of people and in this sense will have numerous knock on effects								

8.2.3 Economic and material well-being impacts

The following economic and material well-being impacts apply to the operational phase of the dams and associated water infrastructure:

- Increases in employment opportunities
- Increased opportunities for SMMEs.

Other economic changes leading to positive impacts during the operational phase addressed in the Economic Specialist's report (Department of Water and Sanitation, South Africa, 2014a) are:

- Economic stimulation of the area
- Increased tax revenue
- Income and expenditure (tax revenue).

Seen against the background of poverty and underdevelopment in the Eastern Cape the project has the potential to improve the situation. However, various provisos are attached to the viability of the project particularly in respect of the irrigation scheme. These provisos, discussed in greater detail in the economic report (Department of Water and Sanitation, South Africa, 2014a, pp. 8-2 - 8-3), include:

Irrigation

- Crop mix
- Land issues
- Business model
- Livestock proposal
- Implication period
- Grant availability
- Management and support structure.

Domestic water supply

- Water demand and cost implications
- The grant and funding strategy applied.

In his strategic review of the Mzimvubu water project Mike Muller (2014, p. 1) argues that, "[t]*he current project will only succeed if it is conceived and managed as a multi-dimensional development programme, not simply as a water project"* and continues to provide a list of recommendations that, if followed, would raise the prospect of success.

The economic and material well-being impacts associated with the dams and associated water infrastructure are **positively** assessed as follows:

Economic and material well-being impacts	Nature	Extent	Duration	Intensity	Potential for gain of resources	Probability	Confidence	Significance
Without Optimisation	Positive	National	Permanent - mitigated	High	High	High	Medium	High
With Optimisation	Positive	National	Permanent - mitigated	Very high	High	Definite	Medium	Very high
Cumulative Impact – If successful the project is likely to have significant impacts on the quality of life of people in the area and the province.								

8.2.4 Cultural impacts

The cultural impacts are likely to be less severe over the operational phase of the project than they are during construction. However, during the operational phase, an influx of tourists and day visitors will result in local communities experiencing greater contact with the outside world which will, over time, result in changed cultural norms.

Apart from this the supply of domestic water and the irrigation of land could have a cultural impact over time, particularly in respect of gender relations as discussed below.

The cultural impacts of the operational phase of the dams and water infrastructure are assessed below:

Cultural impacts	Nature	Extent	Duration	Intensity	Potential for irreplaceable loss of resources	Probability	Confidence	Significance
Without Mitigation	Negative	Regional	Medium term	High	Medium	Definite	Medium	High
With Mitigation	Negative	Regional	Medium term	Medium	Medium	Definite	Medium	Medium-high
Cumulative Impact – Changes in respect of the division of labour could, over time, have an impact on culture. In this respect Mehta and Srinivasan (2000, p. 8) point out that "[i]*n some cases, the social impacts of dams might lead to more egalitarian gender relations…* " as was found in a resettlement scheme in Zimbabwe. The impact of culture on gender relations was also indicated in a study undertaken in Malawi (Msofi, 2014, p. 16). Apart from this the rate of globalisation may be accelerate due to easier access to the area and increased tourism which could have significant consequences for local culture. In this regard tourism in the vicinity of the dams may attract multinational companies, such as McDonalds, KFC and Nando's to the area as well as hospitality service provides. For the effects of globalisation and cultural tourism see Cultural Tourism: Global and Local Perspectives (Richard, 2011)								

8.2.5 Family and community impacts

The following family and community impacts apply to the operational phase of the dams and associated water infrastructure:

- Disruption to family structures and social networks
- Changed attitudes towards local communities, level of satisfaction with the neighbourhood.

The end of the construction phase will result in the majority of the workforce moving out of the area. In some cases local people, having been skilled during the construction process, may leave the area in search of alternative employment. It is, however, unlikely that this demographic process will be at a substantial level thus leading to significant impacts. During this stage the communities will gradually return to a more mundane post construction existence.

Domestic water supply

With the domestic water supply being rolled out to a substantial portion of the population it is likely that less time will be spent in collecting water with more time becoming available to allocate to family activities. This will be addressed in greater detail under gender relations below.

Irrigation

With water becoming available for irrigation it is likely that food will become more accessible and a number of people will find employment on the farms resulting in improved food security for families in the area as a result of an improved purchasing

power. If food security is improved this is likely to help in relieving stress within the family and communities. As the World Bank (The World Bank, 2005, p. 2) points out;

> "*The impact of agriculture extends well beyond providing food security and higher incomes. Agricultural growth has spurred overall economic growth and successfully reduced poverty in settings as diverse as Chile, Ghana, India, Thailand, and Vietnam.*"

The insecurity of food has been an endemic problem in South Africa with over fifty percent of the population experiencing food insecurity (Shisana, et al., 2013). Linked to this is the fact that food insecurity can result in health problems amongst mothers and children (Whitaker, Phillips, & Orzol, 2006).

Family and community impacts as they apply during the operational phase are **positive** and assessed as follows:

Family and community impacts	Nature	Extent	Duration	Intensity	Potential for gain of resources	Probability	Confidence	Significance
Without Optimisation	Positive	Regional	Permanent – no mitigation	High	High	High	Medium	High
With Optimisation	Positive	Regional	Permanent – no mitigation	Very high	High	High	Medium	High
Cumulative Impact – In the event of the success of the project there is likely to be a number of positive impacts that will accrue particularly in respect of family relationships.								

8.2.6 Institutional, legal, political and equity impacts

The institutional, legal, political and equity impacts associated with the operation of the Ntabelanga and Lalini dams, as well as the associated water infrastructure include:

- Increased demand on existing infrastructure, facilities and social services
- Increased opportunity for corruption
- Institutional and financial arrangements
- Decreased level of community participation in decision making, loss of empowerment.

It is envisaged that the construction of the dams and related water infrastructure will, together with the other associated activities, stimulate development nodes in Maclear and Tsolo. This development will possibly last after the construction phase, particularly if the tourist potential of the dam is realised and there is a growth in recreational locations and water based activities, as has been the experience with similar projects (Muller, 2014, p. 9). If such a process does happen to unfold, then there is likely to be some demand placed on existing infrastructure, facilities and social services.

There is also a risk that favouritism, cronyism, and nepotism could creep in, particularly with the allocation of domestic water and agricultural plots, a situation that would need to be carefully monitored and addressed. It is critical that the right institutional and financial arrangements are put in place and that consultation is undertaken on a broad, inclusive and transparent basis throughout the operational phase of the project.

The institutional, legal, political and equity impacts are assessed below:

Institutional, legal, political and equity impacts	Nature	Extent	Duration	Intensity	Potential for irreplaceable loss of resources	Probability	Confidence	Significance
Without Mitigation	Negative	Regional	Medium term	High	Medium	Definite	Medium	High
With Mitigation	Negative	Regional	Medium term	Medium	Medium	Definite	Medium	Medium-high
Cumulative Impact – The capacity of the district and local municipalities is limited with two of the district municipalities, O.R. Tambo and Alfred Nzo, being amongst the 10 most vulnerable municipalities in the country and three of the local municipalities, Umzimvubu, Mhlontlo and Ntabankulu amongst the 20 poorest performing local municipalities (Department of Cooperative Governance and Traditional Affairs, 2009, pp. 28-29). This is likely to result in a number of institutional and performance related impacts.								

8.2.7 Gender relations impacts

The gender relationships associated with the operation of the Ntabelanga and Lalini dams, as well as the associated water infrastructure includes:

- Division of labour.

Domestic water supply

The operational phase of the project will have a significant impact on the division of labour in the area. Women currently spend a great deal of time collecting water and fuel for energy and with the delivery of domestic water to households many women will be freed of the task of collecting water. This will have a significant impact on the time some of these women can spend on other activities. In this regard the **positive** aspects of the project are assessed as follows:

Gender relations impacts, domestic water supply	Nature	Extent	Duration	Intensity	Potential for gain of resources	Probability	Confidence	Significance
Without Optimisation	Positive	Regional	Permanent	High	High	Definite	Medium	High
With Optimisation	Positive	Regional	Permanent	Very high	High	Definite	Medium	Very-high
Cumulative Impact – The released of women from the time consuming tasks of collecting water could have a significant impact on a range of personal and family related matters.								

Irrigation

From a gender perspective, relationships in the area are such that they are likely to have a negative impact in respect of the irrigation aspect of the project. In this regard factors such as access to and control over resources, institutional arrangements, changes in the production process and occupational structures, exclusion from the decision-making process, increased workload due to double or triple cropping, will all impact on women (Mehta & Srinivasan, Balancing Pains and Gains. A Perspective Paper on Gender and Large Dams, 2000, pp. 7-10):

Gender relations impacts irrigation	Nature	Extent	Duration	Intensity	Potential for irreplaceable loss of resources	Probability	Confidence	Significance
Without Mitigation	Negative	Regional	Long term	High	Medium	High	Medium	High
With Mitigation	Negative	Regional	Long term	Medium	Medium	Medium	Medium	Medium-high
Cumulative Impact – The issue of gender relations would need to be considered on a cultural basis as this would have a significant and far reaching impact.								

Attention will now be turned towards the specific impact assessment of the electricity generation and distribution infrastructure.

8.3 THE ELECTRICITY GENERATION AND DISTRIBUTION

The specific impacts associated with the electricity generation and distribution activities are as follows:

8.3.1 Construction phase

One dwelling has been identified as being within 5 m of the Lalini Hydro Pipeline area. This dwelling is illustrated in **Figure 8 - 2**.

Figure 8 - 2: Indirectly affected dwelling at coordinates 31 27.6635S 28 95.2361E

This dwelling lies close to the intersection of where the pipeline meets the tunnel and is located north of the pipeline at a slightly lower elevation than that of the pipeline. This is likely to result in relatively high impacts during construction, and the risk of

flooding in the event of a ruptured pipe during operation, both of which must be considered. It seems that there may be some scope to move the pipeline and tunnel junction further west or south, where there are no dwellings, which is the socially preferred option.

8.3.2 Operation phase

Apart from the operational impacts assessed in association with the dams and associated water infrastructure, the generation and transmission of electricity will result in electromagnetic fields (EMFs) within close proximity of the power lines. Although well documented (Wartenberg, 1993; UK Childhood Cancer Study Investigators, 2000; Draper, et al., 2005; Wood, 2006; Copes & Barn, 2008; Electric Power Research Institute, 2009; Huss, et al., 2009; Scientific Committee on Emerging and Newly Identified Health Risks, 2009; Sidaway, 2009) this issue remains somewhat controversial with little agreement amongst authorities regarding the actual risk that EMFs pose to the health of people and animals. Consequently, this has led to a high degree of concern amongst the public regarding:

- The risk of childhood leukaemia.
- The risk of breast cancer particularly amongst women, but should not be restricted to women only.
- A link between Alzheimer's disease and EMFs.
- The effect of EMFs on animals, particularly the rate and quality of production amongst dairy cattle and poultry, but not restricted to only dairy herds and poultry.
- The devaluation of property within close proximity of power lines and electrical substations.

Although it is difficult to establish the real dangers of exposure to EMFs, what is clear is that people, at least perceive this as a risk to health, and that in turn this may also cause secondary health risks brought about due to elevated stress levels. It is in this sense that this impact is assessed here as associated with the electricity generation and distribution related activities:

Electromagnetic radiation	Nature	Extent	Duration	Intensity	Potential for irreplaceable loss of resources	Probability	Confidence	Significance
Without Mitigation	Negative	Regional	Medium term	High	Medium	Definite	Medium	High
With Mitigation	Negative	Regional	Medium term	Medium	Medium	Definite	Medium	Medium-high
Cumulative Impact – It has been established that the rate of cancer in the area is six times that of the national rate (Sewram, 2011) and any additional risks could compound the situation.								

At the social level the electricity generation and distribution related activities are assessed above together with those across the broader project as it is the full extent of the project that will result in the greatest demographic, economic, social and cultural change processes occurring, rather than the various components of the project in isolation. The specific impact of the roads infrastructure is considered next.

8.4 ROAD INFRASTRUCTURE

The upgrading and relocation of roads and bridges will result in approximately 80 km of new roads and about 25 km of upgrades to existing road infrastructure. A new bridge crossing from the Tsitsa Falls road, to provide access to Lalini, will also need to be constructed as the existing low level bridge will be drowned by the dam backwater.

This activity places the structures listed in **Table 8 - 1** under threat. As the route alignments have as yet not been finalised, and the first option is to avoid rather than relocate any structures, it is likely that the final number of structures actually affected will be significantly reduced. Nevertheless, this assessment takes the full list as it appears in **Table 8 - 1** into account.

Table 8 - 1: Structures and cultivated land affected by road infrastructure

Ntabelanga Road	Within footprint	Within 5 m
Bus stop	1	
Cultivated land	0.19 km²	
Dwellings	28	3
Dwelling abandoned	2	
Water purification plant	1	

An example of some of the structures affected and the coordinates of these structures is provided in **Figure 8 - 3**.

Dwelling at coordinates 31 10.8956S 28 66.4973E

Bus stop at coordinates 31 21.7441S 28 62.4328E

Water purification plant at coordinates 31 08.5436S 28 61.9594E

Dwelling at coordinates 31 08.8451S 28 57.7316E

Figure 8 - 3: Structures affected by road infrastructure

8.4.1 Construction phase

Twenty eight dwellings are at risk of being relocated as a result of the road infrastructure. It is quite possible that a significant number of these dwellings can be avoided as the final alignments of the roads have yet to be fixed and there is some room for adjustments. The preferred mitigation measures are to adjust alignments so as to avoid as many structures as is feasible.

The construction of roads will result in the generation of dust and noise as well as a heightened safety and security risk with the use of heavy machinery and vehicles and the influx of construction workers. The health and social well-being impacts specifically related to the road infrastructure are assessed as follows:

Health and social well-being impacts	Nature	Extent	Duration	Intensity	Potential for irreplaceable loss of resources	Probability	Confidence	Significance
Without Mitigation	Negative	Local	Short term	Medium	Medium	High	Medium	Medium low
With Mitigation	Negative	Local	Short term	Low	Medium	High	Medium	Low
Cumulative Impact – The cumulative impacts are related to the other components of the project and are assessed as such in association with these components.								

8.4.2 Operation phase

The specific impacts associated with the operational phase of the project relate to greater access to the more remote areas as a result of the roads. Greater access has both a positive and negative element attached. On the positive side communities living in the area will have easier access into and out of the area as will tourists wanting to visit the area. These **positive** elements are rated as follows:

Positive impacts associated with access	Nature	Extent	Duration	Intensity	Potential for gain of resources	Probability	Confidence	Significance
Without Optimisation	Positive	Regional	Permanent mitigated	High	High	High	Medium	High
With Optimisation	Positive	Regional	Permanent mitigated	High	High	High	Medium	High
Cumulative Impact – Greater access to the area could lead to an increase in tourism and associated economic impacts. The quality of life could also be improved with improved transport facilities								

On a more negative basis, easier access could hasten the effects of globalisation and the changes to local norms and culture. Vulnerable groups may also face greater psychological and social impacts due to rapid change as a result of greater access and exposure to outsiders. These impacts are assessed as follows:

Negative impacts associated with access	Nature	Extent	Duration	Intensity	Potential for irreplaceable loss of resources	Probability	Confidence	Significance
Without Mitigation	Negative	Regional	Permanent mitigated	High	High	High	Medium	High
With Mitigation	Negative	Regional	Permanent mitigated	High	High	High	Medium	High
Cumulative Impact – Greater exposure to outsiders is likely to have the greatest impact on the youth and could result in rapid cultural change in the area.								

The no project alternative will be considered next.

9. IMPACT ASSESSMENT FOR THE NO PROJECT ALTERNATIVE

This Chapter presents the findings of the environmental impact assessment for the no-project alternative.

There is an obligation on the State to advance the interests of the poor and, in accordance with the Bill of Rights, take adequate measures in ensuring that all citizens have access to basic housing, health care, food, water, social security, education and a healthy environment (South African Human Rights Commission, 2004). In addition to this South Africa has a policy of recognising the human right to water at both the Constitutional and policy levels (Mehta, 2005). A no project alternative would contradict these obligations as the Department of Water and Sanitation and the Eastern Cape Province would lose an opportunity to supplement the water resources in the area and consequently to deliver both domestic water and water for irrigation. Together with this lost opportunity would be the loss of a number of job opportunities, not only associated with the construction of the dams and infrastructure, but also associated with the productive potential of the irrigation scheme. With the area being one of the least developed and poorest in the country these losses will have severe social consequences.

With the Mzimvubu River being the largest undeveloped water resource in the country any loss of benefits associated with the use of this river will be of national significance and is assessed as such below:

No project alternative	Nature	Extent	Duration	Intensity	Potential for irreplaceable loss of resources	Probability	Confidence	Significance
	Negative	Regional	Permanent mitigated	High	High	High	Medium	High
Cumulative Impact – The area is one of the least developed and poorest regions in the country with many development challenges and a no project alternative will have a series of negative social consequences stretching over a long period.								

As Mike Muller points out "[t*]he current project will only succeed if it is conceived and managed as a multi-dimensional development programme, not simply as a water project*" (Mzimvubu water project - strategic review, 2014, p. 1).

10. OTHER INFORMATION REQUESTED BY THE AUTHORITY

In response to the Department of Environmental Affairs' requirement in their letter of acceptance dated 15 July, 2014 regarding information relating to the economic validity of the project for the surrounding areas and how the community will benefit.

It is clear that the project is economically viable and that it will have significant benefit for the surrounding community in the form of the delivery of domestic water and an agricultural irrigation scheme. This should result in local development and job creation which is addressed in greater detail in both the Economic Specialist's and this report.

11. IMPACT STATEMENT

The following categories and social impact variables are associated with the project the majority of which are associated with the construction phase of the project. During the operational phase of the project the situation, should stabilise and with successful mitigation, the negative impacts should be minimised. It is during the operational phase of the project that the benefits can be maximised.

Health and social well-being related impacts	Mitigation measures
Annoyance, dust and noise	Apply the dust suppression and noise reduction mitigation measures recommended in the EMPR.
Fear of crime	Ensure that construction workers are clearly identifiable. All workers should carry identification cards and wear identifiable clothing.
Increased actual crime	
Increased risk of HIV and AIDS	Fence off all construction sites and control access to these sites.
Increased social tensions, conflict or serious divisions within the community	Clearly mark hazardous areas and regularly monitor these areas to ensure that people and animals avoid these areas.
Presence of construction workers	Liaise with the South African Police Services (SAPS) and Community Policing Forums to ensure that construction sites are monitored.
Reduced actual personal safety, increased hazard exposure.	Encourage local people to report any suspicious activity associated with the construction sites.
	Prevent loitering within the vicinity of the construction camp as well as construction sites.
	Ensure that an onsite HIV and AIDS policy is in place and that construction workers have easy access to condoms.
	Draw up a recruitment policy in conjunction with the Traditional Authorities and Ward Councillors of the area and ensure compliance with this policy.
	Communicate the limitation of opportunities created by the project through the Traditional Authorities and Ward Councillors.
	Ensure all construction equipment and vehicles are properly maintained at all times.
	Ensure operators and drivers are properly trained and make them aware, through regular toolbox talks, of any risk they may pose to the community. Place specific emphasis on the vulnerable sector of the population such as children and the elderly.
	Ensure that fires lit by construction staff are done in designated areas and that safety precautions, such as not lighting fires in strong wilds and that fires are completely extinguished before being left unattended, are strictly followed.
	Make staff aware of the dangers of fire during regular tool box talks.
	During operation consider the viability of having life guard facilities available particularly if recreational facilities associated with the dam are developed.
	During the operational phase ensure that any fires are only lit in designated areas and not during the windy season. All fires must also be extinguished before being left unattended. In this regard warning signs must be placed in appropriate areas.

Quality of the living environment impacts	**Mitigation measures**
Disruption of daily living	Local residents should be recruited to fill semi and unskilled jobs.
Increased population density and crowding	Women should be given equal employment opportunities and encouraged to apply for positions.
Reduced adequacy of community social infrastructure	A skills transfer plan should be put in place at an early stage and workers should be provided the opportunity to develop their skills which they can use to secure jobs elsewhere post-construction.
Reduced adequacy of physical infrastructure	A procurement policy promoting the use of local business. Where applicable, should be put in place to be applied throughout the construction phase.
Reduced quality of housing	Careful consideration must be given to the suitability of the crop selection.
Reduction in perceived quality of life.	A well-constructed agricultural development training and support system focused on assisting the new farmers will need to be implemented. The assistance of the Department of Rural Development and Agrarian Reform, Tsolo Agricultural College, and Jongiliswe Agricultural College for Traditional Leaders must be enlisted to train, mentor and support developing farmers. This training must include business training and training in project planning, monitoring and evaluation.
Cultural impacts	**Mitigation measures**
Diminished cultural integrity	Include a section in the induction programme for construction works that covers local traditions and practices.
Loss of rights over and access to natural resources	Regularly reinforce, amongst construction workers, the importance of respecting local traditions and practices through toolbox talks. In this regard encourage the participation of locally recruited construction workers to assist in reinforcing the point.
Changes in movement patterns	Provide a communication channel through The Forum through which local communities can voice their experiences with and expectations of construction workers.
Loss or negative influences on sites of archaeological, cultural, and/or historical significance.	Avoid involuntary resettlement wherever possible. Where feasible encourage displaced people to resettle themselves and support them throughout the process. Undertake consultations with displaced people about acceptable alternatives and strategies and include them in the planning, implementing and monitoring processes. Choose the relocation site to ensure that the minimum disruption to displaced families as well as host communities occurs. Sensitise host communities to the pending arrival of the displaced communities. Establish a forum or resettlement committee through which resettlement and integration can be controlled by those affected. A formal accessible grievance procedure should be implemented and communicated to both the displaced and host communities. Address all grievances in a swift, fair and transparent manner. Provide swift and honest feedback in response to all queries. Ensure the infrastructure and social facilities within the host communities will not be compromised with the arrival of additional people into the area.
Institutional, legal, political and equity impacts	**Mitigation measures**

Increased demand on existing infrastructure facilities and social services Attitude formation towards project Increased opportunity for corruption Decreased level of community participation in decision making, loss of empowerment Disaster management	Ensure that the receiving environment is prepared and has adequate infrastructure, facilities and social services to support both the displaced and host communities, prior to moving the displaced communities. Ensure that the facilities and services available to both displaced and host communities are equitable. Ensure equitable access to common resources such as water, grazing land and forests. Set up a grievance committee comprising of host and displaced community representatives as well as representatives of the responsible authorities. Provide a channel through which both the host and resettled communities can route grievances or concerns regarding service delivery. Swiftly address any grievance raised concerning service delivery in a transparent and equitable manner. Regularly monitor the effect that the resettlement has had on existing infrastructure. facilities and social services within the host community. Ensure that the appropriate procurement policies are put in place and closely followed. Any contravention of the procurement policies must be swiftly, transparently and appropriately dealt with. Assist both displaced and host communities to become self-reliant thus raising their self-esteem and empowering them. During both construction and operation, implement surveillance and monitoring programs and undertake regular dam safety inspections. Implement a disaster plan, as required by Dam Safety Regulations, that includes a well-developed public communication process and evacuation plan. Ensure that all communication and warning systems are regularly tested and maintained.
Quality of the living environment impacts	**Mitigation measures**
Disruption of daily living Increased population density and crowding Reduced adequacy of community social infrastructure Reduced adequacy of physical infrastructure Reduced quality of housing Reduction in perceived quality of life.	Local residents should be recruited to fill semi and unskilled and jobs. Women should be given equal employment opportunities and encouraged to apply for positions. A skills transfer plan should be put in place at an early stage and workers should be provided the opportunity to develop their skills which they can use to secure jobs elsewhere post-construction. A procurement policy promoting the use of local business should be put in place to be applied throughout the construction phase. Careful consideration must be given to the suitability of the crop selection. A well-constructed agricultural development training and support system focused on assisting the poor will need to be implemented. The assistance of The Department of Rural Development and Agrarian Reform, Tsolo Agricultural College and Jongiliswe Agricultural College for Traditional Leaders must be enlisted to train, mentor and support developing farmers. This training must include business training and training in project planning, monitoring and evaluation.
Cultural impacts	**Mitigation measures**
Diminished cultural integrity	Include a section in the induction programme for construction works that covers local traditions and practices.

Loss of rights over and access to natural resources Changes in movement patterns Loss or negative influences on sites of archaeological, cultural, and/or historical significance.	Regularly reinforce, amongst construction workers, the importance of respecting local traditions and practices through toolbox talks. In this regard encourage the participation of locally recruited construction workers to assist in reinforcing the point. Provide a communication channel through The Forum through which local communities can voice their experiences with and expectations of construction workers. Avoid involuntary resettlement wherever possible. Where feasible encourage displaced people to resettle themselves and support them throughout the process. Undertake consultations with displaced people about acceptable alternatives and strategies and include them in the planning, implementing and monitoring processes. Choose the relocation site to ensure that the minimum disruption to displaced families as well as host communities occurs. Sensitise host communities to the pending arrival of the displaced communities. Establish a forum or resettlement committee through which resettlement and integration can be controlled by those affected. A formal accessible grievance procedure should be implemented and communicated to both the displaced and host communities. Address all grievances in a swiftly, fair and transparent manner. Provide swift and honest feedback in response to all queries. Ensure the infrastructure and social facilities within the host communities will not be compromised with the arrival of additional people into the area.
Institutional, legal, political and equity impacts	**Mitigation measures**
Increased demand on existing infrastructure facilities and social services Attitude formation towards project Increased opportunity for corruption Decreased level of community participation in decision making, loss of empowerment Disaster management	Ensure that the receiving environment is prepared and has adequate infrastructure, facilities and social services to support both the displaced and host communities prior to moving the displaced communities. Ensure that the facilities and services available to both displaced and host communities are equitable. Ensure equitable access to common resources such as water, grazing land and forests. Set up a grievance committee comprising of host and displaced community representatives as well as representatives of the responsible authorities. Provide a channel through which both the host and resettled communities can route grievances or concerns regarding service delivery. Swiftly address any grievance raised concerning services delivery in a transparent and equitable manner. Regularly monitor the effect that the resettlement has had on existing infrastructure facilities and social services within the host community. Ensure that the appropriate procurement policies are put in place and closely followed. Any contravention of the procurement policies must be swiftly, transparently and appropriately dealt with. Assist both displaced and host communities to become self-reliant thus raising their self-esteem and empowering them. During both construction and operation implement surveillance and monitoring programs and undertake regular dam break analyses.

	Implement a disaster plan that includes a well-developed public communication process and evacuation plan. Ensure that all communication and warning systems are regularly tested and maintained.
Gender relations impacts	**Mitigation measures**
The burden of resettlement Cultural resistance towards women Division of labour.	Ensure that all consultation is gender inclusive. Promote equal job opportunities for women and men during the construction process. Ensure gender inclusivity and equity with respect to all compensation. Prioritise gender inclusivity and equity in access to resources, goods, services and decision making with the aim of empowering women. Prioritise and articulate gender inclusivity and equity in the project documents by including specific strategies and guidelines for implementation. The projects documents should also include clear mechanisms through which the actual implementation of the activities and the impact on the ground can be monitored and evaluated. Develop a grievance procedure to specifically address gender matters. Factors such as culture should be considered when planning for gender activities since they play a great role in influencing gender relations. In implementing the project consider the gender equity objectives of the Food and Agricultural Organisation (FAO) these objectives to be obtained by 2025 include; "*1. Women participate equally with men as decision-makers in rural institutions and in shaping laws, policies and programs.* *2. Women and men have equal access to and control over decent employment and income, land and other productive resources.* *3. Women and men have equal access to goods and services for agricultural development and to markets.* *4. Women's work burden is reduced by 20% through improved technologies, services and infrastructure.* *5. Percentage of agricultural aid committed to women/gender-equality related projects is increased to 30% of total agricultural aid*" (Food and Agricultural Organization of the United Nations, 2012, pp. 4-5). An important aspect of program design is to gain an understanding the differing roles, responsibilities, capacities, and constraints of women and men in the region. Ensure that strategies are put in place to monitor and prevent child labour from emerging in the area.

The most critical impacts are associated with relocation and resettlement, the influx of construction workers and construction related activities. All of these impacts are highly disruptive to local communities and need to be carefully managed, monitored and regulated throughout the construction process.

In this regard the development of an Environmental Management Programme is relevant, as is the appointment of an Environmental Control Officer whose function it would be to monitor the implementation of the social mitigation measures. It is important that the Environmental Control Officer is au fait with local culture and language and is a competent facilitator with good communication and problem solving skills.

During the operational phase it is important that upstream and downstream impacts are regularly monitored and evaluated in respect of both dams, and that pre-emptive action is taken to prevent any adverse impacts occurring to communities living up- and down-stream of the dams.

11.1 LALINI DAM ALTRENATIVE

Considering the alternative dam sizes in respect of the Lalini Dam, from a social perspective the least disruptive process will be that which results in the least number of households having to be relocated and land lost. The process of relocation and resettlement is undoubtedly one of the most disruptive and risk associated processes related to the construction of large dams (Vanclay, Environmental and Social Assessment for large dams, 2000, pp. 7-9; The World Bank, 2004, pp. 321-332) and needs to be limited wherever possible.

On this basis Option 2 clearly emerges as the socially preferred option as it will result in the relocation of one (1) dwelling and the inundation of 4.9539 km² of cultivated land. Option 1, on the other hand, will result in 12 structures being relocated and 7.58762 km^2 of cultivated land being inundated with Option 3, resulting in the loss of 77 structures and 12.08256 km² of cultivated land.

Attention is now turned towards the conclusion and recommendations.

12. CONCLUSION AND RECOMMENDATIONS

It is apparent that the proposed Mzimvubu Water Project, being of considerable size as well as being located within one of the poorest and most underdeveloped regions of South Africa (Makiwane & Chimere-Dan, 2010, p. 21 & 40; Hamann, et al., 2012, p. 3; Department of Water Affairs, South Africa, 2014g, p. 3; Department of Water and Sanitation, South Africa, 2014a, pp. 1-1 & 5-16) has the potential to have a significant impact on the social environment of the area during both the construction and operational phases. There are, however, a number of caveats attached to the potential that the project holds and consequently the project would need to be carefully considered and implemented. In this vein Mike Muller (2014, p. 1) points out that,

> "[g]*iven the physical nature of the catchment area as well as the current social and economic context, use of water from the river cannot be expected to have the kind of catalytic development impact that has been witnessed in other regions. There is however potential to combine a number of potential water uses into a programme of interventions that could contribute significantly to local development.*"

From an economic perspective the project is considered to be viable but also with the proviso that it " *…will only be possible with the correct implementation of the different proposed benefits* (Department of Water and Sanitation, South Africa, 2014a, pp. 8-1 - 8-5), a sentiment fully supported in the findings of the social report.

Clearly there is both a Constitutional and policy obligation on both the national and local governments to deliver water to the poor (Mehta, 2005, p. 3), and together with this, the project provides an opportunity to lift the state of development in the region. However, this needs to be undertaken in a manner that will be successful in benefitting and improving the lives of the local population on a sustainable basis. As Mehta (2005, pp. 5-6) points out, there is a history of difficulties faced by municipalities in the Eastern Cape regarding their capacity to implement the delivery of water. For this opportunity to be realised careful consideration must be given to the implementation challenges that will be faced. Towards this end Muller (2014, pp. 13-14) suggests the following thirteen recommendations.

1. *"All stakeholders should recognise that the present project is only marginally viable and will require considerable further preparation in order to present a convincing business case to obtain the substantial public investment required as well as to mobilise financial and technical support from the private sector. Economic accounting should be to highlight the Programme's broader benefits*

2. *The project should be managed as a multi-purpose development programme that integrates and coordinates all elements, not simply as a water project.*

3. *In most of the sectors on which the project focuses, there are areas in which there is limited prior experience or precedent. The project should thus be presented, led and managed as an innovative development programme that uses the natural endowments of the region in a creative way to achieve outcomes that change the lives of communities for the better in a region with many development challenges.*

4. *The details of interventions in the different sectors must be confirmed with the relevant agencies to ensure that the Programme is consistent with local and sectoral plans and priorities and to enable Programme design to be finalised.*

5. *Because of the greater financial value and technical utility of peaking power, a focused effort should be made to develop a proposal for the Laleni hydropower scheme as a peaking power project, taking into account the need for investments to mitigate environmental impacts. In order to ensure that there is a market for the power produced, there should be early engagement with DoE, NERSA and ESKOM as well as with potential private investors to identify appropriate operating partners and to negotiate an appropriate offtake agreements that maximise the opportunities offered by the project site.*

6. *Detailed design of the resettlement and farmer establishment process that will be required should start as early as possible to ensure that key stakeholders are involved and that challenges are timeously identified and addressed. The approaches used should be guided by emerging land reform and agricultural development perspectives.*

7. *There should be early engagement with organised commercial agriculture and others organisations in the agricultural supply chain at a local and regional level in order to mobilise their participation. The aim should be to ensure that the agricultural development is integrated into an effective agro-industrial "ecosystem" and that the farmers are supported with an appropriate package of money, management and markets.*

8. *Since agriculture has only a limited potential for livelihood generation in the project area, other opportunities such as recreation and tourism should be aggressively pursued. This will require attention to the integration of the water resource development components of the project into a broader conservation strategy as well as the identification of specific water-based development opportunities.*

9. *The potential to integrate the proposed water resource developments into a broader conservation strategy needs to be considered.*

10. *Transport is a major development constraint in the project area. The approach to the development of access roads for the project should thus be guided by transportation needs of the community as well as those of the project.*

11. *Although there are no conflicts apparent with current proposals, a high-level development strategy for the Mzimvubu river basin should be produced and monitored. This should consider all water-related sectors as well as potential synergies and conflicts with other activities, notably transport, tourism and nature conservation.*

12. *In a future phase, innovative alternative proposals should be developed for the Mbokazi site that consider the potential of the dam as a focus for tourism and conservation development and a contribution to transport links as well as a significant source of hydropower.*

13. *Given the inter-sectoral coordination challenges posed by the Programme, support should be sought from the Presidential Infrastructure Coordinating Commission to ensure the necessary cooperation of national, provincial and local government agencies as well as engagement with stakeholders in the wider community.*"

All of which are critical in ensuring project success and all of which are fully supported in the findings of the social assessment.

Finally, with no sufficient information being available at the time of writing regarding the up- and down-stream situations, these effects were not assessed. It is, however, important to consider the effects that the project will have on communities both up and downstream of the dams and this would need to be investigated, assessed and mitigated to ensure that the interests of these communities are considered.

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