

ENVIRONMENTAL IMPACT ASSESSMENT
Final Environmental Impact Assessment Report for
the Proposed Construction, Operation and
Decommissioning of a Seawater Reverse Osmosis
Plant and Associated Infrastructure in
Tongaat, Kwazulu-Natal

**FINAL
EIA
REPORT**



**CHAPTER 11:
SOCIAL IMPACT**

Abbreviations

ACER	ACER (Africa) Environmental Consultants
CSIR	Council for Scientific and Industrial Research
DWAF	Department of Water Affairs and Forestry
EIA	Environmental Impact Assessment
GDP	Gross Domestic Product
IAIA	International Association for Impact Assessors
IDP	Integrated Development Plan
IFC	International Finance Corporation
KZN	KwaZulu-Natal
LaMRAG	La Mercy Residents Action Group
NEMA	National Environmental Management Act
NMPR	Northern Municipal Planning Region
SDF	Spatial Development Framework
SDP	Spatial Development Plan
SANRAL	South African National Roads Agency Limited
StatsSA	Statistics South Africa
STI	Sexually Transmitted Infection
SWRO	Sea water Reverse Osmosis
ACER	ACER (Africa) Environmental Consultants
CSIR	Council for Scientific and Industrial Research
DWAF	Department of Water Affairs and Forestry
EIA	Environmental Impact Assessment
GDP	Gross Domestic Product
IAIA	International Association for Impact Assessors
IDP	Integrated Development Plan

EXECUTIVE SUMMARY

INTRODUCTION

Umgeni Water Amanzi (hereinafter referred to as Umgeni Water) is proposing large scale desalination as an alternative water supply to the north coast of KwaZulu-Natal (KZN). Umgeni Water is proposing to construct and operate a seawater desalination plant in the Tongaat area using seawater reverse osmosis (SWRO) technology. The proposed site is located approximately 30 km north of Durban between uMhlanga and Ballito.

Umgeni Water has appointed the CSIR to undertake Scoping and an Environmental Impact Assessment (EIA) for the proposed project. Considering the location of the proposed project site in Tongaat, the current land use (market gardening), the presence of permanent residential houses on the site and concerns raised by key stakeholders during the scoping process, the need for a Social Impact Assessment was identified. CSIR appointed ACER (Africa) Environmental Consultants (hereinafter referred to as ACER) to undertake this study for the proposed project.

Scope of work and terms of reference

The scope of work was to undertake a Social Impact Assessment, the details of which are provided in Section 11.1.1.

Study approach

Both qualitative and quantitative data analysis techniques were applied (using primary and secondary data sources) in order to successfully undertake this study.

The assessment of impacts was undertaken in accordance with the agreed upon methodology provided by the CSIR and detailed in Chapter 4 of this Final EIA Report.

PROJECT DESCRIPTION

The proposed desalination plant will be inclusive of the following key infrastructure:

- Seawater intake and pipelines.
- Seawater pump station.
- Seawater Reverse Osmosis desalination plant.
- Brine discharge pipeline.
- Brine diffuser system.
- Potable water pipelines.
- Power supply infrastructure.

It has been estimated that construction will take 30 months with an approximate area of 14 ha required for construction and lay-down and 7 ha required during operation. The anticipated lifespan of the plant is 20-25 years; however, it is understood that provisions will be made to extend this.

APPLICABLE LEGISLATION AND INTERNATIONAL SAFEGUARDS

The following legislation and associated regulations are relevant to this Social Impact Assessment:

- Constitution of the Republic of South Africa Act, 1996 (Act No. 108 of 1996) as amended.
- National Environmental Management Act, 1998 (NEMA) (Act No. 107 of 1998) as amended.
- National Heritage Resources Act, 1999 (Act No. 25 of 1999).
- KwaZulu-Natal Heritage Act, 2008 (Act No. 04 of 2008).

There are also international safeguards that apply to a project of this nature as detailed in Section 11.3.2.

DESCRIPTION OF THE RECEIVING ENVIRONMENT

Population

The population within the municipality is classified as young, with 66% of the population

below the age of 35. Between 2001 and 2011, eThekweni experienced an annual population growth rate of 1.1%, 0.4% higher than the provincial average (StatsSA, 2012).

Employment

High levels of unemployment have been cited as a key development challenge throughout the eThekweni Municipality. An improvement in employment levels was reported between 2001 and 2011, with the level of unemployment reported to drop from 43.0% to 30.0%, placing unemployment within the municipality below the provincial average (Table 11-1) (StatsSA, 2012).

Economic sectors

The eThekweni Municipality contributes 65.5% of the total provincial Gross Domestic Product (GDP) and 10.7% of the South African GDP (eThekweni IDP, 2013/2014). In terms of contributions made to employment by each economic sector, the tertiary sector contributes the most, 73.0%, followed by the secondary sector, 26.0%, with the primary sector only contributing 1% (eThekweni IDP, 2013/2014).

Education

Education levels with the eThekweni Municipality are, on average, better than those experienced by KwaZulu-Natal as a whole. However, in comparison with the eight metro municipalities in South Africa, eThekweni ranks fifth in terms of the percentage of the population over the age of 20 with a Grade 12 and fourth in terms of literacy rate (eThekweni IDP, 2013/2014).

Healthcare

Approximately 80% of the municipal population utilizes public healthcare facilities, which include 116 primary healthcare clinics, eight community healthcare centres, one central hospital and eight specialised hospitals. The remaining 20% of the population has medical aid coverage and has access to sixteen private hospitals (eThekweni IDP, 2011/2012).

Access to services

Piped water – access to piped water within the municipality is far better than the provincial

average. However, an estimated 73,460 households are still reported to be without access to water within their dwelling, a backlog which the municipality cannot foresee addressing in the coming 20 years (eThekweni IDP, 2013/2014).

Sanitation – a noticeable improvement in access to water borne sewage or chemical toilets has been reported within the municipality between 2001 and 2011, with levels above the provincial average. The improvement in access to sanitation throughout the province and within the municipality is best illustrated by the decline in the percentage of households reporting no access to sanitation.

Electricity for lighting – access to electricity for lighting (the lowest level of access) within the municipality is relatively good, with 90% of households reporting access. This is better than the provincial average (78%) (StatsSA, 2012).

Socio-economic overview of the Northern Planning Region

For planning purposes, the eThekweni Municipal Area has been divided into four functional planning regions: the North, South, Central and Outer West Planning Regions. The proposed desalination plant falls within the Northern Municipal Planning Region (NMPR).

Land use within the NMPR is dominated by agricultural activities, which account for 36% of the total land use, of which sugarcane accounts for 86% and mixed agriculture the remaining 14%. Urban settlement accounts for 25% of land use, followed by land zoned as DMOSS (17%) and undeveloped land (14%). The remaining land is used for various activities including industrial and commercial activities.

The NMPR has the highest population density of the four planning regions within eThekweni, with a reported approximately 3,422 people per square kilometre. The population within the NMPR region is described as young, with 16% of the population below the age of 24.

Education levels within the NMPR are below those of the eThekweni Metro as a whole; however, they remain above provincial

averages. At present, the local economy is dominated by the sugar industry, with increasing activity in manufacturing and warehousing related to the production and distribution of domestic goods and services. The tourism industry is focused on the coast with significant business and retail around the uMhlanga and Umdloti nodes (eThekweni SDP, 2013/2014).

Planning environment

The proposed project falls within an area zoned 'Future Residential Area' according to the eThekweni SDF (2014/2015). To the north and south of the proposed project, land is zoned 'Residential and Environmental' and to the west land is zoned 'Environmental' (eThekweni SDP 2013/2014). The proposed pipeline will traverse mainly 'Future Residential Area' and an area zoned as 'Future Office Park' (eThekweni SDP, 2013/2014).

IDENTIFICATION OF KEY ISSUES AND POTENTIAL IMPACTS

Key issues identified during Scoping

The following key social sensitivities were identified during the scoping phase of this study:

- Loss of access to livelihoods.
- Permanent loss of land and housing.
- Visual effects (and loss of views and associated sense of place).
- Reduced property values.
- Temporary restriction on access to recreational areas.
- Nuisance impacts.
- Water quality (as influenced by waste water (brine) discharge into the sea).
- Energy use.
- On site storage of chemicals.

Key concerns identified during public consultation and focus group meetings

Key concerns were identified by the following:

- Tongaat Civic Association and Keep Tongaat Beautiful Association.
- La Mercy Resident Action Group (LaMRAG) and King Shaka Estate.
- Land owners.

These concerns are elaborated in Section 11.5.2.

Potential social change processes

The following social changes processes were identified as being likely to occur as a result of the proposed project:

- Demographic processes - In-migration, Out-migration and Resettlement.
- Economic processes - Waged labour, Conversion and diversification of economic activities, and Impoverishment.
- Geographic processes - Conversion and diversification of land use.
- Socio-cultural processes - Deviant social behaviour.

Identification of potential social impacts

The following social impacts are may occur as a result of the proposed project.

Construction phase

- Health and social wellbeing.
 - Increased spread of disease (**medium** significance without and with mitigation).
 - Reduced road safety (**medium** significance without and with mitigation).
- Quality of the living environment.
 - Increased pressure on road infrastructure (**medium** significance without mitigation, **low** significance with mitigation).
 - Restrictions on access to some recreational areas (**medium** significance without and with mitigation).
 - Increased dust emissions
 - Increased criminal activity
 - Increased likelihood of fire
 - Aesthetic impacts
 - Increased noise
- Family and community impacts.
 - Perceived discrimination (no significance rating possible).
- Economic impacts.
 - Increased employment opportunities
 - Loss of income for market garden employees
 - Permanent loss of land and housing
 - Devaluation of properties

- Temporary loss of agricultural land

Operational phase

- Sense of place.
 - Chemical spills
 - Secure potable water supply
 - Aesthetic impacts
 - Increased noise
- Economic impacts.
 - Increased employment opportunities
 - Devaluation of residential property
 - Increased demand for energy

CONCLUSION

All the above negative impacts are anticipated to have a **low** to **medium** residual significance (i.e. with the implementation of mitigation measures), with the exception of the perceived aesthetic impacts associated with the proposed development and the emotional aspect associated with the permanent loss of land and housing which is predicted to remain of **high** significance during the construction phase.

From a social perspective the proposed project **does not present social fatal flaws**; however, there are social sensitivities which need to be addressed as the project progresses. Of significance is the **positive** benefit that the proposed project would bring to alleviating serious water shortages in the study area and surrounding regions and the increased employment opportunities during the construction phase.

The lack of access to services (water) and reduced investment associated with the no-go alternative are anticipated to be of high significance.

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CHAPTER 11: SOCIAL IMPACT ASSESSMENT

This chapter presents the Social impact assessment specialist study undertaken by Duncan Kael from ACER Africa as part of the Environmental Impact Assessment for the proposed 150 MI Seawater Reverse Osmosis Plant and associated infrastructure in Tongaat, KwaZulu Natal.

11.1 INTRODUCTION

The South African National Water Resources Strategy prepared by the then Department of Water Affair and Forestry (DWAF) notes that in order to meet the economic and socio-economic development needs of the country, potential water sources, other than existing surface water resources, will need to be considered (DWAF, 2013). As conventional water resources near their full yield potential and with climate change likely to place further stress on resources, potential sources such as water re-use, groundwater utilisation, desalination, etc. as possible solutions need to be considered (DWAF, 2013). In the case of KwaZulu-Natal, the Reconciliation Strategy Study for the KwaZulu-Natal Metropolitan and Coastal Areas shows that even with the augmentation of the Mgeni System, the supply of water in the future will not exceed the required assurance of supply. In addition, the planned Mkomazi Water Project has potentially high capital costs and a lengthy implementation period (CSIR, 2014).

In response, Umgeni Water Amanzi (hereafter referred to as “Umgeni Water”) is considering large scale desalination as an alternative water supply. Umgeni Water is proposing to construct and operate a seawater desalination plant in the Tongaat area, on the north coast of KwaZulu-Natal, using seawater reverse osmosis (SWRO) technology. The proposed site is located approximately 30km north of Durban between uMhlanga and Ballito (Figure 11.1). The intake capacity of the plant will be approximately 333 Ml/day, producing 150 Ml/day of freshwater at full capacity, which would equate to providing 1 87 500 four-person households with 200 l per person per day (CSIR, 2015).

In order to comply with the National Environmental Management Act (Act 107 of 1998 as amended) (NEMA) and the NEMA EIA Regulations (18 June 2010, as amended), Umgeni Water has appointed the CSIR to undertake an Environmental Impact Assessment (EIA) for the proposed project. Considering the location of the proposed project site in Tongaat, the current land use (market gardening), the presence of permanent residential houses on the site and concerns raised by key stakeholders during the scoping process, the need for a social impact assessment was identified. CSIR appointed ACER (Africa) Environmental Consultants (ACER) to undertake such study for the proposed project.

11.1.1 Scope of work and terms of reference

The following scope of work was agreed upon for the Social Impact Assessment as part of the Environmental Impact Assessment of the proposed project:

- Provide a detailed description of the social environment that may be affected by the proposed activities and the manner in which it may be affected by the proposed project.
- Collect baseline data on the current social environment within the study area through the use of existing SA Census Survey Data from Statistics South Africa.
- Review all relevant planning and policy frameworks for the project area.

- Review information and reports from similar studies, including EIAs undertaken for other infrastructure and water supply projects in KZN and South Africa, especially as pertains to desalination.
- Provide a detailed description and assessment of all potential social issues associated with the proposed project.
- Describe and obtain an understanding of how the proposed intervention may impact on settlements and communities.
- Identify enhancement and mitigation measures aimed at respectively optimising opportunities and avoiding and or reducing negative impacts.
- Incorporate relevant information from other specialist reports/findings.
- Assess and document the significance of social impacts associated with the proposed desalination plant.
- Identify and assess all reasonable and feasible alternatives of the proposed project.
- Address comments raised by the public during the EIA Phase of the proposed project.
- Provide input to the Environmental Management Programme, including mitigation and monitoring requirements.

11.1.2 Study approach

Both qualitative and quantitative data analysis techniques were applied (using primary and secondary data sources) in order to successfully undertake this study.

Secondary data sources were used to compile a baseline of the social environment which allowed for the proposed project and the potential social impacts to be placed in context. Primary data were gathered through site visits, attendance at public meetings, focus group meetings and questionnaires. The collection of primary data in this manner allowed for key issues and concerns to be identified and correctly represented in the study. The use of both secondary and primary data allowed for the triangulation of findings.

Potential social change processes and associated impacts were identified by applying the social base line conditions and findings from the primary data to an indicative list of processes described by Van Schooten *et al.* (2003). In addition, experiences from past projects of a similar nature and within a similar socio-economic environment assisted in identifying possible social change processes and associated social impacts.

The assessment of impacts was undertaken in accordance with the agreed upon methodology provided by the CSIR and detailed in the relevant section of this Environmental Impact Assessment report.

11.1.3 Information sources

Secondary data sources used to undertake a qualitative aspect of this study included:

- eThekweni Municipal Integrated Development Plans.
- eThekweni Spatial Development Plan
- eThekweni Spatial Development Framework.
- Final Scoping Report for the Proposed Construction, Operation and Decommissioning of a Seawater Reverse Osmosis Plant and Associated Infrastructure in Tongaat, KwaZulu-Natal, including Interested and Affected parties.
- Comments and Responses.

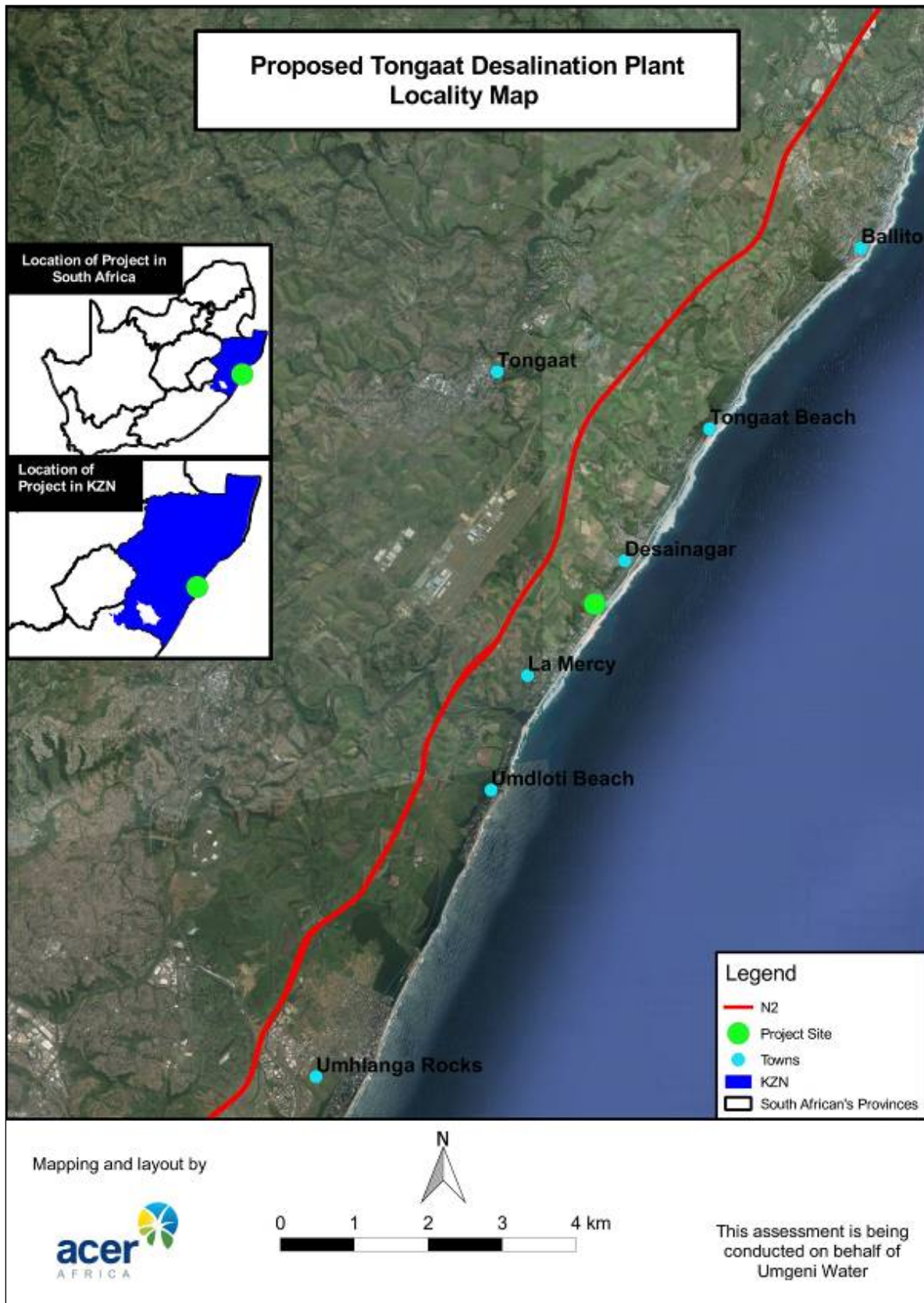


Figure 11.1 Project locality map

Secondary sources used to undertake the quantitative aspect of the study included:

- 2011 National Census Data – Statistics South Africa (extracted from Census 2011 Municipal Report, KwaZulu-Natal, 2012).
- 2001 National Census Data – Statistics South Africa (extracted from Census 2011 Municipal Report, KwaZulu-Natal, 2012).

Primary data were generated through the following means:

- Attendance of the public meeting held on 09 March 2015.
- Focus group meetings held with the following organisations:
 - Representatives of the Tongaat Civic Association (29 April, 2015).
 - Keep Tongaat Beautiful Association (29 April, 2015).
 - LaMRAG (La Mercy Residents Action Group) (29 April, 2015).
 - uMdloti Conservancy Coast Watch (29 April, 2015).
 - King Shaka Estate Trustees (29 April, 2015).
 - Shalimar Gardens (29 April, 2015).
- Focus group meeting with affected land owners (12, May, 2015). The land owners met with were¹:
 - K. Naidu.
 - B. Govender.
 - S. Govender.
 - K. Govender.
 - C.P. Govender.
 - J. Reddy.
 - J. Govender.
 - V. Govender.
 - K. Govender.
 - K. Govender.
 - A. Govender.
 - L. Govender.
 - Y. Govender.
 - J. Govender.

11.1.4 Assumptions and limitations

The following assumptions and limitations apply:

- All data received from the CSIR and Umgeni Water are believed to be valid and accurate.
- Statistical data were available only at a municipal level.
- It is assumed that mitigation measures inherent to the project design, as described in the project description, will be implemented regardless of additional mitigation measures recommended by this study (i.e. ratings for impact ‘without additional mitigation’ are assumed to already include mitigation measures inherent to the design).
- Unless otherwise stated, ratings for the impacts detailed in Section 11.7 are done under the assumption that there are currently no social related mitigation measures inherent to the project design.

¹ In most cases land owners as well as their spouses and/or other family members attended the focus group meeting. This list provided is inclusive of everyone at the meeting.

- Mitigation measures inherent to the project design and that are relevant to this study include:
 - During operation, buildings containing noise emitting equipment will be designed to attenuate noise.
 - Chemicals will be stored in appropriate containers within suitable bunds. Also, access restrictions will be applied.

11.2 PROJECT DESCRIPTION: SOCIAL IMPACT ASSESSMENT

While a full description of the project, the project components and operation can be found in Chapter 2 of the EIA report, the proposed desalination plant will be inclusive of the following key infrastructure:

- **Seawater intake and pipelines:** Seawater will be abstracted approximately 650 m offshore at a water depth of 20 m. The seawater will be transported to the plant through a pipeline on the seabed (220 m) and within a tunnel (680 m) which will be excavated in rock under the surf zone, beach, coastal forest and M4 highway.
- **Seawater pump station:** A seawater pump station will be located within the footprint of the desalination plant and located approximately 11 m below sea level.
- **Seawater Reverse Osmosis desalination plant:** The desalination plant will require an area of approximately 7 ha. Bulk chemicals will be stored on site within bunded structures suitable for chemical storage.
- **Brine discharge pipeline:** The discharge pipeline will be tunnelled under the M4 highway, coastal forest and beach. The pipeline will extend approximately 350 m offshore.
- **Brine diffuser system:** A brine diffuser system will be used to ensure good mixing of the discharged brine within the surrounding seawater.
- **Potable water pipelines:** Three potable water pipelines will be required. The first pipeline will transport water in a north-west direction from the plant to the La Mercy Reservoir; the second will continue north-west from the La Mercy Reservoir to the Hazelmere Bifurcation Pipeline and the third from the La Mercy Reservoir in a south-west direction to the Waterloo Reservoir.
- **Power supply infrastructure:** It is anticipated that the proposed desalination plant will require approximately 25 MW while additional power will also be required to pump water to the plant from the sea and to transfer potable water to the bulk supply infrastructure. The energy required for the desalination plant in its entirety (including water pumps) will be sourced from Eskom's national electricity grid. As such, it is understood that a 132 kV transmission line will be required to transfer power to the site following which a substation will be required to reduce the voltage to 11 kV. It has been confirmed that all designs will be in accordance with eThekweni's standards as it will form part of their future electrical network.

It has been estimated that construction will take 30 months with an approximate area of 14 ha required for construction and lay-down and 7 ha for operation. The plant will be designed in such a manner so as to allow for 24 hour operations for 350 days a year, allowing 15 days per year for maintenance. The anticipated lifespan of the plant is 20-25 years; however, it is understood that provisions will be made to extend this. Figure 11.2 illustrates the proposed project layout and associated infrastructure.

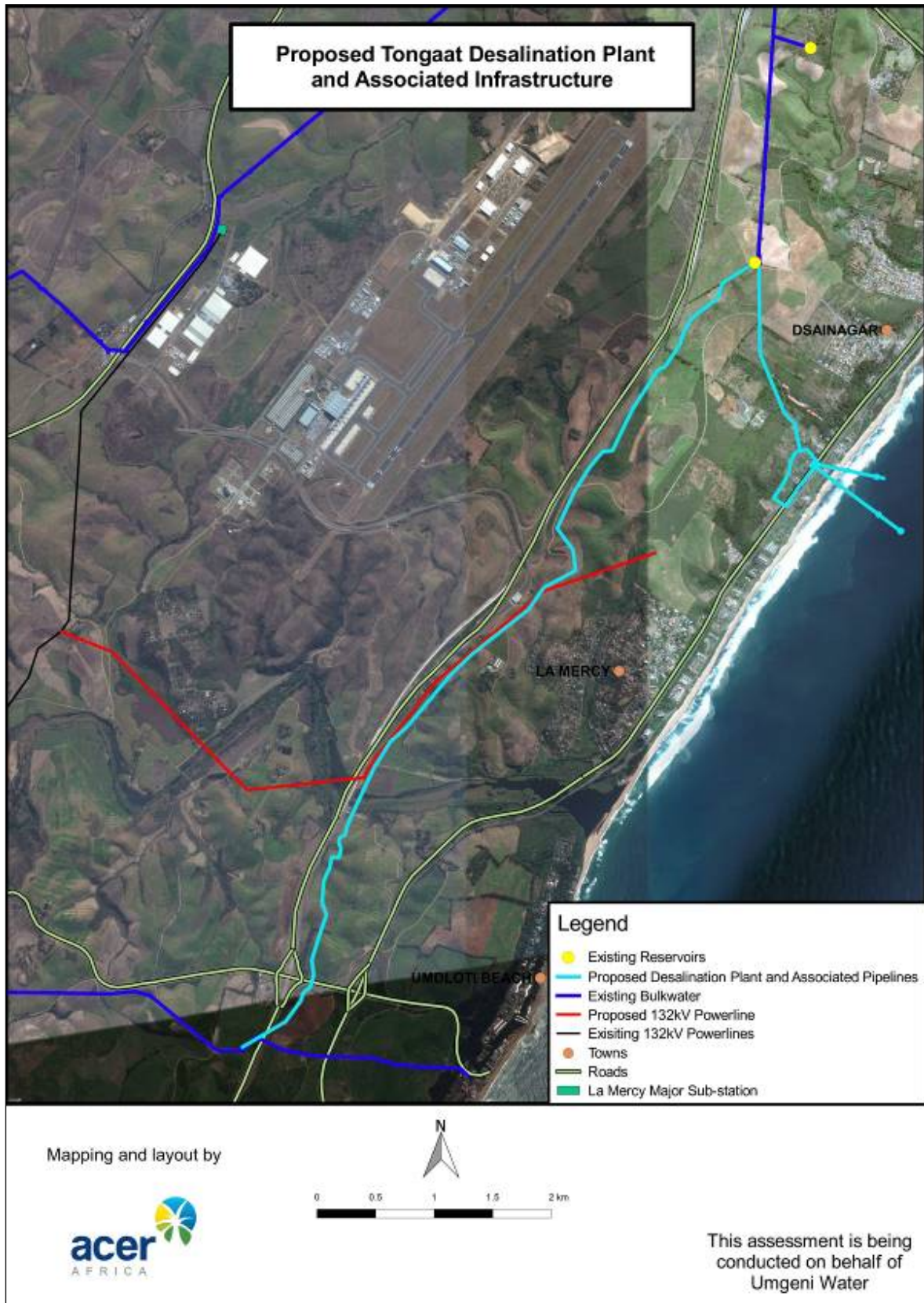


Figure 11.2 Proposed project layout and associated infrastructure

11.3 APPLICABLE LEGISLATION AND INTERNATIONAL SAFEGUARDS

This section outlines legislation and international safeguards that are applicable to the proposed project.

11.3.1 Applicable legislation

The following legislation and associated regulations are relevant to this social impact assessment:

- Constitution of the Republic of South Africa Act, 1996 (Act No. 108 of 1996) as amended.
- National Environmental Management Act, 1998 (NEMA) (Act No. 107 of 1998) as amended and regulations published there under, in particular, regulations governing the environmental authorisation of listed activities.
- National Heritage Resources Act, 1999 (Act No. 25 of 1999) and regulations published there under, in particular, regulations governing permit applications and general provisions for permit applications (Chapter ii).
- KwaZulu-Natal Heritage Act, 2008 (Act No. 04 of 2008).

11.3.1.1 Constitution of the Republic of South Africa Act, 1996 (Act No. 108 of 1996) as amended

The Constitution is the supreme law of South Africa, against which all other laws are measured. It sets out a number of fundamental environmental rights, important ones of which are described hereunder.

- **The Environmental Clause.**
Section 24 of the Constitution outlines the basic framework for all environmental policy and legislation. It states:
“Everyone has the right –
 - a) to an environment that is not harmful to their health or well-being; and*
 - b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that –*
 - i) prevent pollution and ecological degradation;*
 - ii) promote conservation; and*
 - iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development”.*
- **Access to Information.**
Section 32 of the Constitution provides that everyone has the right of access to any information held by the State or another juristic person, that is required for the exercise or protection of any rights.
- **Fair Administrative Action.**
Section 33 of the Constitution provides the right to lawful, reasonable and procedurally fair administrative action.
- **Enforcement of Rights and Administrative Review.**
Section 38 of the Constitution guarantees the right to approach a court of law and to seek legal relief in the case where any of the rights that are entrenched in the Bill of Rights are infringed or threatened.

11.3.1.2 National Environmental Management Act, 1998 (Act No. 107 of 1998) as amended

The National Environmental Management Act (NEMA) promotes citizens' rights to an environment that is not harmful to their health and wellbeing. This right is closely linked to the Constitution where clause 32 of the Bill of Rights stipulates that current and future generations have a right to a healthy environment. NEMA defines the environment as the natural environment as well as the physical, chemical, aesthetic and cultural properties that influences a person's health and well-being.

NEMA provides the legislative framework for Integrated Environmental Management in South Africa. Section 24 provides that all activities that may significantly affect the environment and require authorisation by law, must be assessed prior to approval. Section 2 of NEMA provides a set of principles that apply to the actions of all organs of state that may significantly affect the environment. These principles include the following:

- The sustainability principle.
- The life-cycle, cradle-to-grave principle.
- The 'polluter pays' principle.
- The precautionary principle.
- The duty of care principle.
- Fair and transparent public consultation.

11.3.1.3 National Heritage Resources Act, 1999 (Act No. 25 of 1999)

The National Heritage Resources Act aims to promote an integrated system for the identification, assessment, and management of the heritage resources of South Africa.

11.3.1.4 KwaZulu-Natal Heritage Act, 2008 (Act No. 04 of 2008)

The KwaZulu-Natal Heritage Act aims to provide for the conservation, protection and administration of both the physical and the living or intangible heritage resources of KwaZulu-Natal.

11.3.2 International safeguards

There are a host of international safeguards that apply to a project of this nature where there may potentially be significant social and socio-economic impacts, in particular, resettlement. The accepted best practice safeguards for sustainable development are provided by the World Bank Group² and are documented in the International Finance Corporation's (IFC) Policy and Performance Standards on Social and Environmental Sustainability.

Attention should also be given to the Equator Principles, which govern the manner in which subscribing private sector financial institutions undertake capital investment projects.

2 Experience suggests that most international lenders apply the provisions of the World Bank Group.

11.4 DESCRIPTION OF THE AFFECTED ENVIRONMENT: SOCIAL IMPACT ASSESSMENT

This section provides insight into the social conditions currently prevailing in the area surrounding the project site. Through this, the proposed project is placed in context, enabling the identification of issues and potential impacts that the project is likely to have on the social environment as well as the impacts which the social environment is likely to have on the project.

11.4.1 Socio-economic overview of the eThekweni Municipality

11.4.1.1 Population

The project site is located within the eThekweni Municipality on the east coast of KwaZulu-Natal, South Africa. The municipality covers an area of approximately 2 297 km² with approximately 3.44 million people residing in the area, accounting for 33% of the population of KwaZulu-Natal (KZN) and 7% of the national population (StatsSA, 2012).

The population within the municipality is classified as young, with 66% of the population below the age of 35. Between 2001 and 2011, eThekweni experienced an annual population growth rate of 1.1%, 0.4% higher than the provincial average (StatsSA, 2012). The municipal population is reported to be increasing as a result of both natural growth as well as the migration of people into the area (eThekweni IDP, 2013/2014).

11.4.1.2 Employment

High levels of unemployment have been cited as a key development challenge throughout the eThekweni Municipality. An improvement in employment levels was reported between 2001 and 2011, with the level of unemployment reported to drop from 43.0% to 30.0%, placing unemployment within the municipality below the provincial average (Table 11-1) (StatsSA, 2012).

Table 11-1 Unemployment rates in eThekweni and KZN

	Unemployment Rate	
	2001	2011
eThekweni	43.0%	30.0%
KZN	49.0%	33.0%

The high levels of unemployment experienced in the municipality exacerbate the level of dependency. While the dependency ratio for the municipality is currently 43.0%, down from 47.0% in 2001, and well below the provincial average, one needs to consider that, of the potentially economically active portion of the population, only 70.0% are employed and, thus, in reality, the dependency ratio is higher. The high level of dependency places increased pressure on a narrow base of the economically active population as each employed individual provides for a large number of dependents.

11.4.1.3 Economic sectors

As the economic hub of KZN, the eThekweni Municipality contributes 65.5% of the total provincial Gross Domestic Product (GDP) and 10.7% of the South African GDP (eThekweni IDP, 2013/2014). As would be expected of a significant urban node in South Africa, the tertiary sector is the greatest contributor to the local economy. This is followed by the secondary sector, with significant contributions made to the local economy by the production of food and beverages, fuel and petroleum, and chemical and rubber products (eThekweni IDP, 2013/2014). In terms of contributions made to employment by each economic sector, the tertiary sector contributes the most, 73.0%, followed by the secondary sector, 26.0%, with the primary sector only contributing 1% (eThekweni IDP, 2013/2014).

11.4.1.4 Education

Education levels within the eThekweni Municipality are, on average, better than those experienced by KwaZulu-Natal as a whole. In 2011, only 4.2% of the population over the age of 20 reported not having had access to formal education in comparison to 10.8% within the province (StatsSA, 2012). 37.2% of the municipal population over the age of 20 reported having a minimum of a Grade 12 level of education and 12.4% reported some form of tertiary education (StatsSA, 2012). Again, these levels are above those experienced by the province as a whole, with only 30.9% of the population reporting a Grade 12 level of education and 9.3% some form of tertiary education (Table 11-2) (StatsSA, 2012).

Table 11-2 Levels of education for eThekweni and KZN

	eThekweni		KZN	
	2001	2011	2001	2011
No schooling	10.0%	4.2%	21.9%	10.8%
Some primary	13.3%	9.5%	17.1%	13.6%
Complete primary	5.7%	3.5%	5.7%	4.2%
Some secondary	34.6%	33.2%	28.8%	31.2%
Std 10/Grade 12	26.8%	37.2%	19.6%	30.9%
Higher	9.6%	12.4%	6.9%	9.3%

While education levels within the municipality are above provincial averages, in comparison with the eight metro municipalities in South Africa, eThekweni ranks fifth in terms of the percentage of the population over the age of 20 with a Grade 12 and fourth in terms of literacy rate (eThekweni IDP, 2013/2014). In addition, there is a clear geographical divide in the distribution of the educated population, with the majority of the educated population residing in the well-developed core of the municipality, with the population in the surrounding townships and rural areas having lower levels of education (eThekweni IDP, 2011/2012).

11.4.1.5 Healthcare

Approximately 80% of the municipal population utilizes public healthcare facilities, which include 116 primary healthcare clinics, eight community healthcare centres, one central hospital and eight specialised hospitals. The remaining 20% of the population has medical aid coverage and has access to sixteen private hospitals (eThekweni IDP, 2011/2012). The following key health issues have been identified as requiring attention:

- High rate of HIV/AIDS and TB.
- Limited financial resources.
- High teenage pregnancy rate.
- High incidence of Sexually Transmitted Infections (STIs).

11.4.1.6 Access to services

Piped water

Access to piped water within the municipality is far better than the provincial average. Only 2.8% of households reported not having access to piped water in comparison to 14.0% for the province. 80.7% reported access within the yard or dwelling (63.6% on a provincial level) and 16.5% (22.4% on a provincial level) reported making use of a communal standpipe (StatsSA, 2012). Despite improvements over the past years and the higher level of access within the municipality than in the province, an estimated 73 460 households are still reported to be without access to water within their dwelling, a backlog which the municipality cannot foresee addressing in the coming 20 years (Table 11-3) (eThekweni IDP, 2013/2014).

Table 11-3 Access to water for eThekweni and KZN

	Inside Dwelling/Yard		Communal Standpipe		No Access	
	2001	2011	2001	2011	2001	2011
eThekweni	69.7%	80.7%	25.2%	16.5%	5.1%	2.8%
KZN	48.7%	63.6%	23.8%	22.4%	27.5%	14.0%

Sanitation

A noticeable improvement in access to water borne or chemical toilets has been reported within the municipality between 2001 and 2011, with 78.0% of households reporting access to this level of sanitation in 2011 as opposed to 68.9% in 2001 (StatsSA, 2012). Again, these levels are above the provincial average with only 55.3% of households in KZN reporting access to water borne or chemical toilets (StatsSA, 2012). The improvement in access to sanitation throughout the province and within the municipality is best illustrated by the decline in the percentage of households reporting no access to sanitation. Provincially, 6.5% of households reported no access to sanitation, down from 16.0% in 2001, and within the municipality, 2.2% of households reported no access to sanitation, down from 4.1% in 2001 (Table 11-4) (StatsSA, 2012).

Table 11-4 Access to sanitation for eThekweni and KZN

	Flush or Chemical Toilet		Pit Latrine		Bucket Latrine		None	
	2001	2011	2001	2011	2001	2011	2001	2011
eThekweni	68.9%	78.0%	25.8%	17.0%	1.2%	2.8%	4.1%	2.2%
KZN	46.1%	55.3%	36.7%	36.4%	1.2%	1.8%	16.0%	6.5%

Electricity for lighting

Access to electricity for lighting (the lowest level of access) within the municipality is relatively good, with 90% of households reporting access. Access is in line with other services and, again, is better than the provincial average (78%) (StatsSA, 2012). Significant improvements have been seen between 2001 and 2011 on both a municipal and provincial level, with access in the municipality increasing from 80% in 2001 to 90% in 2011, and on a provincial level from 61% in 2001 to 78% in 2011 (Table 11-5) (StatsSA, 2012).

Table 11-5 Access to electricity for lighting in eThekweni and KZN

	2001	2011
eThekweni	80.0%	90.0%
KZN	61.0%	78.0%

11.4.2 Socio-economic overview of the Northern Planning Region

For planning purposes, the eThekweni Municipal Area has been divided into four functional planning regions: the North, South, Central and Outer West Planning Regions. The proposed desalination plant falls within the Northern Municipal Planning Region (NMPR).

Land use within the NMPR is dominated by agricultural activities, which account for 36% of the total land use, of which sugarcane accounts for 86% and mixed agriculture the remaining 14%. Urban settlement accounts for 25% of land use, followed by land zoned as Durban Metropolitan Open Space System (DMOSS) (17%), undeveloped land (14%) and industrial and commercial (2%). The remaining land (6%) is used for various activities.

While only 2% of land is currently used for industrial and commercial activities, there has been an increasing focus on the development of areas to the north of Durban leading to an increasing number of industries becoming established there (eThekweni SDP, 2013/2014). Due to the trend of a decline in the profitability of the sugar industry, there is an increase in the incidence of land under sugarcane being converted to residential and/or commercial and industrial use (eThekweni SDP, 2013/2014).

The NMPR has the highest population density of the four planning regions within eThekweni. The NMPR is reported to have approximately 3 422 people per square kilometre, compared to the Outer West Planning Region (431 people per square kilometre), the Central Planning Region (1 742 people per square kilometre) and the Southern Planning Region (1 486 people per square kilometre) (eThekweni IDP, 2014/2015). The population within the NMPR region is described as young, with 16% of the population below the age of 24. The young nature of the population suggests that there is a high dependency ratio, placing significant pressure on the working population (eThekweni SDP, 2013/2014).

Education levels within the NMPR are below those of the eThekweni Metro as a whole; however, they remain above provincial averages. Only 4% of the population over the age of 20 in the NMPR reported no access to formal education, while 26% reported to have a minimum of a Grade 12 level of education and 7% some form of tertiary education (eThekweni SDP, 2013/2014). While these figures, on average, are better than those experienced by the province, the relatively poor access to education experienced by the population limits the ability of the population to participate in the formal economy, thereby reducing poverty and the opportunity to improve the standard of living in the area.

The economy of the NMPR is significant in terms of GDP, contributing between 15% and 17% of GDP. At present, the local economy is dominated by the sugar industry, with increasing activity in manufacturing and warehousing related to the production and distribution of domestic goods and services. The tourism industry is focused on the coast with significant business and retail around the uMhlanga and Umdloti nodes (eThekweni SDP, 2013/2014).

However, it should be noted that this is not an accurate account of the entire area. As is the case with much of South Africa, great disparities exist between the different income groups, with these groups

often divided geographically. This is the case in the NMPR, with specific areas exhibiting significantly higher per capita income than others. Areas such as Durban North and Umhlanga/La Lucia are classified as affluent and highly developed with low levels of unemployment. In comparison, areas such as Inanda, Ntuzuma and KwaMashu are poorly developed with unemployment levels in excess of 50% (eThekweni SDP, 2013/2014). Overall, the level of unemployment in the NMPR is of concern especially considering that a high percentage of the labour force is classified as being economically inactive.

11.4.3 Planning environment

The proposed desalination plant will be located in the NMPR of the eThekweni Municipality. The NMPR is further subdivided into six local planning areas, with the study area falling within the Ohlanga-Tongati Local Area.

The role of the Ohlanga-Tongati Local Area has been identified as:

- Logistics city - expansion for logistics sector (related to King Shaka International Airport and the associated Dube Trade Port).
- Residential expansion and lifestyle options (agricultural, rural, coastal and residential).
- Addressing a portion of the low cost housing backlog.
- International tourism expansion and recreation opportunities (coastal areas and cultural heritage).
- Commercial expansion opportunities.
- Agricultural opportunities.
- Protecting environmental assets (coastal, riverine and open space assets).

The proposed project falls within an area zoned 'Future Residential Area' according to the eThekweni SDF (2014/2015). To the north and south of the proposed project, land is zoned 'Residential and Environmental' and to the west land is zoned for 'Environmental' (eThekweni SDP 2013/2014). The proposed potable water pipeline will traverse mainly 'Future Residential Area' and an area zoned as 'Future Office Park' (eThekweni SDP, 2013/2014).

11.5 IDENTIFICATION OF KEY ISSUES AND POTENTIAL IMPACTS

11.5.1 Key issues identified during Scoping

The following key social sensitivities were identified during the scoping phase of this study:

- Loss of access to livelihoods.
- Permanent loss of land and housing.
- Visual effects (and loss of views and associated sense of place).
- Reduced property values.
- Temporary restriction on access to recreational areas.
- Nuisance impacts.
- Water quality (as influenced by waste water (brine) discharge into the sea).
- Energy use.
- On site storage of chemicals.

11.5.2 Key concerns identified during public consultation and focus group meetings

In order to better understand the key concerns of the various stakeholders, focus group meetings were set up with various groups from the project area. The process of involving affected people and other stakeholders in the analysis of impacts and in the planning of mitigation and benefit strategies is essential in a SIA (IAIA, 2015). This section identifies the key themes which were raised during focus group meetings. It should be noted that the intention of this section is not to detail every comment made during the meetings but rather to extract the key themes.

11.5.2.1 Tongaat Civic Association and Keep Tongaat Beautiful Association

- **Consideration of alternatives** – concerns were raised that the municipality has not considered other alternatives with regard to the scarcity of water and potable water supply, especially considering that it has been reported that 36% of treated water in the municipality goes unaccounted.
- **Sense of place** – the visual impact that the plant will have on the surrounding community and on what is believed by the residents to be a pristine section of the coast line.
- **Electricity** – it was questioned that considering Eskom's current inability to provide a reliable supply of electricity, is desalination a viable option?
- **Impact on market gardens** – what will happen to the people currently working in the market gardens as they will experience a loss of income? Will they benefit from the project in some way?
- **Community investment** – will the project benefit the local community in any way?
- **Political benefit** – there is the perception in the local community that the project may be politically motivated in order to benefit particular people. There is concern that regardless of the outcome of the EIA process, if the government wants to go ahead with the project, they will.

11.5.2.2 La Mercy Resident Action Group (LaMRAG) and King Shaka Estate

- **Property prices** – it is believed that in the event of the project going ahead, there is concern that the surrounding properties will devalue. In addition, the King Shaka Estate is still under construction; in this context, the construction of the proposed plant is likely to impact on the ability of the developer to sell new units. This would be largely due to the visual impact.
- **Sense of place** – it is felt that the visual impact and increased noise will greatly affect the current sense of place. The area is currently believed to be less developed than other areas on the coast line and it was reported that the construction of the proposed desalination plant would alter this significantly. In addition, the following concerns were raised: if this development is allowed to go ahead, the La Mercy area could, over time, become similar to the Durban South Basin.
- **Tourism** – concern was raised regarding the impacts that the construction of the plant may have on tourism for the area. It was argued by members of LaMRAG that the area has been identified as holding tourism potential and that if the sense of place of the area was altered, the tourism sector will be affected.
- **Land re-zoning** – it is understood by representatives of LaMRAG that, in the event of the project going ahead, the area will need to be rezoned. Concerns were raised that if the land is rezoned to industrial land, what is to prevent other land in the area also being rezoned and the area following the same path as the Durban South Basin. It was noted that if there is an application to rezone the area, the community will oppose it.

- **Electricity** – it was noted that Eskom cannot currently meet the existing demand for electricity. LaMRAG representatives noted that, considering the energy requirements, how can desalination be considered a viable option?
- **Discrimination against minority groups** – representatives of LaMRAG noted that La Mercy was an area designated for the Indian population during apartheid. There is the strong perception that a number of these areas (areas designated for the Indian population during apartheid) are now being targeted for industrial development with detrimental impacts. The example of the Durban South Basin was used with the communities of Merebank and Isipingo, both formerly Indian areas, being impacted negatively.
- **Community investment** – queries were raised regarding how the proposed desalination plant would benefit the local community considering there would be few employment opportunities. It was noted that there are currently numerous social issues in the area (unemployment, lack of housing, lack of services, etc.) yet the project does not help address any of these. There is a strong sentiment that, in the event of the project going ahead, there needs to be significant benefit sharing in order to ensure that the local and affected community benefit in some way.
- **Impact on market gardens** – it was noted that, presently, there are a large number of people from the local community employed on the market gardens. Considering the limited number of jobs that will be created by the desalination plant, there will be a loss of income for the farmers as well as their staff. This is likely to have significant social impacts. It was suggested that the affected people should be given priority in terms of employment opportunities created by the proposed desalination plant.
- **Consideration of alternatives** – there was a general feeling among representatives that other alternatives have not been suitably considered. Concerns were raised over the amount of water which is wasted within the municipality and whether efforts should be made to address these issues first, before building a desalination plant. It was also noted that examples of desalination throughout the world are in far more arid regions and economically stable countries, and, as such, should it be considered a suitable alternative in South Africa and, more specifically, in a sub-tropical region like the KwaZulu-Natal coast?
- **Strongly opposed to the project** – it came out through the meeting that LaMRAG and the King Shaka Estate residents are strongly opposed to the proposed project. It was noted that, in the event of the project being pushed through, they will be willing to take legal action.

11.5.2.3 Land owners

- **Background to land ownership** – the land is owned by the extended Govender family. The land was purchased in 1864 by one of their ancestors. The property has since been sub-divided into various plots with separate title deeds. Each plot is individually owned, with some being farmed.
- **Farming activities** – collectively there are about 100 staff working on the affected land. Staff working on the land are mainly from the surrounding informal settlements. Approximately 70% of the employees are female. The produce was described as ‘salad stuff’ (lettuce, carrots, beetroot, etc.). The bulk of the produce is sold to formal traders in the Durban area (Pick ‘n Pay, Shoprite, Spar, etc.). The third grade produce is sold on the informal market.
- **Sale of land** – land owners confirmed that if the price offered is suitable, they will be willing to sell their land. It was noted that the land owners were not overly interested in being provided with alternative land, firstly, because there is very little suitable agricultural land in the area and, secondly, because, considering land claims, there is great apprehension regarding owning land in the area which may “be taken away”.

- **Impact on market gardens** – concerns were raised on what the implications may be for the staff currently working on the land. It was suggested that reskilling programmes be implemented for the staff and that Umgeni prioritises the employment of the affected staff during construction and operation of the desalination plant.
- **Political benefit** – concerns were raised that regardless of the price offered for the land and concerns of the surrounding community, the project will be pushed through, especially considering the amount of money which has already been spent on the project.

11.5.3 Potential social change processes

“Social change processes are set in motion by project activities or policies. Depending on the characteristics of the local social setting and mitigation processes that are put in place, social change processes can lead to social impacts” (Vanclay, 2003).

This section of the report aims to provide insight into social change processes that are likely to occur as a result of the proposed desalination plant. The social change processes identified in the following sections are based on an indicative list of processes described by Van Schooten *et al.* (2003); however, only the social processes relevant to this study have been included. It should be noted that the social change processes discussed below are not social impacts themselves but, as a result of the social change processes taking place, social impacts may occur. The social impacts which are likely to occur as a result of social change processes are detailed in Section 11.6.

11.5.3.1 Demographic processes

Demographic processes relate to the movement and composition of people in the region affected by the proposed project.

In-migration

According to the World Bank, the induced population increase associated with a development initiative is estimated to equal the number of people employed on the project (World Bank, 2001). This movement of people can be attributed to people searching for both direct and indirect economic opportunities associated with the proposed development, criminal opportunists, and employees brought into the area to conduct the work. However, the geographical location, social and socio-economic conditions of surrounding areas as well as the type of development taking place should all be taken into consideration when anticipating the possible in-migration of people.

Considering the location of the proposed project in relative close proximity to a number of informal settlements in the eThekweni area as well as its location close to major transport routes, it is likely that there may be a noticeable movement of people into the area in search of work. It should be noted, however, that the movement of people into the area is likely to be transient in nature with job seekers moving out of the area if they are unsuccessful in obtaining employment.

In addition, it is likely that there will be the temporary movement of skilled labourers into the project area. At the time of this study being conducted, it was not clear exactly where these workers would be accommodated; however, it was confirmed that they would not be accommodated on site.

Out-migration

Out-migration is defined by Van Schooten *et al.* (2003) as the process whereby people move out of a project area for various reasons, such as the project making the area less desirable as an area to live. Considering the location of the proposed project within a largely residential area, it is possible that

existing residents may choose to leave the area due to the perceived negative implications of the project going ahead. This process may occur throughout the construction phase (people leaving due to what they perceive the social environment may be like after construction) and during operation (people choosing to leave as they are dissatisfied by how the social environment has changed).

Resettlement

Van Schooten *et al.* (2003) describes resettlement as the process by which people surrender land for a project and are relocated elsewhere as part of a compensation package. It should be noted that resettlement does not only refer to the physical displacement of people but also to the economic displacement of people (IFC Performance Standards, 2012). In the case of the proposed project, there are currently people residing on the project site, and while direct financial compensation may be appropriate in the case of residents, of greater concern are the labourers currently working on the land who are seen to more vulnerable. In the event of the proposed project going ahead, these people are likely to lose access to their current source of income and livelihood and, thus, will be economically displaced.

While the proposed project may result in the affected landowners being paid compensation for their land and the economic activities which they are currently undertaking on the land, it is not believed that an entire resettlement action plan will be required. This is based on the understanding that the affected landowners have indicated that they are willing to sell their land in the event of the project going ahead and are not interested in receiving replacement land. As such, negotiations will need to take place between the affected land-owners and Umgeni Water. With regards to the labourers currently working on the market gardens, best practice would be to ensure that some form of upskilling or retraining is made available for these people. This, however, will not involve the compilation of a resettlement action plan.

Table 11-6 Project phase at which demographic processes are relevant

Process	Phase at which demographic processes are relevant			
	Prior to construction	Construction	Operation	Decommissioning
In-migration	x	√	x	√
Out-migration	√	√	√	X
Resettlement	√	x	x	X

11.5.3.2 Economic processes

Economic processes are those processes that affect the economic activity in a given area. This includes the way people make a living, employment rates as well as macro-economic factors which affect society as a whole (Van Schooten *et al.*, 2003).

Waged labour

Both direct and indirect employment opportunities will be created in the event of the proposed project going ahead. It has been estimated that 35-40 skilled positions and 150 unskilled positions will be required during the construction of the proposed plant and sea pipelines. In addition, it is estimated that 10 skilled jobs will be created and approximately 200 unskilled positions will be required for the construction of the additional potable water pipelines. During the operation of the proposed plant, approximately 30 skilled and 10 unskilled employees will be required. In addition, it is likely that various indirect opportunities will be created for service providers such as security personnel, catering services, accommodation facilities, etc.

While the proposed project will create temporary and permanent employment positions, there will also be a loss of employment for people currently employed on the market gardens. It is, thus, possible that any positive impacts caused by the employment opportunities created, may be negated by the negative impacts associated with a loss of employment for those people working on the market gardens.

Conversion and diversification of economic activities

The conversion and diversification of economic activities refers to the change in the nature of economic activities within an area as a result of a project (Van Schooten *et al.*, 2003). With regards to the proposed project, the proposed site which is currently being used for agricultural purposes will be converted to a desalination plant, essentially industrial in nature. The conversion of economic activity away from agriculture to a more industrial based economic activity is likely to have implications for people residing and working in the area as well as for the sense of place of the area.

Impoverishment

Impoverishment refers to the processes whereby some sectors of a community experience a decline in standard of living into poverty (Van Schooten *et al.*, 2003). As a result of the proposed project it is possible, if suitable mitigation is not implemented, that the people currently employed on the affected land may experience a decline in their standard of living and decline towards poverty. This is particularly relevant to the people currently working the market gardens as it has been established that the majority of the people are female who currently live in informal dwellings, suggesting that they can already be classified as vulnerable persons.

Table 11-7 Project phase at which economic processes are relevant

Process	Phase at which economic processes are relevant			
	Prior to construction	Construction	Operation	Decommissioning
Waged labour	x	√	√	√
Conversion and diversification of economic activities	x	√	√	√
Impoverishment	x	√	√	X

11.5.3.3 Geographic processes

Conversion and diversification of land use

The conversion and diversification of land use refers to the manner in which a given project changes the current manner in which land is utilised (Van Schooten *et al.*, 2003). In the case of the proposed desalination project, land which is currently used for agricultural and residential purposes will be converted to house a desalination plant which will essentially be industrial in nature. This change in land use is likely to have social impacts, including, but not limited to, reduced property values and changes in sense of place.

Table 11-8 Project phase at which geographic processes are relevant

Process	Phase at which geographic processes are relevant			
	Prior to construction	Construction	Operation	Decommissioning
Conversion and diversification of land use	x	√	√	√

11.5.3.4 Socio-cultural processes

Deviant social behaviour

The movement of construction workers and job seekers into the project area and surrounding communities, coupled with an increase in expendable income, may lead to an increase in deviant social behaviour. Possible deviant social behaviour includes prostitution, excessive alcohol consumption, illegal drug use and other types of risk taking behaviour, all of which may result in social impacts.

Table 11-9 Project phase at which socio-cultural processes are relevant

Process	Phase at which socio-cultural processes are relevant			
	Prior to construction	Construction	Operation	Decommissioning
Deviant social behaviour	x	√	x	X

11.5.4 Identification of potential social impacts

This section identifies the social impacts which are likely to occur as the result of the social change processes previously discussed. It should be noted that this section only lists the potential social impacts. A discussion and assessment of the impacts is provided in Section 11.6.

11.5.4.1 Construction phase

- Health and social wellbeing.
 - Increased spread of disease.
 - Reduced road safety.
- Quality of the living environment.
 - Increased pressure on road infrastructure.
 - Restrictions on access to some recreational areas.
 - Increased dust emissions.
 - Increased criminal activity.
 - Increased likelihood of fire.
 - Aesthetic impacts.
 - Increased noise.
- Family and community impacts.
 - Perceived discrimination.
- Economic impacts.
 - Increased employment opportunities.
 - Loss of income for market garden employees.
 - Permanent loss of land and housing.
 - Devaluation of properties.
 - Temporary loss of agricultural land.

11.5.4.2 Operational phase

- Health and social well-being.
 - Chemical spill.
 - Secure potable water supply.

- Sense of place.
 - Aesthetic impacts.
 - Increased noise.
- Economic impacts.
 - Increased employment opportunities.
 - Devaluation of residential property.
 - Increased demand for energy.

11.6 PERMIT REQUIREMENTS

No permit requirements are anticipated.

11.7 DISCUSSION AND ASSESSMENT OF IMPACTS, AND IDENTIFICATION OF MANAGEMENT ACTIONS

The purpose of this section is to discuss identified social impacts (Section 11.5.4) which may occur as a result of the social change processes identified in Section 11.4.2 and identify management actions to enhance benefits and mitigate negative impacts.

Social impacts can be positive or negative and occur within the context of human behaviour, which is often unpredictable, varies according to cultures, traditions, political and religious beliefs, and are influenced by perceptions.

It should be noted that all of the social impacts discussed in this section and assessed in Section 11.7 apply to the project in its entirety and are inclusive of all infrastructure and possible alternatives unless otherwise specifically stated.

11.7.1 Construction phase

This section discusses the potential social impacts that are likely to arise during the construction phase of the proposed project and presents mitigation and/or management measures for these impacts.

11.7.1.1 Health and social well being

Potential impact 1: Increased spread of disease

Any development which causes the migration of people has the potential to lead to the spread of disease; in particular, HIV and AIDS in the case of South Africa. Research suggests that the presence of migrant construction workers leads to an increase in activities such as prostitution and promiscuous behaviour. This could lead to scenarios where infected construction workers coming into the area spread disease through unprotected intercourse with sex trade workers or local individuals, who, in turn, spread it locally. Alternatively, an uninfected construction worker could become infected through unprotected intercourse and, on return to his/her place of origin and spread the disease there.

An increase in the spread of diseases and, in particular, HIV and AIDS, is also likely to be caused by the movement of trucks carrying construction materials moving in and out of the project site. Research suggests that the areas with the highest prevalence of HIV and AIDS are situated adjacent to the major transport routes due largely to transmission between sex workers and truckers (www.sanral.co.za).

While it is anticipated that the majority of construction workers will be sourced from the local community, it is probable that there will be a number of job seekers entering the area, probably in a transient manner, as well as truck drivers transporting materials who may contribute to an increased likelihood in the spread of disease. Although of temporary duration due to the short construction period, the increased spread of disease associated with the construction of the project is therefore anticipated to be highly probable and of high potential intensity. Without additional mitigation, the impacts associated with an increase in the spread of disease during the construction phase are anticipated to be of a **Medium** Negative Significance. While the impact is not thought to be significant, it should be taken into consideration and the necessary mitigation measures followed.

Key mitigation measures proposed by the specialist are:

- An HIV and AIDS awareness/education component should be included in the induction programme for all personnel working on the proposed project.
- Ensure there is easy access to HIV and AIDS related information and condoms for all workers involved with the proposed project.

With the effective implementation of the key mitigation measures as proposed above, these impacts are predicted to remain of a **Medium** Negative Significance.

Many indirect impacts may arise as a result of the spread of disease. In the case of HIV and AIDS, the long-term impacts include a reduced and inefficient work force leading to lower household income security and greater poverty. The number of child- and elderly-headed households may increase, making access to education problematic as other responsibilities take priority. There is also likely to be an increased financial burden on the State as dependency increases. In the case of other diseases, the effect is more immediate. These indirect impacts cannot be assessed or quantified at this stage as some of these may only occur years down the line and in a completely different area or social environment.

Potential impact 2: Reduced road safety

During the construction process, a significant amount of materials and machinery will need to be transported to the project site. The transportation of the required materials and machinery will necessitate the use of heavy duty vehicles. In addition, there will also be an increase in construction vehicles in and around the proposed site. This increase in heavy duty vehicles and construction vehicles will reduce road safety for other road users, including pedestrians and cyclists.

While the route that these vehicles will take has not been confirmed, the most significant impacts will be felt on the M43 (between the oThongathi off-ramp and the M4), the M27 (between the Umdloti/Verulam off-ramps) and on the M4 highway itself. It is not believe that there will be a significant impact on the N2 as this road already accommodates numerous heavy duty vehicles. It needs to be emphasised that the likelihood of road safety being reduced in these areas is magnified by the fact that the M4 is a relatively heavily utilised commuter route, especially during peak hours in the morning and evening as people commute between outlying residential areas and the economic hub of uMhlanga. Reduced road safety is therefore regional and highly probable, and is anticipated to be of high potential intensity due to the increase of heavy duty vehicles on highways mainly utilised by commuters. This impact will however be of temporary duration as it will only last for the construction duration of the project.

Without additional mitigation, the impacts associated with reduced road safety during the construction phase are predicted to be of a **Medium** Negative Significance.

Key mitigation measures proposed by the specialist are:

- Development and implementation of a traffic management plan.
- Signage warning of the presence of construction and heavy duty vehicles. The location of the signs should be detailed in the traffic management plan.

Additional mitigation measures proposed by the specialist are:

- Avoid heavy duty vehicles making deliveries during peak traffic times.

With the effective implementation of the key mitigation measures proposed by the specialist, the impacts associated with reduced road safety during the construction phase are predicted to remain of a **Medium** Negative Significance.

11.7.1.2 Quality of the living environment

Potential impact 3: Increased pressure on road infrastructure

As noted in section 11.6.1.1, the construction of the proposed desalination plant will require the transportation of various materials and machinery to site which will lead to an increase in heavy duty vehicles. The increase in heavy duty vehicles and the associated increase in pressure on road infrastructure may potentially lead to the deterioration and damage to existing roads. It should be noted that it is not anticipated that there will be any notable impact on the N2 considering the existing high volume of traffic accommodated by this road. Of greater concern are the roads linking the site with the N2 and the M4 highway, namely the M43 and M27. A deterioration in road infrastructure is likely to lead to feelings of resentment towards the project by road users and the surrounding community, reduced road safety for all road users and negative financial implications for the responsible authority (eThekweni municipality). The impact, while having a high probability of occurring, will be short-term in duration and is likely to only have a medium-low potential intensity and, therefore without mitigation is predicted to have a **Medium** Negative Significance.

Key mitigation measures proposed by the specialist are:

- Establish the carrying capacity of the roads to be used by construction and heavy duty vehicles.
- Prior to construction, engage with the relevant road authorities (KZN Department of Transport, eThekweni Municipality and any other relevant road authority) to jointly monitor road conditions during the construction period.
- Establish a set route which will be used by heavy duty vehicles so as to limit potential damages.

Additional mitigation measures proposed by the specialist are:

- Establish, in conjunction with the eThekweni municipality, a road maintenance plan.
- The project proponent should contribute to road maintenance and rehabilitation using the baseline assessment as a guideline.

With the effective implementation of the key mitigation measures proposed by the specialist, the impacts associated with increased pressure on road infrastructure during the construction phase are predicted to be of a **Low** Negative Significance.

Potential impact 4: Temporary restriction on access to recreational areas

It has been confirmed that during the construction process, portions of the beach on either side of the marine construction zone will be closed while an offshore exclusion zone will also be implemented. It is anticipated that these exclusion zones will be implemented for 18 months. These exclusion zones are likely to impact negatively on people making use of the beach for recreational purposes (local residents and recreational fishermen), while the offshore exclusion zone may impact on recreational fishermen fishing from ski-boats. Other impacts likely to arise from the exclusion zones include the aesthetic impact of having no go areas demarcated on the beach as well as the impact that such areas may have on tourism.

In considering the potential impact, however, it does need to be considered that the affected area is relatively small as access to the rest of the beach will not be impacted upon. In addition, in terms of tourism, the beach that will be affected is not believed to be as popular in terms of tourism as areas further south (uMhlanga) and north (Westbrooke beach and Ballito). Therefore, while the impact will definitely occur, considering that it will be temporary in nature, will be local in extent and have a medium-low potential intensity as the area is not believed to be heavily utilised for recreational activities, without additional mitigation, it is anticipated that the impact will be of **Medium Negative Significance**.

Key mitigation measures proposed by the specialist are:

- Inform local residents well in advance of restrictions on access to specific areas.
- Inform local tourism boards of planned restrictions and exclusion zones.
- Inform local fishing and ski boat clubs of the of exclusion areas.
- Place advertisements in local newspapers and have announcements on local radio stations informing the public of the exclusion areas.

With the effective implementation of the key mitigation measures proposed by the specialist, the impacts associated with temporary restriction on access to recreational areas during the construction phase are predicted to remain of a **Medium Negative Significance**.

Potential impact 5: Increased dust emissions

During the construction process, significant earth works will be required that will expose soil in areas where vegetation has been removed. During times of strong winds, these exposed areas will lead to there being an increase in dust in the area. Considering the prevailing winds (north-easterly and south-westerly) the most sensitive receptors will be residents living on the northern and southern boundaries of the proposed site. For these residents, an increase in dust is likely to become a nuisance. In addition, it needs to be considered that there may be an increase in the amount of dust being blown across the M4 at times, which may reduce visibility and, in turn, reduce road safety. Despite having a highly probable likelihood of occurring, the impact of increased dust emissions will be local, have a short-term duration and a medium-low potential intensity. As such, without additional mitigation it is believed the impacts associated with increased dust will be of a **Low Negative Significance**.

Key mitigation measures proposed by the specialist are:

- Employ dust suppression techniques such as water spraying or the use of dust suppressants.
- Ensure that areas of exposed soil are rehabilitated as soon as construction has been completed (i.e. follow progressive reinstatement and rehabilitation).

Additional mitigation measures proposed by the specialist are:

- At times of excessively strong winds, which may result in dust blown across the M4, alert the road traffic authorities to potential road use dangers on the M4.

With the effective implementation of the key mitigation measures proposed by the specialist, the impacts associated with increased dust emissions during the construction phase are predicted to be of a **Low Negative Significance**.

Potential impact 6: Increased criminal activity

Prior to and during construction, in addition to job seekers, criminal opportunists are also likely to move into and through the areas surrounding the project site. Considering the location of the proposed project in close vicinity to major transport routes, it is likely that criminal opportunists will move through the area as opposed to staying in the area for a prolonged period.

The areas around the proposed project site that are most likely to be affected by crime are informal settlements as these are likely to be the area where criminals find soft targets and or find refuge. Special attention also needs to be given to the areas where the water pipeline and powerline will be constructed. During the construction processes, these areas will be easily accessed and there will be an increase in the number of people moving on and off the sites making it easy for criminal opportunists to access these areas undetected. While few households exist in these areas, those that do are isolated making them particularly vulnerable to crime. Without additional mitigation measures, the impact of increased criminal activity, which is considered probable, is only anticipated to occur at a local level, have a short-term duration and a medium-low potential intensity and, thus, the potential impact is of a **Low Negative Significance**.

Key mitigation measures proposed by the specialist are:

- All construction workers should be easily visible and identifiable as construction workers.
- Local police and community policing forums should be informed of the potential for an increase in criminal activity and to increase vigilance.
- Security guards should be placed on site at all times.
- All landowners should be informed well in advance of any planned activities taking place on their land.

Additional mitigation measures proposed by specialist are:

- While construction of the water pipelines and powerlines are taking place, routine patrols should be conducted 24 hours a day by security services.

With the effective implementation of the key mitigation measures proposed by the specialist, the impacts associated with increased criminal activity during the construction phase are predicted to remain of a **Low Negative Significance**.

Potential impact 7: Increased likelihood of fire

During the construction process, there will be an increase in the possibility of uncontrolled fires, particularly during the dry winter months, as a result of construction workers being on site. Uncontrolled fires may develop from fires lit by construction workers for warmth or cooking purposes spreading or alternatively through discarded cigarette butts. Uncontrolled fires present a potential safety hazard for both construction workers and surrounding residents as well as a financial hazard for surrounding sugarcane farmers and other agricultural activities.

Areas of specific concern are the sugarcane farms operated by Tongaat Hulett (between the project site and the N2 highway and traversed by the potable water pipelines) which will be accessed during the construction of the potable water pipeline and powerline. In the event of uncontrolled fires breaking out in these areas there will be both significant safety concerns and financial implications.

The likelihood of uncontrolled fires occurring is thought to be probable and considering the potential safety and financial implications, the intensity is high. However, the extent of the impact is local and it will only be temporary in nature and, as such, the impact without additional mitigation is believed to be **Medium** Negative Significance.

Key mitigation measures proposed by the specialist are:

- No fires should be permitted in any of the project works areas.
- Fire extinguishers and firefighting equipment should be available at all project works areas.
- Smoking should only be allowed in designated areas.
- Staff should be inducted regarding fire safety and firefighting responsibilities/activities.

Additional mitigation measures proposed by specialist are:

- No smoking should be allowed on Tongaat Hulett land.

With the effective implementation of the key mitigation measures proposed by the specialist, the impacts associated with increased likelihood of fires during the construction phase are predicted to be of a **Low** Negative Significance (Section 12.7).

11.7.1.3 Sense of place

Potential impact 8: Perceived aesthetic impacts

During the construction phase, residents who live in close proximity to or overlook the proposed project site will experience a change in their existing views. At present, the view of residents of the King Shaka Estate to the south is over the existing market gardens and the sea. During construction, this view will be altered significantly as residents will have a view of a construction site characterised by exposed earth, construction materials, and machinery. It is believed that as the King Shaka Estate is elevated above the proposed site, it will be difficult to mitigate the impact that the construction site will have on their view. It should be noted that the impact on the aesthetics of the area will also include people making use of the M4 highway from which the construction site will also be visible. A change in the aesthetics of the area is likely to have a significant impact on the current sense of place for residents, in particular, for those people residing on land adjacent to the project site or within the King Shaka Estate.

As discussed in Section 11.4.2, the aesthetic impacts of the project and the associated impact on the sense of place of the area was identified as a significant concern during focus group meetings. The impact on the aesthetic nature of the area and, particularly, on the view from the King Shaka Estate is likely to have secondary impacts. Particular concern has been raised regarding reduced property values (Impact 13). This has been identified by residents within the King Shaka Estate as being of significant concern as they feel it is likely to impact on the investment they have made. The visual impact assessment study (Chapter 9) provides greater detail on the visual impacts that are anticipated during construction and proposes mitigation measures. However, without additional mitigation, the perceived impact is believed to be of **High** negative significance (despite it being localised and temporary in nature) as it will definitely occur, and has a high potential intensity.

Key mitigation measures proposed by the specialist are:

- Mitigation measures stipulated in the visual impact assessment should be implemented.

With the effective implementation of the key mitigation measures proposed by the specialist, the impacts associated with aesthetic impacts during the construction phase are predicted to remain of a **High** Negative Significance. These findings align with those from the visual impact assessment.

Potential impact 9: Increased noise

During the construction phase, there will be an increase in noise associated with a construction site, including noise generated by construction vehicles, excavation vehicles, jackhammers, etc. Reverse hooters on vehicles are noisy but necessary for health and safety, and, therefore, cannot be mitigated. While the area is currently not thought to be devoid of unnatural noise as it is relatively close to the M4 highway, these levels may increase for the duration of the construction process. The increase in noise will be a nuisance for sensitive receptors, in particular, households and businesses in close proximity to the proposed site. The increase in noise during the construction period is also likely to impact on the sense of place of the area, a concern which has been raised during focus group meetings. Without mitigation, while the impact is considered highly probably, the potential intensity is considered to be low-medium, while the extent of the impact is local and will cease after construction and is, therefore, temporary. As such, the increase in noise is considered of **Medium** Negative Significance.

The noise impact assessment study (Chapter 8) provides greater detail on the noise impacts that are anticipated during construction and proposes mitigation measures.

Key mitigation measures proposed by the specialist are:

- Mitigation measures stipulated in the noise impact assessment should be implemented.

With the effective implementation of the key mitigation measures proposed by the noise specialist, the impacts associated with increased noise during the construction phase are predicted to be of a **Low** Negative Significance.

11.7.1.4 Family and community impacts

Potential impact 10: Perceived discrimination

During the focus group meetings, members of the local community raised concerns regarding the location of the proposed project in La Mercy, a residential area which during apartheid was designated for the Indian population. The general feeling amongst respondent is that the more affluent areas to the south and north of La Mercy had been avoided purposefully with previously designated Indian areas being earmarked for development. It must be noted that the site selection was undertaken based on technical and environmental criteria. For example, the proposed Mdloti desalination site was excluded as an alternative location following a detailed pre-feasibility study, conducted as part of the KwaZulu-Natal East Coast Desalination Plants, Detailed Feasibility Study, Phase 1 – Due Diligence Report (Aurecon, 2012 cited in CSIR, 2015), which raised concerns about the potential impact on the existing estuarine system. In addition, investigations into a desalination plant in the affluent coastal town of Zinkwazi (Umgeni Water, 2013) suggests that Umgeni Water is not targeting specific areas based on racial or socio-economic groupings but on the technical feasibility of these areas and based on the most efficient means of securing potable water.

Despite this however, this sentiment within the local community needs to be taken seriously as it has the potential to derail the proposed project. It emerged out of the focus group meetings that the community, in particular LaMRAG, are vehemently against the project taking place in La Mercy and will take legal action if it goes ahead. Such sentiments are of a sensitive nature and may lead to severe opposition to the project, which may result in considerable delays in the project being authorised, which, in turn, will have implications on the provision of water to certain areas.

The issue of perceived discrimination is difficult to quantify and outside of providing assurances to the affected parties that scientifically sound methods were used in identifying the proposed location, it is difficult to mitigate. As such, no assessment of this has been carried through to the assessment section of this report. Nevertheless, it is imperative that channels of communication are established between the proponent and the community, via the representative organisations, so that open, transparent and honest dialogue can be entered into with a view to building relationships of trust from which to address concerns and find solutions.

Potential impact 11: Emotional impact due to permanent loss of land and housing

The land where the proposed site is located is reported to have been in the Govender family for an extended period of time (in excess of 100 years) and, thus, holds significant sentimental value to the family. In the event of the proposed project going ahead this land will be lost to the family and while financial compensation is likely to be paid to the affected parties there is likely to be an emotional loss as a result of the land no longer being in the family.

It needs to be understood that an impact of this nature, a perceptual or emotional impact, is difficult to quantify and mitigate against. However, considering that the sentimental value of the land was identified during consultation with the land owners, it is believed that in the event of the project going ahead the impact will definitely occur. As such the significance of the impact is considered **High**.

11.7.1.5 Economic impacts

Potential impact 12: Increased employment opportunities

During the construction phase, it is anticipated that approximately 35 – 40 skilled positions and 150 unskilled positions will be required for the construction of the desalination plant and sea intake pipelines, and an additional 10 skilled positions and approximately 200 unskilled positions for the other pipelines. It is anticipated that the majority of skilled positions will be taken by people from outside the immediate community as it is unlikely that the required skills can be sourced locally. The unskilled jobs, however, do provide opportunities for members of the local community to gain formal employment, albeit on a temporary basis.

Considering the relatively high unemployment rate experienced in the study area, any additional formal employment opportunities are seen as positive. Increased employment opportunities are likely to have various social benefits for the local community such as an increase in expendable income, and a general improvement in the standard of living. The increase in employment opportunities will cease after construction and is, thus, temporary with the potential intensity medium. It is believed that without additional management measures, the benefits will definitely be felt and that the impact will be regional in nature. Taking all this into consideration, the impact is believed to be of a **Medium Positive Significance**.

Key mitigation measures proposed by the specialist are:

- Prioritise the employment of people from the local community.
- As far as feasibly possible, employ the required skilled labour from the local community.

Additional mitigation measures proposed by specialist are:

- Wherever feasible, opt for labour intensive practices so as to increase employment opportunities, e.g. employ manual labour for the digging of pipeline trenches.

With the effective implementation of the key mitigation measures proposed by the specialist, the impacts associated with increased employment opportunities during the construction phase are predicted to be of a **Medium** Positive Significance.

Potential impact 13: Loss of income for market garden employees

The proposed land for the desalination plant is currently being used for market gardens. In the event of the project going ahead, the market gardens will be lost which will result in a loss of income for both the market garden owners as well as the staff employed on the market gardens (assuming that alternative land is not made available to existing land owners). While the land owners will be compensated for the land which they have lost, they will still lose a source of income in the event of alternative land not being available. In this regard, it should be noted that during focus group meetings with land owners (section 11.5.2.3), the general consent among the land owners was that they would unlikely continue farming at an alternative location, citing concerns over land claims as well as the lack of available agricultural land in the area.

Of greater concern, however, are the staff employed on the market gardens as they are seen to be particularly vulnerable, especially considering that about 70% are reported to be female and that they already fall within a low income group. A loss of income for these people may have various indirect social implications for them as well as their dependants, and is likely to ultimately result in a reduction in their standard of living. This, viz. the implications for existing market garden employees, was an issue raised during focus group meetings with various stakeholders. The loss of income, if not mitigated, could be permanent and will definitely occur in the event of the project going ahead. Considering the socio-economic profile of these people, it is believed that the potential intensity of the impact is high. Considering all of these factors, it is believed that without mitigation the potential impact will be of a **High** Negative Significance.

In order to reduce potential impacts associated with a loss of income, the mitigation measures outlined hereunder are proposed.

Key mitigation measures include:

- Prioritise the employment of people who are currently market garden employees (in the event that they do not continue market gardening in a new location).
- Implement retraining and skills development programmes.

Additional mitigation measures include:

- In the event of previously employed market gardeners being unable to be employed during the construction process, Umgeni Water should provide some form of social assistance for an interim period, either financial or through food security assistance.

With the effective implementation of the key mitigation measures proposed by the specialist, the impacts associated with loss of income during the construction phase are predicted to be of a **Medium** Negative Significance.

Potential impact 14: Economic loss due to Permanent loss of land and housing

In order for the desalination plant to be constructed on the proposed site, privately owned land which is currently economically productive will be lost. The land is currently being used by various member of the Govender family to earn a living. Thus, the sale of the properties would have financial implications for the current landowners.

Concern was raised during the focus group meetings that, in the event of the project going ahead, Umgeni Water would only purchase the sections of the properties which they require. It was noted by

landowners that they do not consider this a viable option as the remaining sections would be steep in gradient and not large enough to sustain their current agricultural output needs. Considering the concerns raised and the permanent nature of the impact, is believed to be of a High Negative Significance. In regard to the loss of the land, the mitigation measures outlined hereunder are proposed.

Key mitigation measures proposed by the specialist are:

- Compensate land owners at a market related price.
- Provide compensation for losses incurred.
- In cases where the entire properties are not required, land owners should be provided with the option of keeping the remaining sections of land or selling the property in its entirety.
- In the event of the land owner not wishing to keep any section of an affected property, Umgeni Water should purchase the entire property.

With the effective implementation of the key mitigation measures proposed by the specialist, the impacts associated with the loss of land and housing during the construction phase are predicted to reduce to a **Low** Negative Significance as there is a low probability of the impact occurring.

Potential impact 15: Devaluation of residential property

Concerns were raised during focus group meetings regarding how the presence of a desalination plant may impact on the value of residential properties adjacent to and overlooking the plant. It is possible that during the construction process, the value of residential properties in the area will potentially decrease, especially within the King Shaka Estate which is elevated above and has views to the south directly over the proposed project site. Concerns were raised in the focus group meetings that this will have implications for the value of the investment made by some residents while the estate developer is also likely to be affected as it may become difficult to sell the properties for the desired price. It should be noted that regardless of whether property prices decrease or not, there is a strong perception among local residents that this will occur. This perception may result in a sudden rush to sell properties in the area which, in turn, may lead to a drop in property prices.

The socio-economic impact assessment (Chapter 11) discusses the potential impacts that the proposed project may have on the devaluation of properties in greater detail. However without mitigation it is anticipated that the impact will be of a **medium** negative significance.

Key mitigation measures proposed by the specialist are:

- Mitigation measures stipulated in the Socio-economic impact assessment should be implemented.

It is anticipated that with suitable mitigation as detailed on the Socio-economic impact assessment (Chapter 11) the impact will remain of a **medium** negative significance.

Potential impact 16: Temporary loss of agricultural land

The proposed water pipeline and 132kV powerline will be routed through areas currently under sugarcane production on land under the management of Tongaat Hulett Sugar. During the construction process these areas will be temporarily lost to production. At the time that this study was conducted, it was not clear how wide the construction servitude width would be, however, it can be confirmed that the required length of the pipeline is approximately 16 km and the powerline length is 5 km. The temporary loss of this agricultural land may result in a temporary loss of earnings for Tongaat Hulett for a period of time. Despite the impact definitely occurring, it will be localised,

temporary in nature and of a medium-low potential intensity and, as such, even with no mitigation is thought to have a **Low Negative Significance**. Possible mitigation measures are outlined hereunder.

Key mitigation measures proposed by the specialist are:

- Compensate affected land owners for any losses.
- Clear the servitude, and place the water pipeline following the harvesting of sugarcane on the affected land so as to reduce losses.
- Ensure that the affected areas are rehabilitated immediately after the pipeline has been laid.

With the effective implementation of the key mitigation measures proposed by the specialist, the impacts associated with the temporary loss of agricultural land during the construction phase are predicted to remain of a **Low Negative Significance**

11.7.2 Operational Phase

This section discusses and presents mitigation and/or management measures for the social impacts that are likely to arise during the operational phase of the proposed project. It should be noted that those impacts identified as having a permanent impact in the construction phase of the project viz. *loss of income for market garden employees* and *permanent loss of land and housing* have not been carried through to this section.

11.7.2.1 Health and social wellbeing

Potential impact 17: Chemical spill

The proposed desalination plant will require the storage of various chemicals on site. While at the time of the study being conducted it was not clear which chemicals would be required, a typical desalination plant of this nature would require the bulk storage of the following (CSIR, 2015):

- Sulphuric acid (20m³).
- Sodium bisulphate (5m³).
- Caustic soda (10m³).
- Ferric chloride (20m³).
- PolyDADMAC (1.5m³).
- Sodium Hypochlorite (10m³).
- Ammonia (5m³).
- Antiscalant (2m³).
- Citric acid (5 m³).
- Hydrochloric acid (2.5 m³).

Of the chemicals which will be kept on site, the following in sufficient quantity are considered hazardous to humans and/or the natural environment: sulphuric acid, caustic soda, ferric chloride, sodium hypochlorite, ammonia and hydrochloric acid. It is understood that all the chemicals kept on site will be stored in suitable containers with suitable bunds and access restrictions, and, as such, major impacts associated with the storage of these chemicals are not anticipated. In addition, the volume of chemicals that will be kept on site at any given time is not particularly large in terms of the storage of chemicals for industrial purposes.

However, despite the above, the possibility of a spill which may have environmental implications for the surrounding area as well as potential temporary unpleasant odours for surrounding residents still exists. The perceived danger that the storage of chemicals brings should also be noted and has been raised as a concern during public consultation. This perceived danger will likely fuel public resistance

towards the project. In terms of the significance of the impact, without additional mitigation measures, the local extent of the impact, low probability of it occurring and the medium-low potential intensity, give the impact a **Low Negative Significance**.

Mitigation measures inherent to the project design are:

- Chemicals will be stored in appropriate containers within suitable bunds and access restrictions will be applied.
- Material Safety Data Sheets will be kept on site at strategic locations.

Key mitigation measures proposed by the specialist are:

- Scheduled checks should be carried out on the chemical storage facility and bunded area to ensure there are no damages which may increase the likelihood of accidental spills.
- A procedure should be developed to deal with potential spills. All staff should be trained as to the procedure to deal with spills.
- Chemical clean up kits should be available on site.

With the effective implementation of the key mitigation measures proposed by the specialist, the impacts associated with storage of chemicals during the operations phase are predicted to remain of a **Low Negative Significance**.

Potential impact 18: Secure potable water supply

Studies undertaken suggest that even with the implementation of current plans, shortfalls are still likely to occur, which will severely limit sustainable socio-economic development in KwaZulu-Natal. As a result of the proposed project, the northern areas of the eThekweni Municipality as well as sections of the iLembe DM will be provided with a secure potable water supply. At present, it is reported that 2.8% of households in the eThekweni municipality and 19.1% of households in the iLembe DM do not have access to potable water. While it is not anticipated that the proposed project will address all the existing backlogs, it will assist in addressing the current demand.

Considering the strategic importance of a secure potable water supply, the potential intensity is thought to be high. In addition, considering that the extent of the impact is regional and that it will be for the long-term, the significance of the impact without any additional management measures is of a **High Positive Significance**.

Key management measures proposed by the specialist are:

- Continued maintenance of water infrastructure.

With the effective implementation of the key management measures proposed by the specialist, the impacts associated with a secure potable water supply during the operations phase are predicted to remain of a **High Positive Significance**.

11.7.2.2 Sense of place

Potential impact 19: Aesthetic impacts

On completion of construction it is understood that the proposed desalination plant will cover an area of approximately 7 ha. The presence of the desalination plant is likely to change the nature of the existing landscape from one currently characterised by market gardens to one characterised by an industrial type development. Concerns were raised during focus group meetings regarding how the presence of a desalination plant would affect the aesthetic nature and sense of place. Particular concern was raised in this regard by residents of the King Shaka Estate and how an alteration in their

existing views would affect their property values (Impact 20). While it is accepted that the construction of the desalination plant will impact on the aesthetics of the area for people living in King Shaka Estate and adjacent to the project site, it does need to be added that considering the prime location of the land it is inevitable that at some stage this land will be developed potentially as residential land or alternatively for commercial purposes (shopping centre). Thus, moving forward it is likely that a change in the aesthetic nature of the area will occur at some stage.

It should be noted that it would not only be local residents who would be affected by changes to the visual landscape but also people making use of the M4 or alternatively using the area for recreational purposes (cycling, going to the beach, etc.) albeit that the impact on such people would be minor and transient in comparison to the impact felt by local residents. In this regard, concerns were raised during the focus group meetings that the changed aesthetic nature of the area would have a detrimental impact on tourism in the area.

The presence of a desalination plant on the proposed site will have significant aesthetic impacts which are likely to be difficult and costly to mitigate and likely to change the sense of place of the area. However, it also needs to be considered that while the presence of a desalination plant will impact on the immediate surroundings, the impacts will be relatively localised and are unlikely to stretch along the coast line. Considering this, it is anticipated that without additional mitigation measures the aesthetic impact will be of a **High** Negative Significance. Greater detail of the likely impacts are provided in the visual impact assessment (Chapter 10).

Key mitigation measures proposed by the specialist are:

- Mitigation measures stipulated in the visual impact assessment should be implemented.

Additional mitigation measures proposed by the specialist are:

- Consider constructing a portion of the desalination plant below ground so as to reduce the visual and aesthetic impact.

With the effective implementation of the key mitigation measures proposed by the visual impact specialist, the impacts associated with aesthetic impacts during the operation phase are predicted to be reduced to a **Medium** Negative Significance.

Potential impact 20: Increased noise

During the operational phase of the proposed project there is potential for there to be an increase in noise as a result of the proposed desalination plant. An increase in noise will likely become a nuisance impact for local residents and business owners whilst also impacting on the sense of place of the area, albeit that that noise emissions will be within the limits of the municipal bylaws. An impact on the sense of place may, in turn, result in changes in property values as well as the tourist potential for the area. It should, however, be noted that the proposed desalination plant has been designed in such a manner that the most significant sound emitting components (pump station, etc.) will be housed within a sound proofed chamber. As such, during the operational phase of the proposed project there will not be a significant increase in noise and that without additional mitigation measures, the increased noise will be of a **Low** Negative Significance.

Key mitigation measures proposed by the specialist are:

- Mitigation measures stipulated in the noise impact assessment should be implemented.

With the effective implementation of the key mitigation measures proposed by the noise specialist, the impacts associated with increased noise during the operation phase are predicted to remain of a **Low** Negative Significance.

11.7.2.3 Economic impacts

Potential impact 21: Increased employment opportunities

During the operational phase of the proposed desalination plant, it has been estimated that 30 skilled and 10 unskilled employment opportunities will be created. Increased employment opportunities are likely to bring with them various social benefits for the employed person as well as their dependants as an increase in expendable income is likely to lead to an overall improvement in the standard of living. It should, however, be noted that any employment opportunities created during operations need to be considered against the number of people currently earning a living off the land. In this context, the number of jobs likely to be created is relatively few. Considering this, the significance of an increase in employment opportunities is considered to be of a **Medium** Positive Significance. However, with specific management actions the potential employment opportunities and benefits can be optimised.

Key mitigation measures proposed by the specialist are:

- All unskilled positions should be provided to members of the local community with priority being given to people currently making use of the land.
- Upskilling programmes should be put in place so as to enable members of the local community to fill skilled positions.

Additional mitigation measures proposed by the specialist are:

- Establish a timeline within which all employees on the plant are from the local community.

With the effective implementation of the key mitigation measures proposed by the specialist, the impacts associated with increased employment opportunities during the operation phase are predicted to remain of a **Medium** Positive Significance.

Potential impact 22: Devaluation of residential property

As a result of the presence of a desalination plant close to upmarket residential areas, in particular the King Shaka Estate, it is likely that there may be a reduction in the neighboring property values. This is likely to be due to the impact that the desalination plant will have on the sense of place of the area as it will be changed from a largely residential and market garden area to an industrial one. There is also the concern, as noted during focus group meetings with LaMRAG, that the area will follow the same route as the Durban South Basin becoming an industrial area. This perception, whether the area becomes industrial or not, will likely have an impact on the local property values. The socio-economic impact specialist study (Chapter 12) provides greater detail into the potential for changes in property values and notes that during the operation phase that without mitigation a **high** negative significance will occur.

Key mitigation measures proposed by the specialist are:

- Mitigation measures stipulated in the Socio-economic impact assessment should be implemented.

With suitable mitigation, particularly the mitigation of visual and noise impacts, it is anticipated that the impact can be reduced to a **medium** negative significance.

Potential impact 23: Increased demand for energy

Considering the current energy crisis in South Africa, with Eskom unable to supply the required demand as well as potential cost increases, the implications of energy intensive desalination as a viable option for water supply needs to be considered. This was a concern raised during focus group meetings. The high cost of electricity is likely to make the cost of producing water more expensive. It is, however, understood that energy recovery systems have been included in the design of the proposed plant in order to reduce energy demand. In addition, Eskom is in the process of implementing plans to address the electricity shortfall with the construction of the Medupi and Kusile Power Plants as well as possible nuclear power stations. It is, thus, likely that while the provision of electricity for the proposed desalination plant is currently a concern, with time this should be resolved. As such, it is anticipated that without additional mitigation measures that there will be a **Medium Negative Significance** associated with the increased demand for electricity.

Mitigation measures inherent to the project design are:

- Incorporation of energy recovery systems into the plant design.

Key mitigation measures proposed by the specialist are:

- Make use of alternative energy as far as possible (e.g. solar power for lighting).

With the effective implementation of the key mitigation measures proposed by the specialist, the impacts associated with increased demand for energy during the operation phase are predicted to remain of a **Medium Negative Significance**.

11.7.3 'No-go' option

In considering the proposed project, the 'no-go' option needs to be discussed as a potential alternative. It needs to be understood that desalination is not the only option for securing a potable water supply in the northern areas of the eThekweni Municipality and areas within the iLembe DM. However, other alternatives, such as the proposed Mkomazi Water Project entail significant capital costs as well as a long implementation period and, thus, desalination presents a possible short-medium-term alternative (CSIR, 2015). In addition, considering the increasing demand for potable water and the current deficits, exemplified by water restrictions in the Ballito area, it is likely that in the future a range of alternatives will need to be implemented of which desalination could be one. Thus, while a 'no-go' option may not result in the northern eThekweni area and parts of the iLembe DM having no access to potable water, potentially a 'no-go' may result in continued shortfalls. In the event of the 'no-go' alternative materialising, various social impacts are likely to emerge.

11.7.3.1 Health and social wellbeing

Potential impact 24: Lack of access to services

In the event of the 'no-go' option materialising, households in eThekweni's northern areas and the iLembe DM will experience a shortfall in potable water. A lack of access to potable water will further delay the provision of this basic service to the population and may result in increased backlogs as the population grows. This is of concern as, at present, it is reported that 2.8% of households in the eThekweni Municipal area and 19.1% of households in iLembe DM do not have access to piped potable water (StatsSA, 2012). A lack of access to potable water may increase the likelihood of water borne disease as communities are forced to make use of unclean water.

Without the implementation of the project, considering the regional impact, the long-term implications and the high potential intensity associated with poor service delivery, the impact is believed to be of a **High** Negative Significance.

11.7.3.2 Economic impacts

Potential impact 25: Reduced investment

A lack of access to potable water is likely to restrict future commercial investment in the affected areas which will have detrimental implications for the local economy. This, in turn, will limit the development potential of the area and negatively impact socio-economic development for the local communities. Again, the mitigation measure here is essentially the implementation of the proposed project. In the event of the project not going ahead, it is anticipated that the reduction in investment will have a **High** Negative Significance considering the regional nature of the impact and the high potential intensity.

11.7.4 Decommissioning Phase

It is anticipated that the lifespan of the proposed desalination plant will be 20-25 years. In the event of decommissioning taking place, the associated activities will be accompanied by potential social impacts. Potential positive impacts are considered to be of a similar nature to those during construction, for example, increased employment opportunities, etc. Similarly, negative impacts are also likely to occur, for example, the spread of disease, especially sexually transmitted diseases such as HIV/AIDS. However, it needs to be noted that no meaningful assessment of possible social impacts can be undertaken as the social environment currently prevailing in the study area is likely to have changed significantly by the time that decommissioning of the desalination plant occurs. As such, it is recommended that in the event of decommissioning taking place, a new social impact assessment is undertaken.

11.7.5 Cumulative Impacts

11.7.5.1 Cumulative impact 1 Sense of place

While impacts on sense of place during construction are largely temporary (noise, visual, access to recreational areas, etc.), a more significant impact is likely to occur during the operational phase of the proposed project. As noted in Section 11.5.2, concerns were raised during focus group meetings about how the presence of an industrial type development of this nature may change the entire nature of the study area in the future and impact on the development of the tourism industry. Concerns were also raised that a development of this nature may lead to further industrial development taking place and the area becoming similar to the Durban South Basin.

While it is likely that the sense of place of the area will be affected, it is not believed that the establishment of the desalination plant will lead to the growth of other industry in the area or that the area will become similar to the Durban South Basin. This is based on the understanding that the Durban South Basin has developed largely around the presence of petrochemical industries and the Durban Port, with air pollution being a significant problem in the area. A desalination plant of this nature appears to be relatively unobtrusive in comparison with big industry (little to no air emissions and little noise generation). In addition, the area where the project is proposed to be located has been earmarked for residential development and considering its location between key tourism areas and not within a strategic location from an industrial development perspective, it is unlikely that large industry will move to the area.

Thus, while concerns were raised regarding cumulative impacts on sense of place, it is believed that this is of low significance.

11.8 IMPACT ASSESSMENT SUMMARY

The assessment of impacts and recommendation of mitigation measures as discussed above are collated in Table 11.10 and Table 11.11 below³:

3 For information on the impact assessment criteria, reference should be made to chapter 4 in this EIA report.

Table 11-10 Impact assessment summary table for the Construction Phase

Construction Phase										
Impact Description	Status	Spatial Extent	Duration	Reversibility	Potential Intensity	Probability	Significance (Without Mitigation)	Key Management actions	Significance (With Mitigation)	Confidence
Increased spread of disease (Direct impact)	Negative	Regional(3)	Temporary (1)	Highly reversible	High (8)	Highly Probable (0.75)	Medium (9)	<ul style="list-style-type: none"> An HIV and AIDS awareness/education component should be included in the induction programme for all personnel working on the proposed project; Ensure there is easy access to HIV and AIDS related information and condoms for all workers involved with the proposed project. 	Medium (5.5)	High (Based on existing research)
Reduced road safety (Direct impact)	Negative	Regional (3)	Temporary (1)	Highly reversible	High (8)	Highly probable (0.75)	Medium (9)	<ul style="list-style-type: none"> Development of a traffic management plan; Suitable signage warning of the presence of construction and heavy duty vehicles. The location of the signs should be detailed in the traffic management plan. 	Medium (5.5)	Medium (Examples of past projects)
Increased pressure on road infrastructure (Direct impact)	Negative	Regional (3)	Short term (2)	Highly reversible	Medium-low (2)	Highly Probable (0.75)	Medium (5.25)	<ul style="list-style-type: none"> Establish the carrying capacity of the roads to be used by construction and heavy duty vehicles. Prior to construction, engage with the relevant road authorities (KZN 	Low (3.5)	Medium (Examples of past projects)

								Department of Transport, eThekweni Municipality and any other relevant road authority) to jointly monitor road conditions during the construction period.		
Temporary restrictions on access to recreational areas (Direct impact)	Negative	Local (2)	Temporary (1)	Highly reversible	Medium-low (2)	Definite (1)	Medium (5)	<ul style="list-style-type: none"> Establish a set route which will be used by heavy duty vehicles so as to limit potential damages. 	Medium (5)	Medium (Personal deductions)
Increased dust emissions(Direct impact)	Negative	Local (2)	Short-term (2)	Highly reversible	Medium-low (2)	Highly probable (0.75)	Low (4.5)	<ul style="list-style-type: none"> Employ dust suppression techniques such as water spraying or the use of dust suppressants; Ensure that areas of exposed soil are rehabilitated as soon as construction has been completed (i.e. follow progressive reinstatement and rehabilitation). 	Low (2.5)	Medium (Examples of past projects)
Increased criminal activity(Direct impact)	Negative	Local (2)	Short-term (2)	Moderate reversibility	Medium-low (2)	Probable (0.5)	Low (3)	<ul style="list-style-type: none"> All construction workers should be easily visible and identifiable as construction workers; Local police and community policing forums should be informed of the potential for an 	Low (2.5)	Medium (Examples of past projects)

								<ul style="list-style-type: none"> increase in criminal activity and to increase vigilance; Security guards should be placed on site at all times. All landowners should be informed well in advance of any planned activities taking place on their land. 		
Increased likelihood of fire (Direct impact)	Negative	Local (2)	Temporary (1)	Highly reversible	High (8)	Probable (0.5)	Medium (5.5)	<ul style="list-style-type: none"> No fires should be permitted in any of the project works areas. Fire extinguishers and firefighting equipment should be available at all project works areas. Smoking should only be allowed in designated areas. Staff should be inducted regarding fire safety and firefighting responsibilities/activities. 	Low (2)	Medium (Examples of past projects)
Perceived Aesthetic impacts (Direct impact)	Negative	Local (2)	Temporary (1)	Moderate reversibility	High (8)	Definite (1)	High (11)	<ul style="list-style-type: none"> Implement mitigation measures proposed by the visual specialist. 	High (11)	Medium (Personal deductions)
Increased noise (Direct impact)	Negative	Local (2)	Temporary (1)	Highly reversible	Medium (4)	Highly probable (0.75)	Medium (8.25)	<ul style="list-style-type: none"> Implement mitigation measures proposed by the noise specialist. 	Low (3.75)	Medium (Personal deductions)
Emotional impact due to permanent loss of land and housing (Direct impact)	Negative	Local (2)	Long Term (4)	Low reversibility	Medium (4)	Definite (1)	High (10)	<ul style="list-style-type: none"> No mitigation possible 	High (10)	Medium (Personal deductions)
Increased employment opportunities (Direct impact)	Positive	Regional (3)	Temporary (1)	Highly reversible	Medium (4)	Definite (1)	Medium (8)	<ul style="list-style-type: none"> Prioritise the employment of people from the local community; As far as feasibly possible employ the required skilled labour from the local community. 	Medium (8)	Medium (Personal deductions & statistical data on existing unemployment levels)

Loss of income for market garden employees (Direct impact)	Negative	Local (2)	Permanent (5)	Irreversible	High (8)	Definite (1)	High (15)	<ul style="list-style-type: none"> • Prioritise the employment of people who are currently market garden employees (in the event that they do not continue market gardening in a new location). • Implement retraining and skills development programmes. 	Medium (8.25)	Medium (Personal deductions & statistical data on existing unemployment levels)
Economic loss due to permanent loss of land and housing (Direct impact)	Negative	Site specific (1)	Permanent (5)	Irreversible	High (8)	Definite (1)	High (14)	<ul style="list-style-type: none"> • In cases where the entire properties are not required, land owners should be provided with the option of keeping the remaining sections of land or selling the property in its entirety; • In the event of the land owner not wishing to keep any section of an affected property, Umgeni Water should purchase the entire property. 	Low (2.5)	Medium (Examples of past projects)
Devaluation of residential property (Indirect impact)	Negative	Local (2)	Temporary (1)	Moderate	High (8)	Highly probable (0.75)	Medium (8.25)	<ul style="list-style-type: none"> • Implement mitigation measures proposed by the socio-economic specialist. 	Medium (5.5)	High
Temporary loss of agricultural land (Direct impact)	Negative	Site specific (1)	Temporary (1)	Highly reversible	Medium-low (2)	Definite (1)	Low (4)	<ul style="list-style-type: none"> • Compensate affected land owners for any losses. • Clear the servitude, and place the water pipeline following the harvesting of sugarcane on the affected land so as to reduce losses. • Ensure that the affected areas are rehabilitated immediately after the pipeline has been laid. 	Low (3)	Medium (Examples of past projects)

Table 11-11 Impact assessment summary table for the Operational Phase

Operational Phase										
Impact Description	Status	Spatial Extent	Duration	Reversibility	Potential Intensity	Probability	Significance (Without Mitigation)	Key Management actions	Significance (With Mitigation)	Confidence
Chemical spill (Direct impact) Mitigation measures inherent to the project design: <ul style="list-style-type: none"> Chemicals will be stored in appropriate containers within suitable bunds and access restrictions will be applied. 	Negative	Local (2)	Long term (4)	Highly reversible	Medium-low (2)	Low probability (0.25)	Low (2)	<ul style="list-style-type: none"> Scheduled checks should be carried out on the chemical storage facility and bunded area to ensure there are no damages which may increase the likelihood of accidental spills. A procedure should be developed to deal with potential spills. All staff should be trained as to the procedure to deal with spills. Chemical clean up kits should be available on site. 	Very Low (1.75)	Medium
Secure potable water supply	Positive	Regional (3)	Long term (4)	Highly reversible	High (8)	Highly probable (0.75)	High (11.25)	N/A	High (15)	Medium

Aesthetic impact (Direct impact)	Negative	Local (2)	Long term (4)	Highly reversible	High (8)	Definite (1)	High (14)	<ul style="list-style-type: none"> Implement mitigation measures proposed by the visual specialist. 	Medium (8)	Medium
Increased noise (Direct impact)	Negative	Local (2)	Long term (4)	Highly reversible	Medium-low (2)	Low probability (0.25)	Low (2)	<ul style="list-style-type: none"> Implement mitigation measures proposed by the noise specialist. 	Very Low (1.75)	Medium
<u>Mitigation measures inherent to the project design:</u> <ul style="list-style-type: none"> Buildings containing noise emitting equipment will be designed to attenuate noise. 										
Increased employment opportunities (Direct impact)	Positive	Local (2)	Long term (4)	High reversible	Medium (4)	Probable (0.5)	Medium (5)	<ul style="list-style-type: none"> All unskilled positions should be provided to members of the local community with priority being given to people currently making use of the land; All unskilled positions should be provided to members of the local community; Upskilling programmes should be put in place so as to enable members of the local community to fill skilled positions. 	Medium (8.25)	Medium (statistical data on existing unemployment levels)
Devaluation of residential property (Indirect impact)	Negative	Local (2)	Long term (4)	Moderate reversibility	High (8)	Highly probable (0.75)	High (10.5)	<ul style="list-style-type: none"> Implement mitigation measures proposed by the socio-economic specialist. 	Medium (8)	Low

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<p>Increased demand for electricity (Direct impact)</p> <p><u>Mitigation measures inherent to the project design:</u></p> <ul style="list-style-type: none"> • Incorporation of energy recovery systems into the plant design 	<p>Negative</p>	<p>Regional (3)</p>	<p>Long term (4)</p>	<p>Highly reversible</p>	<p>Medium-low (2)</p>	<p>Definite (1)</p>	<p>Medium (9)</p>	<ul style="list-style-type: none"> • Make use of alternative energy as far as possible (solar power for lighting, etc.). 	<p>Medium (6.75)</p>	<p>Low</p>
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Table 11-12 Impact assessment summary table for the 'No-go' alternative

'No-go' Alternative										
Impact Description	Status	Spatial Extent	Duration	Reversibility	Potential Intensity	Probability	Significance (Without Mitigation)	Key Management actions	Significance (With Mitigation)	Confidence
Lack of access to services	Negative	Regional (3)	Long-term (4)	Highly reversible	High (8)	Highly probable (0.75)	High (11.25)	<ul style="list-style-type: none"> Proposed desalination project 	Low (3.75)	Medium
Reduced investment	Negative	Regional (3)	Long-term (4)	Highly reversible	High (8)	Highly probable (0.75)	High (11.25)	<ul style="list-style-type: none"> Proposed desalination project 	Low (3.75)	Medium

11.9 CONCLUSION AND RECOMMENDATIONS

In order to ensure a sustainable water supply in the future for the north coast area of KwaZulu-Natal, Umgeni Water is investigating various options, one of which is a proposed desalination plant in the vicinity of Tongaat. During this study, a number of social impacts were identified, discussed and assessed. At the conclusion of the assessment, it can be confirmed that no fatal flaws from a social perspective exist. However, there are a number of key findings that should be noted as well as a number of recommendations.

The *loss of income for market garden employees* is potentially a significant impact if suitable mitigation measures are not implemented. During this study, it was confirmed that the employees on the market gardens can be classified as ‘vulnerable’ and that a loss of income may have significant social implications. It is, however, possible that with suitable mitigation and management measures the significance of this impact can be reduced to an acceptable level. The following mitigation and management measures are recommended:

- Prioritising the employment of current market garden employees.
- Implementing retraining and skills development programmes.

In addition, the possibility exists of the market garden employees continuing to work on alternative land purchased by affected land owners; if this becomes an eventuality, it will mitigate the impact. It appears, however, that moving the market gardens to alternative land is not considered an attractive option for the affected land owners.

Attention also needs to be paid to the impact that the proposed project will have on *sense of place*. This is inclusive specifically of the impact that the project will have on the aesthetics of the area during both construction and operation, and the potential impact it may have on property values for surrounding residential areas. While various mitigation measures can be applied during construction to reduce the visual impact, during the operational phase, this will be more difficult especially for residential areas situated above and overlooking the proposed site. Considering that the project area is currently a residential area and characterised by coastal vegetation, market gardens and other agricultural land, the presence of an industrial type development is likely to alter the nature of the area. The impact on sense of place is amplified by the strong connection many local residents report having with the area. However, it does need to be considered that the area which will be affected is relatively isolated in that the impacts on sense of place will be localised and not stretch along the coast line.

During this study, it also emerged that there is strong opposition towards the project among the local community with it being openly stated that they will oppose the development of the desalination plant throughout the authorisation process. Much of the opposition to the proposed project relates to concerns about how the sense of place of the area will be altered following the construction of the proposed desalination plant.

Finally, from a social perspective, the proposed project does not present social fatal flaws; however, there are social sensitivities which need to be addressed as the project progresses. These sensitivities need to be measured against the **significant positive benefit** that the proposed project would bring to **alleviating serious water shortages in the study area and surrounding regions**, and against the far more substantial negative social implications that will arise by not addressing water shortages.

11.10 REFERENCES

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