

8. KEY ISSUES

The main objective of this EIA is to provide the competent authority with the information that they require to make a decision on whether this project should go ahead or not, and if so then on what conditions. Some of the impacts during the construction and operation of the project will require environmental management measures and monitoring, but will not be determining factors on whether the project is authorised or not. These impacts are addressed in the Environmental Management Programme, but do not require specialist studies to inform the recommendations of the Environmental Impact Report. The purpose of identifying key issues is to focus the specialist studies and impact assessment on the issues and impacts that are critical to the authorisation decision and conditions.

This Chapter describes the key issues and impacts associated with the project that have been identified.

8.1 KEY ISSUES THAT WILL BE ADDRESSED IN THE EIA

8.1.1 Impacts on Plants and Animals

Dam development and the resulting inundation will result in the permanent loss of terrestrial plant and animal habitat.

The following key impacts on plants and animals have been identified:

- Drowning and loss of vegetation, with specific mention of Species of Conservation Concern such as *Boopha disticia* (used in African Traditional Medicine);
- Sedimentation and erosion may extend beyond the footprint of the study area leading to loss of niche habitat for floral assemblages;
- Alien invasive vegetation encroachment, leading to altered habitat conditions;
- Sensitive vegetation types such as the endangered *Mthata Moist Grassland* and the vulnerable *Eastern Griqualand Grassland* (Mucina and Rutherford, 2006) will be affected;
- Vehicles may impact upon sensitive riparian areas during construction, operation and rehabilitation, resulting in a loss of habitat;
- Loss of faunal habitat due to the flooding of floodplain and riparian areas and affect threatened species such as *Bugeranus carunculatus* (Wattle Crane), *Balearica regulorum* (Grey Crowned Crane), *Anthropoides paradiseus* (Blue Crane), *Geronticus calvus* (Southern Bald Ibis) and raptors will occur;
- Decrease in food supply due to habitat loss will result in a decrease in faunal diversity and cause changes to faunal community assemblage;
- Potential collisions of construction vehicles with potential species of conservation concern;
- Increased risk of poaching of potential species of conservational importance; and
- Increased risk of fire hazards due to increased human activity on site.

The impacts on **terrestrial ecology** will be assessed in the Impact Assessment Phase by undertaking a survey of the existing plants and animals and assessing how the proposed project is likely to impact on them.

8.1.2 Impacts on Rivers and Wetlands

The inundation of the Tsitsa River by the Laleni and Ntabelanga Dams will cause direct impacts to the biological, chemical and physical properties of the river and riparian environments.

The following key impacts on aquatic ecology have been identified:

- Sediment trapping, critical for maintaining physical processes and habitats downstream, will occur;
- Increased erosion of the downstream river bed and banks due to the trapping of sediments upstream;
- Changes from a free flowing river, causing changes in temperature, chemical composition and dissolved oxygen levels;
- Potential negative impact of discharge from the WWTWs;
- Impacts on migratory fish species, with special mention of eels and possibly *Labeobarbus natalensis*;
- Loss of refugia for aquatic community members;
- Increase in aquatic communities' sensitivity to changes in water flow and water quality, specifically for the endemic Mayfly.

The following key impacts on wetlands have been identified:

- Destruction and drowning of wetland habitat and overall loss of biodiversity through dam construction, road and pipeline construction;
- Loss or changes in ecosystem service provision of the wetlands ;
- Potential encroachment of infrastructure or construction or operational waste materials into wetland areas, which would affect the habitat integrity of these areas;
- Earthworks in the vicinity of wetland areas may lead to increased runoff and erosion and altered runoff patterns;
- Increased runoff volumes due to increased paved and other impervious surfaces may impact on wetland hydrology and habitat; and
- Ineffective rehabilitation of riparian areas could cause siltation and changes in the hydrological functioning of these areas.

The impacts on **rivers and wetlands** will be assessed in the Impact Assessment Phase by undertaking a wetland delineation and survey of the existing aquatic ecology and assessing how the proposed project is likely to impact on them. The potential impact on water quality will also be assessed.

In addition, a Reserve determination downstream of the Laleni site will be undertaken for assessment and management purposes. The purpose of the Reserve determination is to ensure that the proposed infrastructure development does not impact on the system's ability to provide the ecological and basic human rights water requirements.

8.1.3 Social and Economic impacts

Socio-economic upliftment of communities in the project area is the primary objective of this project. A number of socio-economic benefits are therefore expected to be derived from the project. Some negative impacts are also anticipated. The following key socio-economic issues have been identified:

- Job creation: in addition to the jobs created during the construction phase of the project (approximately 6700 jobs/year), it is predicted that the farms in the Tsolo area could create 3375 permanent jobs and up to 1350 seasonal jobs;
- The increase in economic activity during construction and operation will create SMME opportunities and promote an economic stimulus for the region;
- Integration of the project with the strategic development plans of the Eastern Cape Province;
- Improved service provision, including potable water and roads;
- Access (to grazing land for instance) may also be restricted due to the dams;
- Health and gender issues: large infrastructure projects typically involve social risks, especially with regard to health and gender, including STDs, HIV and AIDS risks. It may also affect social stability;
- Loss of land: large expanses of land will be inundated by the dam. This may result in a decrease of agriculture on neighbouring properties because of the inundation of crop lands or grazing areas;
- Resettlement: some households will have to be relocated to make way for the proposed infrastructure;
- Sense of place: the proposed project, and specifically the two dams, will change the character of the area and will affect the sense of place; and
- Economic viability of the project.

The social specialist study will predict the positive and negative social impacts on the communities in the study area. This will include the potential impact of HIV/Aids. The loss of structures and livelihood supporting resources will be quantified in the Relocation Action Plan register.

The economic specialist study will determine whether the project will enhance net societal welfare. At a broad level, investigating impacts on overall welfare requires considering the efficiency, equity and sustainability of the project.

8.1.4 Impacts on Heritage resources

The most significant heritage resources potentially affected by the proposed project are likely to be:

- Places associated with oral traditions and living heritage:
Extensive developments, such as dam inundation, potentially damage or destroy such places, with little or no opportunities for restitution and concomitant community disruption. Accordingly, it is imperative that alteration to such places is avoided by changing the proposed development footprint if necessary, or negotiating appropriate offsets with affected communities, in the case of inundation.
- Landscapes and natural features:
Impact on the landscape will require assessment by a visual specialist.
- Traditional burial places:
All human remains have high heritage significance at all levels due to their spiritual, social and cultural values and may not be altered in any way without the permission of the next-of-kin and a permit from the Eastern Cape Provincial Heritage Resources Authority (ECPHRA). Potential impacts on traditional burial places range from indirect (next-of-kin cannot access graves during construction activities for health and safety reasons) to direct alteration, destruction or inundation.
- Archaeological sites.
If undisturbed, archaeological sites may have medium to high heritage significance for their historical and scientific values at various levels. They will require intensive survey and scrutiny during the EIA phase. Potential impacts on archaeological sites usually comprise alteration or destruction of the resource. Appropriate mitigation for sites with low heritage significance may be limited to basic recording and application for a destruction permit from ECPHRA; whereas more significant sites may require extensive recording, artefact sampling and/or excavation, all of which actions would require a permit from ECPHRA.

It is unlikely that structures or buildings older than 60 years (other than those older than 100 years, which then constitute archaeological sites) are present in the proposed development area. It is possible and indeed likely that individual trees/medicinal plants are present. These are not strictly considered heritage resources in terms of heritage legislation, and should be considered in the Social and Ecology specialist studies, which will provide recommendations for mitigation.

A palaeontological study will be necessary for this project as the South African Heritage Resources Inventory System (SAHRIS) National Fossil Sensitivity Map indicates a very high estimated palaeontological sensitivity.

8.1.5 Changes to the landscape and sense of place

The proposed project will change the landscape and affect the sense of place. These will be addressed in the visual impact assessment.

8.2 ISSUES THAT WILL NOT BE ADDRESSED IN THE EIA

8.2.1 Climate change projections and risks

According to the *Eastern Cape Climate Change Response Strategy* (DEDEA, 2011), the Province is expected to experience highest temperature increases towards the north-west interior, while lowest increases are likely along the coast. Associated with the higher temperature will be increases in evaporation rates and increased intensity of droughts.

Regarding rainfall projections a wetting trend is expected eastwards. In addition to increases in mean annual rainfall, it is projected that the durations of droughts will increase while the intensity of rainfall may increase (Midgley et al 2007).

Some key risks and opportunities of climate change are of relevance to the project and are described below:

- *Risks for the agricultural sector:*

The gradual increase in mean temperature and changes in moisture condition over time may result in both increases and decreases in agricultural productivity depending on local circumstances and the crop type in place. Warming as a result of climate change is predicted to reduce the accumulation of chill units, making it more difficult to produce chill-dependent deciduous fruits such as apples. Furthermore added heat stress will reduce the productivity of perennial and annual crops. Due to increased evaporation and drying, net water requirements for crops in the summer rainfall region are projected to increase throughout southern Africa but particularly in the eastern and central parts of South Africa.

- *Biodiversity related risks:*

Biodiversity is extremely susceptible to climatic changes including rainfall and temperature. Reduced rainfall and increased temperatures may result in local extinction of marginal species and may facilitate extension of the geographical range of invasive alien species of plant and animal. These, in turn, will compete with indigenous species for scarce resources and may ultimately impair the ability of ecosystems to cope with other disturbances. This is of particular importance when indigenous species contribute to essential goods or services. Increased temperatures in particular are expected to result in increased insect outbreaks which may have negative consequences for agriculture within the province.

- *Social systems related risks*

Climate-change vulnerabilities of industry, settlement and society are mainly related to extreme weather events rather than to gradual climate change. Vulnerabilities of industry, infrastructures, settlements and society to climate

change are generally greater in certain high-risk locations, particularly coastal and riverine areas, and areas whose economies are closely linked with climate sensitive resources, such as agricultural and forest product industries, water demands and tourism; these vulnerabilities tend to be localised but are often large and growing. Poor communities can be especially vulnerable as they tend to have more limited adaptive capacities, and are more dependent on climate-sensitive resources such as local water and food supplies.

- *Water resources and water services related risks*

Climate change can cause changes to baseflows (i.e. “dry weather” flows) and stormflows and their variabilities, which have strong and direct influences on water quality and quantity, as well as the integrity of aquatic ecosystems. Changes to annual streamflows and their variabilities also affects the predictability of annual water supply to storage dams.

More intense rainfall events will result in increased turbidity and sedimentation (causing loss of capacity of storage dams and increased water treatment costs). Shallower, warmer water and increased evaporation and eutrophication leading to water treatment and distribution challenges (disinfection, by-products, regrowth). Increased risk of direct flood damage to water services and treatment facilities. Possible increased water demand (for irrigation as well as domestic urban demand) due to more heat waves and dry spells.

The impact of climate change on the area, and therefore the project, is a process that is taking place at a scale that is much longer in terms of time and larger in terms of geographic extent than this project. Cognisance is taken of the increased likelihood and frequency of impacts as described above. This will be addressed in the relevant specialist studies by applying the precautionary principle.

The contribution of this project to climate change in the region will be addressed in the EMP.

No climate change specialist study will therefore be undertaken.

8.2.2 Agriculture and land tenure

Currently the land in the study area is for the most part under communal tenure and used for cultivation (locally) and livestock grazing (widespread) on State owned land. Under this system the State owns the land, but it is managed and allocated to community members by the Traditional Leaders. Although the system, without title to the land, is currently relatively stable this practice needs to be reconsidered under intensive farming conditions where the incentive for the farmer becomes more important.

Any agricultural development in the sub-catchment area under consideration will have to take account of existing land use and occupation as well as of economic considerations. The establishment of a small number of commercial farmers in an area with a large rural population is likely to face land tenure and compensation challenges. Responsibility for the establishment of new farmers has not yet been determined. This will be a major challenge since there are currently few examples where such efforts have been successful and there have been many failures. The agricultural opportunities in the area selected are also limited by climatic factors, which add to the challenges.

The costs of establishment will be substantial and the requirements for ongoing support could be onerous. For the proposed farm model it is estimated that the capital needed to establish a single farmer is almost R5 million while working capital required is estimated at almost R1.4 million. Because of the relatively low levels of development in the area, particular attention will also have to be given to establishing channels for distribution of inputs and marketing of production. The range of crops that can be grown in this climatic zone is limited and careful attention will have to be given to ensuring that they can be successfully and reliably marketed.

In many agricultural development projects, a key obstacle has been the absence of linkages to effective technical and financial support, inputs and markets. One response to this has been to engage stakeholders in the relevant supply chains in order to ensure effective integration of new producers. This approach does not yet appear to have been initiated. This creates a risk that the design of the farming model adopted will not reflect the opportunities and constraints in the broader agricultural marketing and support “ecosystem”.

The infrastructure components of the project that are the subject of the authorisation that this EIA supports extend to the supply of water to the field edge. Although the EIA will consider the impacts of a change in land tenure arrangements (especially from a social perspective), **the details of how land tenure arrangements will be changed, as well as new commercial farmer establishment and support, are not included in the scope of this EIA.**

8.2.3 Potential for forestry

There may be some scope for the expansion of commercial forestry in the sub-catchment above the dam site. However, this will reduce the amount of water available and could impact on the viability of the hydroelectricity component. Any forestry expansion will thus have to be planned from a water use as well as a land use perspective. **This is the subject of a separate planning process and not included in the EIA.**

8.2.4 Possible recreational and estate opportunities

Possible estate and recreational related infrastructure associated with the proposed dams has not been identified at this stage. Any authorisations required for such infrastructure will be applied for separately.

8.2.5 Tertiary distribution lines

The EIA will only consider the primary and secondary distribution system, which will be implemented by DWA. Tertiary distribution lines (i.e. smaller pipelines supplying settlements along the secondary lines and from District Reservoirs) are the responsibility of the various DMs.

8.2.6 Activities undertaken as part of DEA's Catchment Rehabilitation and Management Programme

Activities undertaken as part of DEA's Catchment Rehabilitation and Management Programme will not be assessed as part of this EIA.

9. PLAN OF STUDY FOR ENVIRONMENTAL IMPACT ASSESSMENT

9.1 SCOPE OF THE EIA

The EIA will investigate the impacts of, and recommend mitigation and enhancement measures for the following project components:

- The Ntabelanga and Lalení 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 pumps) for irrigated agriculture (raw water supply up to field edge);
- Impact of commercial agriculture in earmarked irrigation areas;
- WWTWs at the Ntabelanga and Lalení Dam sites;
- Accommodation for operational staff at the Ntabelanga and Lalení Dam sites;
- Upgrading and relocation of roads and bridges;
- Generation of hydro power and feeding of this power into the existing grid;
- Tunnel at the proposed Lalení Dam;
- 18.5km powerline from the Lalení Dam tunnel, 13 km power line from Ntabelanga Dam; power lines to supply power during construction at Ntabelanga and Lalení dam sites and to operate pumping and booster stations along the bulk distribution infrastructure;
- River intake structures and associated works;
- Ten construction materials quarries and borrow pits;
- Information centres at the two dam sites; and
- Miscellaneous construction camps, lay down areas, and storage sites.

9.2 PROPOSED APPROACH

The EIA will build on the Scoping report and will focus on assessing the key impacts, determining their significance, and recommending appropriate measures to mitigate negative impacts and enhance benefits (**Sections 9.4 and 9.5**). Where required, this will involve specialist input (see **Section 9.3** below).

The contents of the EIR will be as prescribed in the EIA Regulations, 2010 (Regulation 31(2)).

9.3 SPECIALIST STUDIES

Some of the key issues identified during the Scoping Phase will require further investigation by appropriately qualified and experienced specialists. The specialist studies to be undertaken during the EIA phase are detailed below. These studies will be synthesised and integrated into the overall impact assessment (full reports will be included as appendices to the EIR), and recommendations for mitigation will be included in the EMP. The contents of all specialist reports will include information as prescribed in Regulation 32(3) of the EIA Regulations, 2010.

9.3.1 Social Impact Assessment

The objective of the Social Impact Assessment is to identify the social baseline conditions in which the proposed project will take place. Against this background, and based on the project description, the purpose is also to identify, assess and mitigate the likely social impacts that may occur as a result of the proposed project.

Both a quantitative and qualitative methodological approach will be applied throughout the study, in a research technique referred to as triangulation.

Data will be gathered through:

- A scan and analysis of the Draft Scoping Report prepared for the project by ILISO Consulting (Pty) Ltd;
- Statistics South Africa, Census 2011; Quarterly Labour Force Survey First Quarter, 2013;
- A comprehensive scan of the Issues and Response Report generated by ILISO Consulting (Pty) Ltd;
- Discussions with the project proponents and the Environmental Assessment Practitioners;
- A literature review of various documents such as the relevant municipal Integrated Development Plans (IDPs) and other specialist reports and documents; and
- A broader literature scan.

9.3.2 Terrestrial and aquatic ecology and wetlands delineation

This task will consist of a full ecological assessment of the area to be flooded by the Ntabelanga Dam (4 700 ha at maximum flood level) as well as any other footprint areas such as areas to be used as borrow pits (approximately 20 ha) and construction camps (approximately 20 ha) as well as the servitudes to be used for roadways, pipelines, electrical servitudes and areas of irrigated agriculture (2 900 ha). The assessment of the Laleni Dam and Hydropower scheme infrastructure will also be undertaken.

- **Terrestrial Ecological Assessment**

The proposed approach will include both desktop studies and site specific field work.

Desktop assessments

- Desktop study to collect all relevant vegetation type-, Red Data List (RDL) taxa and migration data available for the area and relevant study site. The desktop study will also include referencing any governmental and non-governmental information that can be obtained. The literature/desktop will include all relevant documentation in the possession of the client;
- Input on faunal and floral components for the scoping report, which is to include the findings of the data from the desktop study as well as the initial site visit, including comments with respect to spatial integrity and importance, species richness, biodiversity value of the areas and proposed management actions with respect to sensitive areas and/or species.

Field assessments

The following points outline the field assessment methods to be followed:

- Flora:
 - The field assessment will be initiated by first identifying terrain units and ecological units to identify areas of varying structure and degree of disturbance.
 - On site assessments of each terrain unit will take place to determine the Present Ecological State;
 - Species lists of identified species within the study area will be compiled;
 - A site sensitivity plan will be developed; and
 - The presence of medicinal and RDL species will be assessed.
- Invertebrates:
 - Capture through netting and the use of an emergence box; baiting and other attraction methods; and direct observation.
- Amphibians:
 - Identification through tadpole collection, call identification and direct observation; habitat and potential biodiversity list; and habitat evaluation for RDL species.
- Reptiles:
 - Searching of target areas including rocky outcrops and through direct observation;
 - Potential biodiversity list;
 - Habitat evaluation for RDL species; and
 - Consultation with local communities.
- Birds:
 - Identification through call and direct observation;
 - Potential biodiversity list; and
 - Habitat evaluation for RDL species.
- Mammals:
 - Identification through call, spoor or dung;
 - Trapping using Sherman traps;
 - Potential biodiversity list; and
 - Habitat evaluation for RDL species.

- The effects of the development on migratory corridors and connectivity will be addressed;
- A sensitivity map will be developed for the proposed development site;
- Mitigation measures will be recommended on completion of the study; and
- A monitoring program will be developed highlighting monitoring requirements, monitoring sites, protocols and monitoring frequencies.

- **Aquatic and wetland assessment**

Desktop phase

The wetland delineation will be initiated as a desktop study, where all the relevant information from research sources, as well as existing documentation will be reviewed in order to develop preliminary wetland delineations.

Ground truthing and field assessment reporting and impact assessment

Allowance has been made for detailed wetland delineations of specific areas of concern or interest, including consideration of areas potentially affected by flooding and areas where rehabilitation will take place. The following methodologies will be used:

- Delineation of the riparian/wetland zones will take place according to the DWA 2005 guideline method: Aspects such as soil morphological characteristics, vegetation types and wetness will be used to delineate the temporary zones of the wetlands according to the guidelines. The buffer zone will then be delineated around the wetlands in order to ensure protection;
- The wetland classification assessment will be done according to the Classification System for Wetlands and other Aquatic Ecosystems in South Africa. User Manual: Inland systems (Ollis *et al.*, 2013);
- The wetland Present Ecological State and Ecological Importance and Sensitivity will be assessed according to indices such as the wetland IHI and as defined in DWA (1999). In addition the wetland ecological and socio-cultural service provision will also be defined based on the methods of Kotze (2005); and
- The wetland Health will be assessed according to the resource directed measures guideline as advocated by Macfarlane *et al.*, (2008).

9.3.3 Visual impact assessment

This specialist study will cover the following key aspects:

- Description of the visual landscape of the area with specific focus on topographical features that offer impact mitigation opportunities and constraints;
- Description of key areas from which the proposed project will be seen (the viewshed) as well as the viewing distance;
- An assessment of the visual absorption capacity of the landscape (i.e. the capacity of the landscape to visually absorb structures and forms placed upon it). Particular attention must be paid to conservation, tourism, eco-tourism and associated activities, and potential impacts on sense of place;

- The identification of potential impacts (positive and negative, including cumulative impacts if relevant) of the proposal on the visual landscape during construction and operation;
- Recommendations on alternatives identified, to avoid negative impacts;
- The identification of mitigation measures for enhancing benefits and avoiding, reducing or mitigating negative impacts and risks (to be implemented during design, construction and operation of the proposed project); and
- The formulation of a clear and simple system to monitor impacts, and their management, based on key indicators.

9.3.4 Heritage Impact Assessment

The HIA will be undertaken in compliance with Section 38 of the National Heritage Resources Act 25 of 1999 and include all heritage resources, including paleontological sites, and recommendations for their management.

Reports in fulfilment of Section 38(3) of the NHRA will include the following information:

- the identification and mapping of all heritage resources in the area affected;
- an assessment of the significance of such resources in terms of the heritage assessment criteria set out in regulations;
- an assessment of the impact of the development on such heritage resources;
- an evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;
- the results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;
- if heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and
- plans for mitigation of any adverse effects during and after completion of the proposed development.

9.3.5 Economic

A Macro-economic Impact Analysis (MEIA) as well as an Economic Cost-Benefit Analysis will be performed.

The focus of the economic impact analysis is macro-economic, stressing linkages between the project and the remainder of the relevant economy. Environmental externalities may affect other economic sectors and are included in the tools of the macro-economic impact assessment. The local, regional and national socio-economic impact will also be assessed.

The basic function of the economic specialist input to the EIA process is to assist in determining whether the project will enhance net **societal welfare**. This necessitates

the analysis of impacts on different sectors or groups that make up society. At a broad level, investigating impacts on overall welfare requires considering the efficiency, equity and sustainability of the project. It is important that all three of these aspects are considered in order to provide adequate information to the client:

- The principle of **efficiency** raises the issue of whether alternative forms of a project would constitute a more efficient use of resources.
- The **equity** principle requires the consideration of whether the project results in outcomes that can be considered 'fair'. Investigating the distribution of impacts is required to clearly indicate what is impacted on, in what way and for what period.
- **Sustainability** related issues include a consideration of whether the project is likely to be financially viable over the long term and whether it will be economically sustainable. Risks to the long-term success of the project, including factors such as changing interest and exchange rates, therefore become important.

As part of a MEIA, a Cost-Benefit Analysis will also be performed. The Cost-Benefit Analysis evaluates the direct surplus that the development will generate taking into account the externalities, both negative and positive, that will flow from the development. This analysis shows to what extent the project will be viable in its own right. If a project of this nature fails it will have huge social, economic and environmental negative effects for the region. Social and environmental "costs" and rehabilitation at closure will also be included.

The macro-economic impacts of the project on the Eastern Cape Province include all the economic sectors in the immediate vicinity of the proposed Mzimvubu Water Project activities, as well as for the rest of the province. The primary objective of this study will be to determine the nature and magnitude of all economic and socio-economic impacts emanating from the proposed project.

Identification of irrigable land has been undertaken as part of the feasibility study. The relevant study(ies) will be reviewed by the economic and agricultural specialist.

9.3.6 Water quality

A water quality analysis will be undertaken and will inform both the EIA and WULA. The analysis will focus on fitness for use. The water quality study will address, among other things, the potential negative impact of discharge from the WWTWs. Hydrological aspects have already been covered in previous studies and relevant information on the hydrology will be extracted as required.

9.4 IMPACT ASSESSMENT METHODOLOGY

The key issues identified during the Scoping Phase inform the terms of reference of the specialist studies, as summarised above. Each issue consists of components

that on their own or in combination with each other give rise to potential impacts, either positive or negative, from the project onto the environment or from the environment onto the project. In the EIA the significance of the potential impacts will be considered before and after identified mitigation is implemented, for direct, indirect, and cumulative impacts, in the short and long term.

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

The following criteria will be used to evaluate significance:

- **Nature:** This is an appraisal of the type of effect the activity is likely to have on the affected environment. The description includes what is being affected and how. The nature of the impact will be classified as positive or negative, and direct or indirect.
- **Extent and location:** This indicates the spatial area that may be affected (**Table 14:**)

Table 14: Geographical extent of impact

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

- **Duration:** This measures the lifetime of the impact (**Table 15**).

Table 15: Duration of Impact

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

- **Intensity/severity:** This is the degree to which the project affects or changes the environment; it includes a measure of the reversibility of impacts (**Table 16**).

Table 16: Intensity of Impact

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

- **Potential for irreplaceable loss of resources:** This is the degree to which the project will cause loss of resources that are irreplaceable (Table 17).

Table 17: Potential for irreplaceable loss of resources

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

- **Probability:** This is the likelihood or the chances that the impact will occur (Table 18).

Table 18: Probability of Impact

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

- **Confidence:** This is the level of knowledge or information available, the environmental impact practitioner or a specialist had in his/her judgement (Table 19).

Table 19: Confidence in level of knowledge or information

| Rating | Confidence | Description |
|--------|------------|--|
| | Low | Judgement based on intuition, not knowledge / information. |

| | | |
|--|--------|--|
| | Medium | Common sense and general knowledge informs decision. |
| | High | Scientific / proven information informs decision. |

- **Consequence:** This is calculated as extent + duration + intensity + potential impact on irreplaceable resources.
- **Significance:** The significance will be rated by combining the consequence of the impact and the probability of occurrence (i.e. consequence x probability = significance). The maximum value which can be obtained is 100 significance points (**Table 20**).

Table 20: Significance of issues (based on parameters)

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

- **Cumulative Impacts:** This refers to the combined, incremental effects of the impact. The possible cumulative impacts will also be considered.
- **Mitigation:** Mitigation for significant issues will be incorporated into the EMP.

9.5 ENVIRONMENTAL MANAGEMENT PROGRAMME

Based on the findings of the EIR, a practical and feasible EMP will be compiled. The draft EMP will outline how negative environmental impacts will be managed and minimized, and how positive impacts will be maximised, during and after construction. The EMP will fulfil the GN 543 requirements and will include mitigation measures required during the planning, construction and operational phases of the project as well as a framework for social and environmental monitoring. Recommendations will be given with regard to the responsible parties for the implementation of the EMP.

9.6 RELOCATION ACTION PLAN

The Relocation Action Plan (RAP) will be presented as a Chapter in the EMP. The focus of the RAP will be to:

- Confirm that there are no relocation, compensation or livelihood fatal flaws that could impact on the decision on whether the project should go ahead or not;
- Identify any relocation, compensation or livelihood related conditions that should be stipulated in the Environmental Authorisation;

- Estimate the magnitude of the task of implementation of the RAP;
- Agree on the structure of the final RAP (i.e. what will be included); and
- Unblock potential bottle-necks that could delay implementation.

A Relocation, Compensation and Livelihoods Strategy will be compiled during the EIA phase. Livelihoods will include aspects such as access to community facilities, social opportunities, clinics and schools. In order to achieve this, the Social Impact Assessment, Heritage and public participation tasks will be more extensive than the minimal requirements of an EIA in terms of the EIA Regulations. This will include a focused consultation process to deal with potentially directly affected parties for which a RAP Background Information Document will be compiled. A discussion on the receiving areas for affected households will be initiated, with potential receiving areas being identified. If homesteads are identified that will need to be relocated then discussion on the type of replacement structures will be included.

It is essential for the RAP to provide an accurate baseline of the existing structures and resources. The Social baseline will therefore be more extensive than usually required for an EIA's SIA and will include a database of directly affected parties linked to a locality plan. The RAP consultation process will include Focus Group Meetings that supplement the HIA's findings on the number of graves, holy places, archaeology, rock art and other heritage resources to facilitate accurate implementation planning.

9.7 PUBLIC PARTICIPATION

Public participation in an Environmental Impact Assessment (EIA) plays a critical role in integrating economic, social and environmental objectives. It assists in moving towards more sustainable development through strengthening and increasing public awareness of the economic and environmental trade-offs, minimizing or avoiding public controversy, confrontation and delay, and assists with obtaining traditional and local information about the project and the project area.

The requirements of the NEMA EIA Regulations (2010) for the Public Participation Process (PPP) will be adhered to. The International Association of Public Participation (IAP2) best practice principles will also be applied, including special measures such as additional focus group meetings, the use of local facilitators at meetings, and the translation of documents, advertisements and notification letters from English into isiXhosa.

ILISO will provide feedback to stakeholders throughout the process. I&APs and the public will be informed of the availability of the draft EIA report (through written notification to registered stakeholders), as well as of the authorities' decision and the appeal process in respect of the various applications (through newspaper advertisement and written notification to all registered stakeholders).

The draft reports will be distributed to public places and made available for a 30 calendar day public comment period. The draft reports will also be presented at stakeholder meetings, where I&APs will be able to confirm that their issues have been captured correctly, properly understood by the environmental team, and included in the specialist studies and impact assessment. The final documents will be made available for public comment for a 21 calendar day public comment period and be submitted to the authorities. Draft and final reports will be made available for download on the DWA website.

All issues and comments received from the stakeholder consultation process will be captured in an Issues and Responses Report that will form an Appendix to the EIA Report.

9.8 AUTHORITY CONSULTATION

The relevant authorities will be kept up to date with progress on the EIA through the Authorities Forum (see **section 6.2**).

9.9 PROGRAMME

Due to the high priority nature of this project, a fast-tracked process is being implemented. Although the fast-tracked programme will not compromise the legislated EIA process if the deadlines are achieved, it involves some quality risks if not all role players cooperate fully. In particular, specialists will have to commence with their studies prior to acceptance of the PoS for EIA by DEA.

In addition, the fast-tracked programme will require optimal coordination between all the commenting authorities and shortened review periods and decision-making processes for DEA.

The key milestones in the EIA process are summarised below:

- Public comment period for final Scoping report and submission of final Scoping report to DEA: June 2014
- EIA phase (including specialist studies): July – September 2014
- Public comment period for draft EIR and EMP: September 2014
- Submission of final EIR: November 2014.

10. CONCLUSION AND RECOMMENDATIONS

The main aim of the Mzimvubu Water Project is the socio-economic upliftment of the largely undeveloped and impoverished communities within the area. This is to be achieved through:

- Supply schemes for domestic and industrial water requirements;
- Supply schemes for irrigated agriculture;
- Hydropower generation; and
- The creation of temporary and permanent jobs.

The project involves some positive and negative impacts. Potentially significant environmental impacts of the project have been identified and will be further investigated and assessed in the EIA phase.

The project team has the necessary experience and skills to carry out the EIA process (including specialist studies) required and it is recommended that the EIA process proceeds based on the proposed Plan of Study for EIA (**Chapter 9**).

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APPENDIX A

PROJECT TEAM CURRICULA VITAE

APPENDIX B

PUBLIC PARTICIPATION PROCESS (PPP)

INFORMATION

B1: List of Interested and Affected Parties

B2: Notification letter

B3: Background Information Document (BID)

B4: Newspaper advertisement

B5: Site notice

B1: List of Interested and Affected Parties

B2: Notification letter

B3: Background Information Document (BID)

B4: Newspaper advertisement

B5: Site notice