

6. CONSULTATION PROCESS

Apart from the public consultation process a number of focus group meetings 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 CONSULTATION 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, Siqungquni, 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 2014 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 aquaculture 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 winds 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 km² 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 | <u>24</u> |
|--------------|------------------|

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 Provider 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 these 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 km² of cultivated land will be inundated with a further 0.5 km² 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 11.

Table 11: 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 | |

| Lalini Dam Basin option 1 | Within footprint | Within 5 m |
|----------------------------------|-------------------------|-------------------|
| 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 km ² | |
| 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 11** is provided in **Figure 31**.

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 31: 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 32** 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 33**.

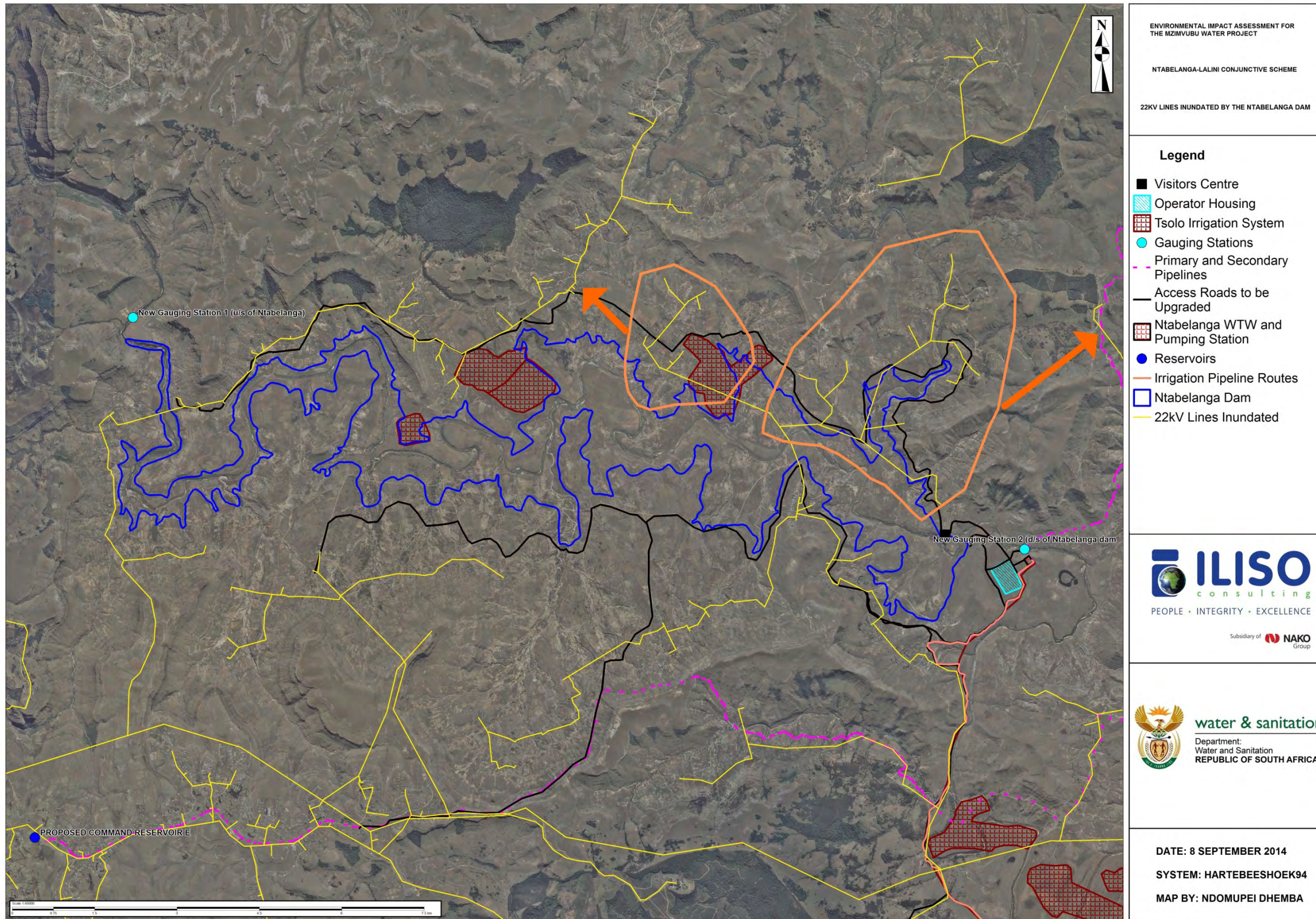


Figure 32: Eskom power lines inundated by the Ntabelanga Dam Basin

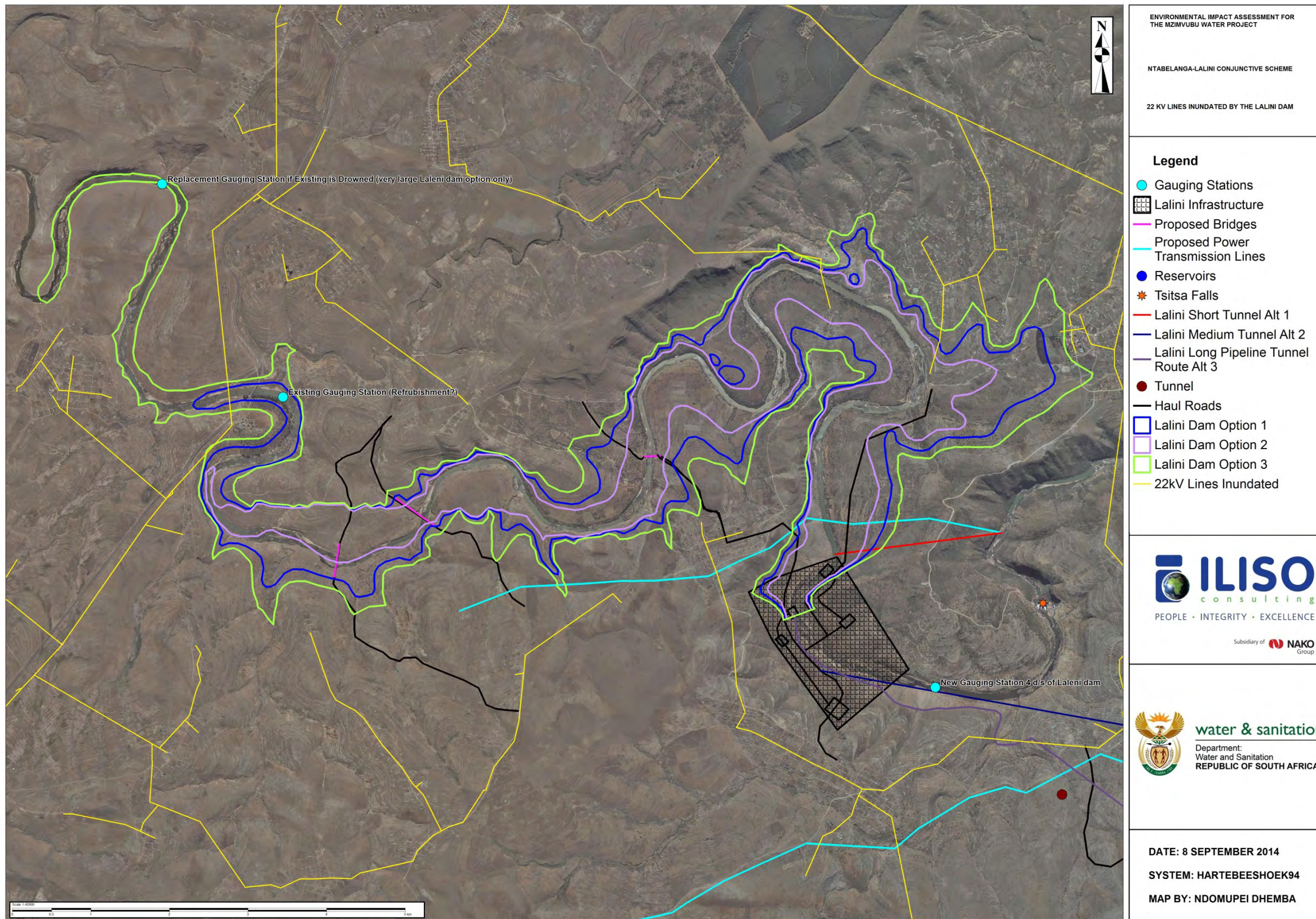


Figure 33: Eskom power lines inundated by the Lalini Dam Basin

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 34**. 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.

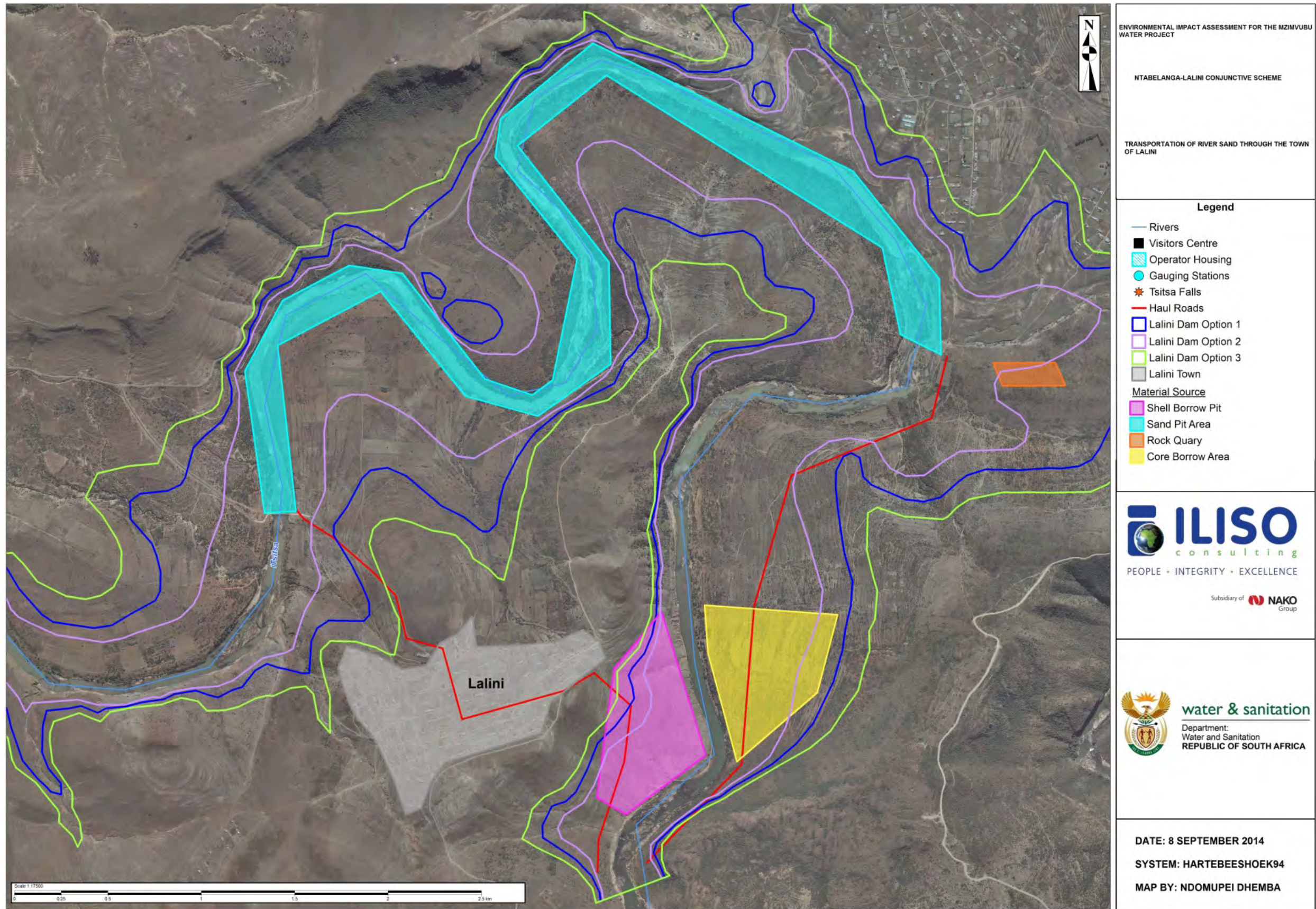


Figure 34: Route between borrow pit and Lalini Dam construction site

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 Water and 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 | Positive | National | Medium term | Very high | High | Definite | Medium | Very high |
| With Optimisation | Positive | National | Medium term | Very high | High | Definite | Medium | Very high |

Cumulative Impact – The creating 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 km² of cultivated land being inundated. Option 2 will result in 1 dwelling having to be relocated with 4.9539 km² of cultivated land being inundated. Option 3 will result in the most severe impacts being experienced with 77 structures and 12.08256 km² 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 11.

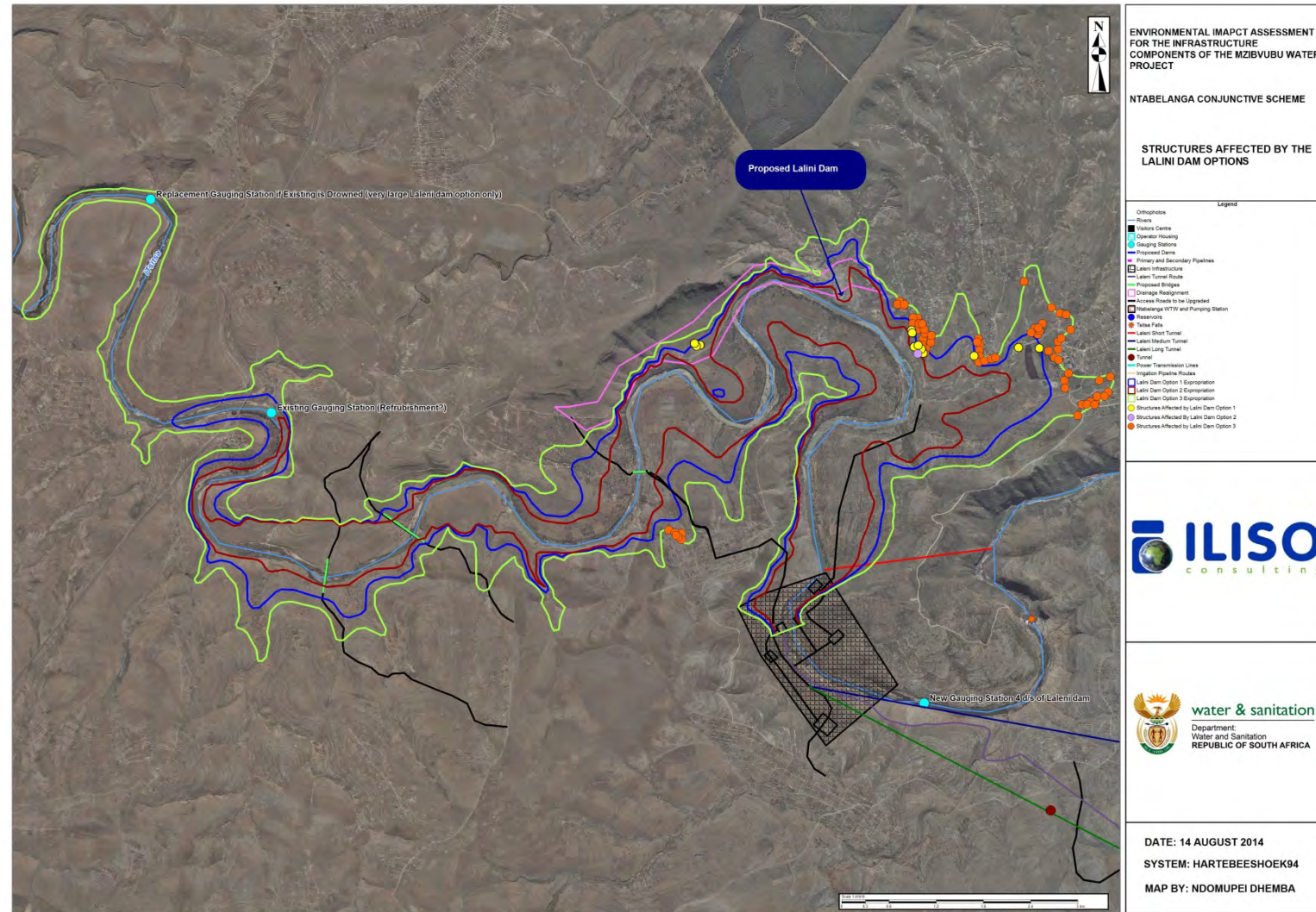


Figure 35: Structures affected by the Lalini Dam Options

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 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 36**Figure 36:.



Figure 36: 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 12** 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 12** into account.

Table 12: Structures and cultivated land affected by road infrastructure

| Ntabelanga Road | Within footprint | Within 5 m |
|-----------------|----------------------|------------|
| Bus stop | 1 | |
| Cultivated land | 0.19 km ² | |
| 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 37**.



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 37: 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:

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| 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. IMPACTS 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

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.

Mitigation measures

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 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 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 winds 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

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.

Mitigation 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. Where applicable, 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 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

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.

Mitigation measures

Include a section in the induction programme for construction works that covers 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 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 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

Increased demand on existing infrastructure facilities and social services

Mitigation measures

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.

| | |
|---|--|
| <p>Attitude formation towards project Increased opportunity for corruption Decreased level of community participation in decision making, loss of empowerment Disaster management</p> | <p>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.</p> |
| <p>Quality of the living environment impacts 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.</p> | <p style="text-align: center;">Mitigation measures</p> <p>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.</p> |
| <p style="text-align: center;">Cultural impacts 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,</p> | <p style="text-align: center;">Mitigation measures</p> <p>Include a section in the induction programme for construction works that covers 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 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.</p> |

and/or historical significance. 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 ALTERNATIVE

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 km² 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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