

APPENDIX D5: Socio-Economic Impact Assessment Report

LOWER UMKHOMAZI BULK WATER SUPPLY SYSTEM – WATER SUPPLY SCHEME, IN KWAZULU-NATAL

Socio-Economic Impact Assessment

Authority Reference No: 14/12/16/3/3/2/1030

July 2020

Final

Prepared for: Umgeni Water










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Title and Approval Page

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Amendments Page

Date:	Nature of Amendment	Amendment Number:
15 December 2017	Draft for Client Review	0
09 February 2018	Incorporation of Specialist Review comments – added Section 3.1; amended Sections 5.2.6 and 6.2, added Section 6.3. Final report issued.	1
27 July 2020	Amendment, taking into account the changes of pipeline route from the WTW and the Quarry Reservoir	2

Executive Summary

Umgeni Water proposed the construction of the Lower uMkhomazi Bulk Water Supply System (LUBWSS) in order to increase the assurance of water supply to the areas from Hibberdene to Amanzimtoti within the KwaZulu-Natal province of South Africa. The LUBWSS consists of two sub-sections; the Ngwadini Weir and Ngwadini Off-channel Storage Dam; and a second abstraction of water from the Goodenough Weir, transport, treatment and storage near Craigieburn. This report covers the second sub-section, known as the Lower uMkhomazi Bulk Water Supply System – Water Supply Scheme (LUBWSS-WSS).

Nemai Consulting was appointed to carry out the Socio-Economic Impact Assessment (SEIA) which is a specialist study to the EIA.

The project area is situated in the eThekweni Metropolitan Municipality predominantly in Ward 99. The towns most affected by the proposed scheme from this municipality are Craigieburn and Roseneath.

Proposed Alternatives and Project Components

A simplified description of the system consists of the following components:

- Raw water abstraction from the existing Goodenough Weir. This will involve raising the existing weir by 2.8m;
- A pump station to pump water from the Goodenough abstraction;
- A short rising main and raw water storage reservoir, referred to as the Goodenough reservoir;
- An approximately seven-kilometre gravity main from the Goodenough Reservoir to the Water Treatment Plant in Craigieburn;
- A 100 Ml/d Water Treatment Plant in the town of Craigieburn; and
- A potable gravity water pipeline from the Water Treatment Plant to Quarry Reservoir.

The report assesses two water treatment plant site alternatives; one on the centre of Craigieburn and the second to the north east of the town. Both have alternative supply pipeline routes and delivery pipeline routes. The map below depicts the location of the components and alternatives to be assessed as part of this study.

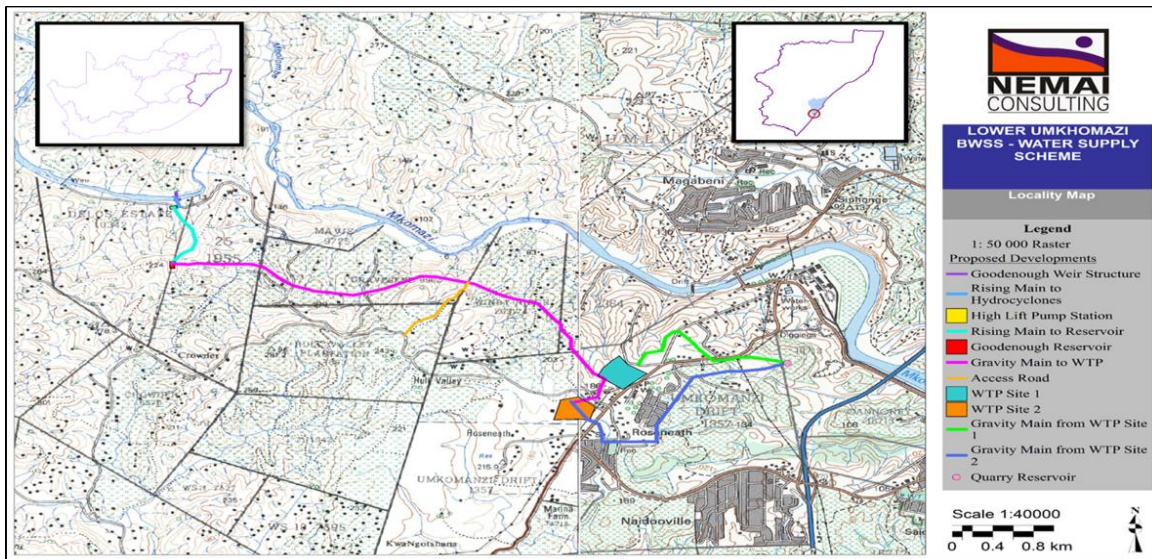


Figure 1: LUBWSS-WSS Layout Plan

Methodology

The following activities were conducted as part of the SIA: defining the study area; detailing the project scope; a situation analysis describing the socio-economic status of the study area, engagement with stakeholders through the public participation process; an impact assessment and recommended mitigation measures to reduce the identified impacts. The report concludes with an alternative analysis which makes recommendations with regards the preferred alternative from a socio-economic perspective.

Study Area

The project is located predominantly within Ward 99 of the eThekweni Metropolitan Municipality. Project infrastructure is located within four sub-places of the Ward namely Craigieburn, Clansthal, Roseneath, and Mkhomazi Drift Smallholdings. The study area was thus defined as being those four sub-places, since they are directly impact upon by the project.

Situation Analysis

The land use in the area is predominantly agricultural. Crops are planted along some of the route of the gravity main, with larger areas being open grazing. The pipeline passes near dwellings and in one case crosses through a farmer's homestead. As the pipeline reaches into Craigieburn the land use changes to high density residential and commercial uses. As the pipeline exits the two water treatment works options, industrial land uses are impacted upon.

The sites of the proposed two alternative water treatment plants are unused. Site 1 is located outside the main centre of town on land that is zoned in the future for light industrial use. Site 2 is located in the centre of Craigieburn, adjacent to the main existing residential areas of the town. The land use on this site is zoned for residential use in the future.

The study area contains a population of 9 343 people, living within 2 734 households. The dominant housing typology is brick or traditional structures with there being very few informal settlements. Levels of service for water supply are high with over seventy-five percent of the population serviced by piped water inside their dwellings. Sanitation services within the study area show that sixty-eight percent of the households have flush toilets within their houses.

Education levels are low, with seventy percent of the population above twenty years old not having achieved matric. Craigieburn is the area with the highest education levels, where thirty-seven percent of the population have at least a matric certificate.

Annual household income figures for the study area show that a substantial portion of the Clansthal, Roseneath and Mkhomazi Drift SH sub-places have no or low household income. The community of Craigieburn is relatively wealthier and this is mirrored by the data on education. The official unemployment rate is lowest in Craigieburn, at 17%, and highest in Clansthal, at 50%. The degree to which the potential labour force in an area is employed provides a measure of the engagement of the community with the economy. This measure is lowest in Roseneath, at 50% and indicates a labour sending area. It is highest in Craigieburn and Mkomanzi Drift SH at 69% and 57% respectively. These two areas are generally labour absorbing areas.

Stakeholder Engagement

Stakeholder engagement was carried out as part of either the public participation process of the EIA or as part of this SEIA. Stakeholders involved in the engagement were landowners, community groups and the eThekweni Metro Municipality: Town Planning. During this engagement the following social and economic issues were identified: noise and lighting; land acquisition; security issues; traffic; access to the weir for recreational purposes; infection of crops; damage to private property; and direct local economic benefits derived from the project.

Identification of Activities, Aspect and Impacts

Impact assessment started with the identification of the high risk project activities and the aspects which impact upon the socio-economic environment. Once this was carried out, the potential impact as identified.

The socio-economic impacts of the proposed development were divided into categories and were identified as follows:

- Impacts due to land acquisition:
 - Partial loss of livelihood on the part of landowners
 - Reduced access to productive land
 - Development constraints within Craigieburn
 - Visual Impact
- Impacts Due to Scheme Operations

- Economic growth and induced impacts
- Opportunity for local business.
- Employment of local people
- Skills development
- Noise
- Odour
- Light pollution
- Access across the weir
- Safety concerns
- Impacts occurring at the construction phase
 - Security Concerns
 - Damage to property or equipment
 - Damage or wear to access roads
 - Improvement of access in the project area
 - Proximity to construction work and associated inconvenience and dangers.
 - Employment of local people
 - Sourcing of equipment, machinery and services locally
 - Noise
 - Dust
 - Noise
 - Influx of workers
 - Employment of local people
 - Sourcing of equipment, machinery and services locally
 - Temporary road closures
 - Increased traffic
 - Security
 - Improved access to amenities
 - Noise
 - Employment of local people
 - Sourcing of equipment, machinery and services locally

Mitigation Measures

Mitigation measures were proposed in the report and the implementation of these mitigation measures is expected to reduce the socio-economic impacts of the project to low levels.

The final routing of the pipelines and the selection of the WTP site are the primary mitigation measures for the project. The routing and site selection should be carried out so as to avoid impacting upon existing development as far as possible. Where not possible, mitigation provides for compensation for economic losses to be made.

The siting of the water treatment plant on Site 2 will impact upon the location of future residential development within Craigeiburn. The primary mitigation measure in this regard is the selection of Site 1 as the preferred site alternative.

Lighting impacts can be controlled through engineering interventions.

Those who will benefit during the construction is limited to those who actively participate in the construction activity through employment, sub-contracting or other economic opportunities. Active participation should be encouraged. The benefits on such a construction will take place irrespective of which routing and site alternative is preferred.

Disturbances during the construction phase can be successfully mitigated through contractor specifications issued at tender stage and through monitoring of contractor performance during the construction phase.

Discussion of Alternatives

The Go / No Go option is not supported owing to the fact that water supply to the supply area will be less secure that if the project did go ahead. A secure water supply is a fundamental input to the social and economic activities of the area.

With regards to the siting of the water treatment plant, Site 1 is the preferred alternative. The site will not impact on the residential and commercial centre of Craigeiburn, whilst Site 2 is adjacent to the primary residential area of Craigeiburn and will sterilise future residential development within this node.

The clean water gravity pipeline option running from Site 1 is preferred owing to its running through largely un-used land. The alternative pipeline route, from Site 2, runs through Craigeiburn's industrial area. The installation of the pipeline will result in disturbance to the companies operating in the industrial area and possible long-term impacts will be felt through having to maintain and replace the pipeline.

Summary and Conclusion

The study assessed the social and economic impacts of the proposed project. As expected of any construction project, there were several positive and negative socio economic impact identified. The identified negative impacts can be successfully mitigated and the positive impacts will bring economic and social benefit to the area.

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List of Abbreviations

AIDS	Acquired Immunodeficiency Syndrome
ASGISA	Accelerated and Shared Growth-South Africa
DEA	Department of Environmental Affairs
DFA	Development Facilitation Act (Act 67 of 1995)
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
HIV	Human Immunodeficiency Virus
ISO	International Standards Organisation
LUBWSS	Lower uMkhomazi Bulk Water Supply System
MI/d	Megalitres per day [1 000 000 litres per day]
NDP	National Development Plan
NEMA	National Environmental Management Act (Act No. 107 of 1998)
NSDS	National Skills Development Strategy
NWA	National Water Act (Act No. 36 of 1988)
NWRS2	National Water Resource Strategy Second Edition, June 2013
OCS	Off-Channel Storage [Dam]
PAJA	Promotion of Administrative Justice Act (Act No. 3 of 2000)
PGDS	Provincial Growth and Development Strategy
PSEDS	Provincial Spatial Economic Development Strategy
SEIA	Socio-Economic Impact Assessment
SMME	Small, Medium or Micro Enterprise
WTP	Water Treatment Plant

1 INTRODUCTION

The Lower uMkhomazi Bulk Water Supply System (LUBWSS) is the recommended augmentation option for the existing Upper and Middle South Coast Supply area, in order to increase the assurance of water supply.

The Middle and Upper South Coast areas include the coastal areas from Hibberdene to Amanzimtoti within KwaZulu Natal (Figure 3). The project area is situated in the eThekweni Metropolitan Municipality and the towns most affected by the proposed scheme are Craigieburn and Roseneath.

Nemai Consulting was appointed as the independent Environmental Assessment Practitioner to undertake an amendment to the Environmental Impact Assessment (EIA) for the proposed LUBWSS.

This Socio-Economic Impact Assessment (SEIA) serves as a specialist study to the EIA Amendment for the project.

This version of the SEIA uses the original version issued in February 2018. This amendment version takes into account project changes relating to pipeline routing from the river to the Water Treatment Works and the pipeline from the Water Treatment Works to the Quarry Reservoir. The Water Treatment Works is located in the town of Craigieburn.

1.1 Terms of Reference

- Determine the socio-economic baseline conditions in the study area.
- Determine the specific local socio-economic, land utilisation and acquisition implications of the project.
- Assess socio-economic impacts (positive and negative) of the project
- Suggest suitable mitigation measures to address the identified impacts.
- Make recommendations on preferred options from a socio-economic perspective.

1.2 Structure of the report

The remainder of the report is structured as follows:

Section 2: Legislation – A description of the statutory and regulatory requirements that inform this report.

Section 3: Project Description – This section provides an introduction and motivation to the project.

Section 4: Methodology – Outline on the methodology used to determine the socio-economic impacts of the proposed project.

Section 5: Situational Analysis– A desktop analysis into the baseline context on the study area. A discussion on the finding that result from community engagement, site visits and stakeholder participation.

Section 6: Identification of Activities, Aspects and Impacts – The identification of the project activities and an investigation into what aspects of these activities will result in socio-economic impacts.

Section 7: Analysis of Alternatives – Decision making with regards the preferred alternatives from a socio-economic perspective.

2 LEGISLATION

Legislation, policy, plans and strategy provide an important framework and governance of the SEIA. This section provides a summary of the acts, policy, plans and strategy which were considered by this study.

2.1 Constitution of the Republic of South Africa (Act 108 of 1996)

As contained in the Constitution the rights of all South Africans are protected as outlined in Chapter 2: The Bill of Rights. These rights form the basis of democracy in South Africa. The Constitution (including the Bill of Rights) binds the Legislature, the Executive, the Judiciary and all organs of state and is the overriding legislation of South Africa.

While all items in the Bill of Rights are considered to be of equal importance, key items in the Bill of Rights that have a bearing on social rights and issues in this project include (but are not necessarily limited to):

- Life: Everyone has the right to life;
- Human Dignity: Everyone has inherent dignity and the right to have their dignity respected and protected;
- Equality: Everyone is equal before the law and has the right to equal protection and benefit from the law;
- Freedom of religion, belief and opinion: Everyone has the right of freedom of conscience, religion, thought, belief and opinion;
- Environment: Everyone has the right to an environment that is not harmful to their health or well-being, and to have the environment protected for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation, promote conservation and secure ecologically sustainable development and the use of natural resources while promoting justifiable economic and social development;
- Property: No person may be deprived of property except in terms of the law of general application, and no law may permit arbitrary deprivation of property. Property may be expropriated only in terms of the law of general application for a public purpose or in the public interest. The public interest includes South Africa's commitment to land reform and to reforms to bring about equitable access to all South Africa's natural resources. Property is not limited to land;
- Health care, food, water and social security: Everyone has the right to have access to health care services, including reproductive health care, sufficient food and water and social security, including, if they are unable to support themselves and their dependents, appropriate social assistance;

- Language and culture: Everyone has the right to use the language and participate in the cultural life of their choice, but no one exercising these rights may do so in a manner inconsistent with any provision of the Bill of Rights;
- Cultural, religious and linguistic communities: Persons belonging to cultural, religious or linguistic communities may not be denied the right, with other members of the that community to enjoy their culture, practice their religion and use their language, and to form, join and maintain cultural, religious and linguistic associations and other organs of civil society. These rights must be exercised in a manner that is consistent with any provision in the Bill of Rights;
- Access to information: Everyone has the right of access to any information held by the state and any information that is held by another person and that is required for the exercise or protection of any rights; and,
- Just administrative action: Everyone has the right to administrative action that is lawful, reasonable and procedurally fair. Everyone whose rights have been adversely affected by administrative action has the right to be given written reasons. This right has been given effect via the Promotion of Administrative Justice Act ((PAJA) Act 3 of 2000).

2.2 National Environmental Management (Act 107 of 1998)

The National Environmental Management Act (NEMA) and the principles contained therein have a significant influence on the need to identify and assess socio-economic impacts. The NEMA principles are based on the basic rights as set out in Chapter 2 (Bill of Rights) of the Constitution.

According to Barber (2007:16) the following NEMA principles have an important impact on social issues:

- Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably;
- Development must be socially, environmentally and economically sustainable;
- Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option;
- Environmental justice must be pursued so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons;
- Equitable access to environmental resources, benefits and services to meet basic human needs and ensure human well-being must be pursued and special measures

may be taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination;

- The participation of all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, and participation by vulnerable and disadvantaged persons must be ensured;
- Decisions must take into account the interests, needs and values of all interested and affected parties, and this includes recognising all forms of knowledge, including traditional and ordinary knowledge;
- Community well-being and empowerment must be promoted through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means;
- The social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated, and decisions must be appropriate in light of such consideration and assessment;
- The right of workers to refuse work that is harmful to human health or the environment and to be informed of dangers must be respected and protected;
- Decisions must be taken in an open and transparent manner, and access to information must be provided in accordance with the law;
- The environment is held in public trust for the people. The beneficial use of environmental resources must serve the public interest and the environment must be protected as the peoples' common heritage; and
- The vital role of women and youth in environmental management and development must be recognised and their full participation therein must be promoted.

2.3 Development Facilitation Act (Act 67 of 1995)

The Development Facilitation Act (DFA) outlines various principles concerning land development in Section 3 of the Act. Some of the relevant principles are briefly highlighted below (Babour, 2007). These principles include (but are not limited to):

- Promoting the integration of the social, economic, institutional and physical aspects of land development;
- Promoting integrated land development in rural and urban areas in support of each other;
- Promoting the availability of residential and employment opportunities in close proximity to or integrated with each other;

- Optimising the use of existing resources including such resources relating to agriculture, land, minerals, bulk infrastructure, roads, transportation and social facilities;
- Promoting a diverse combination of land uses, also at the level of individual erven or subdivisions of land;
- Discouraging the phenomenon of "urban sprawl" in urban areas and contributing to the development of more compact towns and cities;
- Contributing to the correction of the historically distorted spatial patterns of settlement in the Republic and to the optimum use of existing infrastructure in excess of current needs;
- Encouraging environmentally sustainable land development practices and processes;
- Promoting land development which is within the fiscal, institutional and administrative means of the Republic;
- Promoting the establishment of viable communities; and,
- Promoting sustained protection of the environment.

2.4 Restitution of Land Rights Act 22 Of 1994

The aim of the Restitution of Land Rights Act 22 of 1994 is as follows:

- To provide for the restitution of rights in land in respect of which persons or communities were dispossessed under or for the purpose of furthering the objects of any racially based discriminatory law;
- To establish a Commission on Restitution of Land Rights and a Land Claims Court; and
- To provide for matters connected therewith.

2.5 National Development Plan (2011)

The National Development Plan (NDP) of 2010 proposes to “invigorate and expand economic opportunity through infrastructure, more innovation, private investment and entrepreneurialism.

The Plan aims to ensure that all South Africans attain a decent standard of living through the elimination of poverty and reduction of inequality. The core elements of a decent standard of living identified in the Plan are:

- Housing, water, electricity and sanitation;
- Safe and reliable public transport;
- Quality education and skills development;
- Safety and security;

- Quality health care;
- Social protection;
- Employment;
- Recreation and leisure;
- Clean environment; and
- Adequate nutrition.

2.6 National Water Resources Strategy (June 2013)

This strategy provides a national framework against which water resources across the country will be managed and in this sense aims to;

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

2.7 KwaZulu-Natal Planning and Development Act 6 of 2008

The KwaZulu-Natal Planning and Development Act of 2008 aims to:

- To provide for the adoption, replacement and amendment of schemes;
- Provide for the subdivision and consolidation of land;
- Provide for the development of land outside schemes;
- Provide for the phasing or cancellation of approved layout plans for the subdivision or development of land;
- Provide for the alteration, suspension and deletion of restrictions relating to land;
- Establish general principles for the permanent closure of municipal roads or public access;
- Provide for the adoption and recognition of schemes;
- Provide for compensation in respect of matters regulated by the Act;
- Establish the KwaZulu-Natal Planning and Development Appeal Tribunal;
- Provide for provincial planning and development norms and standards; and
- Provide for matters connected therewith.

2.8 Provincial Growth and Development Strategy 2011

There are seven strategic objectives highlighted in the PGDS namely:

1. Job creation;
2. Human resource development;
3. Human and community development;
4. Strategic infrastructure;
5. Environmental sustainability;
6. Governance and policy; and
7. Spatial equity.

The document identifies unemployment, poverty and inequality as structural constraints to KwaZulu-Natal's growth.

2.9 KwaZulu-Natal Spatial Economic Development Strategy (PSEDS)

The KwaZulu-Natal Spatial Economic Development Strategy (PSEDS) was formulated in 2007 as a spatial economic assessment of the areas of need and potential within the province. The PSEDS is intended as a guide to service delivery within the cluster to achieve the goals set in ASGI-SA to halve poverty & unemployment by 2014. The PSEDS is built on the principles of the National Spatial Development Strategy (NSDS), namely:

- Principle 1: Rapid economic growth that is sustained and inclusive is a prerequisite for the achievement of poverty alleviation
- Principle 2: Fixed investment should be focused in localities of economic growth or economic potential
- Principle 3: Where low economic potential exists investments should be directed at projects and programmes to address poverty and the provision of basic services in order to address past and current social inequalities
- Principle 4: Future settlement and economic development opportunities should be channelled into activity corridors and nodes that are adjacent to or link the main centres

Four key sectors have been identified as drivers of economic growth in the Kwazulu-Natal, namely:

- The Agricultural sector (including agri-processing and land reform);
- The Industrial sector (Including Manufacturing);
- The Tourism sector;
- The Service sector (including government services).

The logistics and transport sector (including rail) in the services sector are important sub-sectors underpinning growth in all four sectors. Sustainable and affordable water and energy provision is crucial to the economic growth & development of the province.

2.10 International Organisation for Standardization, ISO 14001:2004

The International Organisation for Standardization (ISO) is used for identifying impacts. The ISO 14001: 2004 – Environmental Management Systems definitions for aspect, activity and impact are used in keeping with best practice.

ISO 14001:2004 specifies requirements for an environmental management system to enable an organization to develop and implement a policy and objectives and information about significant environmental aspects. It applies to those environmental aspects that the organization identifies as those which it can control and those which it can influence.

3 PROJECT DESCRIPTION

The LUBWSS-WSS is a sub-section of a larger scheme. The larger scheme consists of the two project segments: the first segment of the scheme creates the assurance of supply and includes the following infrastructure:

- The Ngwadini Weir and abstraction works to fill the Ngwadini OCS Dam during summer periods of excess flow; and
- The Ngwadini OCS Dam, with a capacity of 10 million m³, and outlet infrastructure to release water back into the river and augment low flow periods.

This segment has received environmental authorisation and is not the subject of this study. The second segment, the LUBWSS-WSS, listed below and known as the Water Supply Scheme, is the second segment, where the water generated from the first segment is made available for use. This segment has also received environmental authorisation. The second segment comprises the following:

- A second abstraction downstream at the Goodenough Weir site to abstract the raw water for delivery to the WTP. This will involve raising the existing weir by 2.8m, thereby increasing the area behind the weir that is affected by water impoundment;
- A pump station to pump water from the Goodenough abstraction;
- A short rising main;
- A break pressure tank that also serves as a raw water storage reservoir, referred to as the Goodenough reservoir;
- An approximately seven-kilometre gravity main from the Goodenough Reservoir to the Water Treatment Plant (WTP);
- Hydrocyclones before the pump station and WTP to remove sediments during periods of higher turbidity river flows and reduce the WTP residual (“sludge”);
- A 100 Ml/d Water Treatment Plant in the town of Craigieburn; and
- A potable gravity water pipeline from the Water Treatment Plant to Quarry Reservoir, the potable water delivery and tie-in point on the South Coast Pipeline.

This second segment has since been amended by the engineers as part of the project design process: the routes of both pipelines have changed and the alternative locations with respect of the Water Treatment Works have been removed. It is this amendment that is the subject of this study. The amendments to the authorised scheme can be summarised, using a socio-economic filter, as follows:

- Goodenough Weir Structure: Minor Position and size change
- Rising Main to Hydroclones: Minor Route change
- High Lift Pump Station: Minor Position change
- Rising Main to Reservoir: Minor Route change

- Goodenough Reservoir: Minor Size change
- Gravity Main to WTW: Route change to the north of previous route
- Access Road: Route change
- WTW Site: Minor Size increase
- Rising Main to Quarry reservoir: Route change through Craigieburn and environs
- Quarry Reservoir: No change

A layout map shows the locations of the amended components of this segment.

This study will focus on the two pipeline route changes, since these are relevant in the context of a socio-economic impact assessment. The size and routes changes of the weir, reservoir and equipment do not represent a change that will impact on the socio-economic environment of the study area. This conclusion applies to the Water Treatment Works as well, with the design works size now covering the entire extent to the site already considered in the original study.

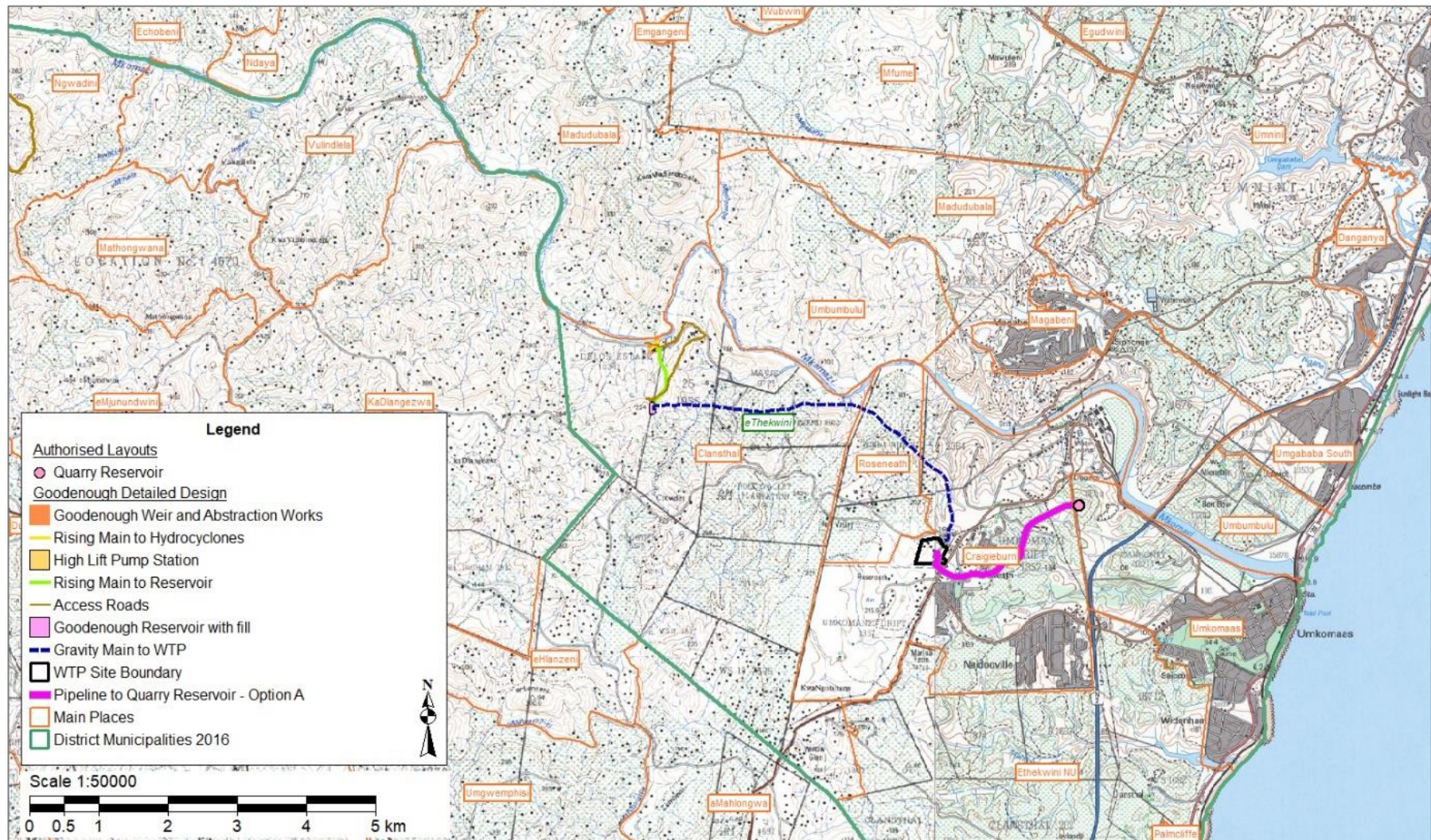


Figure 1: LUBWSS Amendment Layout Plan

3.1 Rationale for the Project

The Lower uMkhomazi Bulk Water Supply System (LUBWSS) is to augment water supply to the existing Upper and Middle South Coast Supply area.

The water demand in the Upper and Middle South Coast supply area in 2014 was 85MI/d on average, with peaks up to 110MI/d. A water demand analysis was carried out for the supply area which determined that a 30-year water demand projection will be between 155 to 205MI/d. This estimate was done whilst taking into account an estimate of 25MI/d suppressed demand in the supply area (due to infrastructure constraints), and took into account that Water Conservation and Water Demand Management: measures to save water, would be implemented in the supply area. Thus, the based on a medium growth scenario, the LUBWSS was sized to provide an additional average volume of 100MI/d (with a 130 MI/d designed peak capacity), to meet the future 30-year demand projection.

This rationale remains the same, despite the present amendment to the scheme.

3.2 Location

The Goodenough Weir and Abstraction Works, and Goodenough High Lift Pump Station are located on the uMkhomazi River.

A rising main then moves the water from the High Lift Pump Station to the Goodenough Reservoir.

A gravity main runs from the Goodenough Reservoir to a Water Treatment Plant (WTP) which will be located in the town of Craigieburn. From the Water Treatment Plant, a clean water rising main will move the treated water to the Quarry Reservoir, from where treated water will be distributed to users.

The LUBWSS gravity main traverses private land.

The project is located entirely within Ward 99 of the eThekweni Metropolitan Municipality. The Census 2011 subplaces that are affected by the project are listed in the table below.

Table 1: Census 2011 Sub-Places Affected by the Proposed Project

Sub-Place Name and Code	Project Component Affected
Clansthal – 599194001	Goodenough Weir, Pump Station and half of the length of raw water gravity main
Roseneath – 599193001	Portion of raw water gravity main
Craigieburn – 599195003	Remainder of raw water gravity main, WTP Sites 1 and 2, clean water gravity pipeline from WTP Site 2, portion of clean water gravity pipeline from WTP Site 1

Mkomanzi Drift SH - 599195002	Portion of WTP Site 1, portion of clean water gravity pipeline from WTP Site 1
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3.3 Description of Proposed Works and Alternatives

The changes to the components for the LUBWSS, which were investigated as part of this SEIA amendment are outlined below (**Table 1**). These components will be restricted to the two pipeline route changes, since these are relevant to the socio-economic environment.

Raw water from the Goodenough Weir will flow from the Goodenough Reservoir, along a seven-kilometre pipeline and under gravity, to a Water Treatment Works. The routing for this pipeline is shown in the figure below. This pipeline is approximately six kilometres long and runs across farming land past Roseneath and towards Craigieburn.



Figure 2: Route of Gravity Pipeline to the WTW Amendment

Once the water has been treated at the Water Treatment Plant, a pumped (or rising) pipeline will feed this treated water to the Quarry reservoir for distribution to users. The routing for this pipeline is shown in the figure below. This pipeline is approximately three kilometres long and runs through Craigieburn and out along the eastern boundary of the town, crossing active sugar cane fields along its route.



Figure 3: Route of Clean Water Pipeline Amendment

This socio-economic impact assessment does not consider the Go / No Go alternative. This alternative, to determine the socio-economic impact of not going ahead with the proposed development was considered in the original study.

4 METHODOLOGY

Socio-Economic Impact Assessment is an interactive process by nature which relies wholly on both desktop research as well as input from the community. This tool assists the community to be part of the environmental decision-making process, and empower communities to participate in decisions that will affect their livelihoods (DEAT, 2006).

The Australian Government Department of the Environment and Heritage (2005:5) states that Socio-economic Impact Assessment is a useful tool to help understand the potential range of impacts of a proposed change, and the likely responses of those impacted on if the change occurs.

A SEIA is used during the EIA process to identify and evaluate potential social, economic or cultural impacts of a proposed development. The SEIA recognises the important relationship between the economic, social and biophysical environment.

The SEIA will look at minimising adverse impacts of the proposed development while aiming to maximise the beneficial impacts. The SEIA sets out the socio-economic baseline, predicts impacts and makes recommendations for mitigation.

This amendment report has taken the approach of using the data from the original study and supplementing this with consultation with the Ward 99 councillor and a ward committee member.

4.1 Sourcing of Information and Data Analysis

The SEIA sets out the socio-economic baseline, predicts impacts and makes recommendations for mitigation. The socio-economic baseline level is based on both primary and secondary data. Primary data was collected directly from traditional leaders, community members, and private farmers. Secondary data was accessed through South African Databases, available reports and articles, internet searches and are referenced in the text and in the reference section of this report.

The profile of the baseline conditions includes determining the current status quo of the community, including information on a number of social and economic issues such as:

- Demographic factors;
- Socio-economic factors such as income and population data;
- Access to services;
- Institutional environment;
- Social Organisation (Institutional Context); and
- Statutory and Regulatory Environment.

4.1.1 Public Participation

Affected landowners and members of the public were given an opportunity to comment on the project during the public participation process carried out during the EIA. Comments and responses used during this process have been included into this report and have formed the basis for the socio-economic impacts considered in this report.

4.1.2 Primary Data

A consultation session was held with the eThekweni Metropolitan Municipality Ward 99 councillor and a ward committee member. This session aimed to determine the attitudes of the affected community to the project and the degree of knowledge surrounding the project.

This data was supplemented by a site visit of the area affected by the pipeline route changes.

4.1.3 Secondary Data

An assessment of the scoping phase was conducted provide an understanding of the project details, location and possible impacts.

The required information was collected using different sources Statistics South Africa Census data and a through the review of relevant municipal, district and other literature.

The discussion of the demographics and the development profile of the municipality is carried out using Census 2011 data produced by Statistics South Africa.

The Census 2011 data is the most comprehensive dataset available for the area, and it is currently the best data at hand. The analysis will be conducted using the Census 2011 municipal data as the project area is vast. The ward and municipal data have been extracted using the project GIS, and the data for the affected areas will be presented in tables and figures throughout the report.

In addition to data sources, a review of existing literature on similar projects was conducted. The literature reviews of similar project in South Africa and international projects provides an invaluable comparative analysis.

4.1.4 Geographic Information System

A Geographic Information System (GIS) was used to conduct an analysis of the area. The use of GIS brings together the demographic and economic data to enable a thorough analysis.

4.2 Impact Assessment

Impact assessments allows for an estimate of the significance of the identified social and economic impacts to those who will be affected. In addition, the response of the affected parties to such impacts also needs to be clarified (Centre for Good Governance, 2006). All

impacts will be analysed with regard to their nature, extent, magnitude, duration, probability and significance (Barbour, 2007). Section 7 lists the definitions that apply to the impact assessment.

The determined impacts are clustered around a common issue and are assessed before and after mitigation. The identification of the socio-economic impacts associated with the project is issues-based, with the main headings referring to a common theme addressing several related impacts. Under each of these issues the specific impacts and potential mitigation strategies are discussed for pre-construction, construction, operation and decommissioning phases.

4.3 Assumptions and Limitations

- It is assumed that information obtained during the public participation and primary data phase provide a comprehensive account of the community structure and community concerns for the project;
- The study was done with the information available to the specialist at the time of executing the study, within the available time frames and budget. The sources consulted are not exhaustive, and additional information which might strengthen arguments, contradict information in this report and/or identify additional information might exist. However, the specialist did endeavour to take an evidence-based approach in the compilation of this report and did not intentionally exclude information relevant to the assessment.
- It is assumed that no relocation of families or people will take place for this project.

5 SITUATIONAL ANALYSIS

5.1 Land use

The land use along the project components is described in this section per project component (Figure 4 and Figure 5).

Goodenough Reservoir to Water Treatment Plant:

This six-kilometre pipeline, running from the Goodenough Reservoir for to the Water treatment plant, past Fountain View Road has an agricultural land use with areas of planted fields and of forestry.

The gravity line passes a private dwelling in the vicinity of Fountain View Road at approximately 650m.

The pipeline crosses a gravel road at approximately 1 150m. The pipeline cuts across ploughed fields and farm access roads at between approximately 1 500 and 1 800m along this section.



Figure 4: Gravity Main Routing – Western Section

At approximately 3 700m, the pipeline enters the vicinity of Roseneath, where it crosses a further gravel road at 4 100m.

From this point onwards the land use changes into undeveloped agricultural land, until it reaches the water treatment plant site.

At 4 500m the pipeline passes to the east of a small settlement on the northern outskirts of Cragieburn. The pipeline enters the site of the Water Treatment Plant at approximately 5 600m.

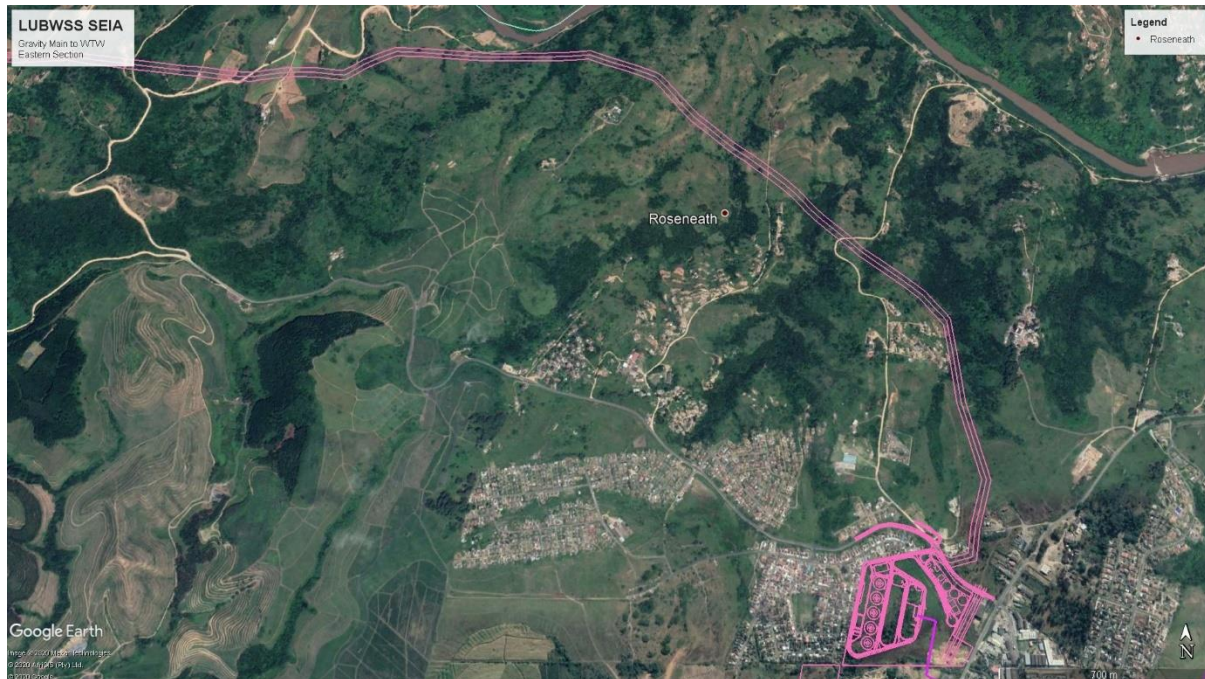


Figure 5: Gravity Main Routing – Eastern Section

Rising Main from Water Treatment Works to Quarry Reservoir:

The pipeline route runs across the R197 at approximately 230m, and runs through an undeveloped area until it crosses a residential housing development at approximately 620m. From there it crosses undeveloped land, past a road freight depot until it exits the town to the east. The crossing of the residential housing development is likely to be disruptive to the developed and should be planned in well in advance of the crossing to allow the owner to plan adequately.

At approximately 890m, the line passes a private house which contains the Mega Fitness Gym. This western section of the pipeline is shown in Figure 6 below.



Figure 6: Gravity Main to Quarry Reservoir – Western Section

The pipeline passes to the west of the Sappi Training Centre at 1 950m. This set of buildings used to be an Emmanuel church until it was taken over by Sappi. The pipeline makes a final crossing of a gravel road at 2 600m prior to reaching the Quarry Reservoir. This eastern section of the pipeline is shown in Figure 7 below

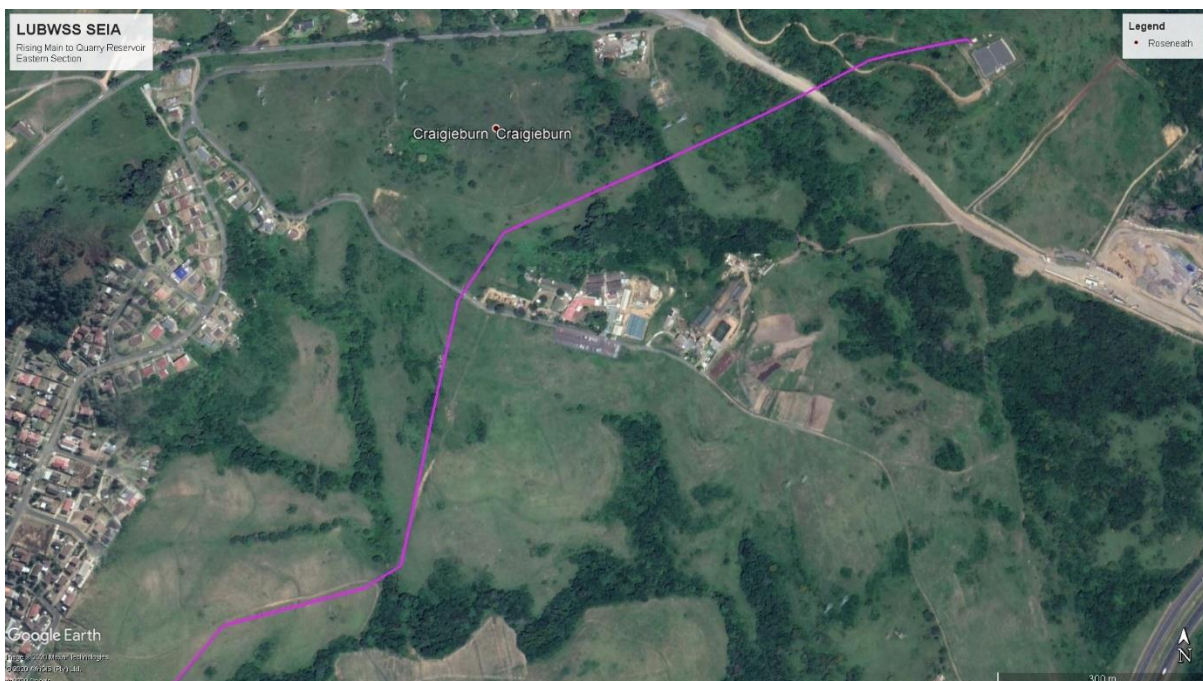


Figure 7: Gravity Main to Quarry Reservoir – Eastern Section

This pipeline is approximately 2 800 m in length, where the length is measured from the start of the pipeline, within the WTW site.

5.2 Study Area Overview

The following section provides a detailed description of the social and economic environment of the study area at sub-place level.

The project is located within the eThekweni Metropolitan Municipality, specifically in Ward 99. Ward 99 has a much larger extent than the project scope, thus it is more meaningful to present the socio-economic overview at a small scale: that of sub-places.

The figure below shows the sub-places that have been considered as part of this assessment.

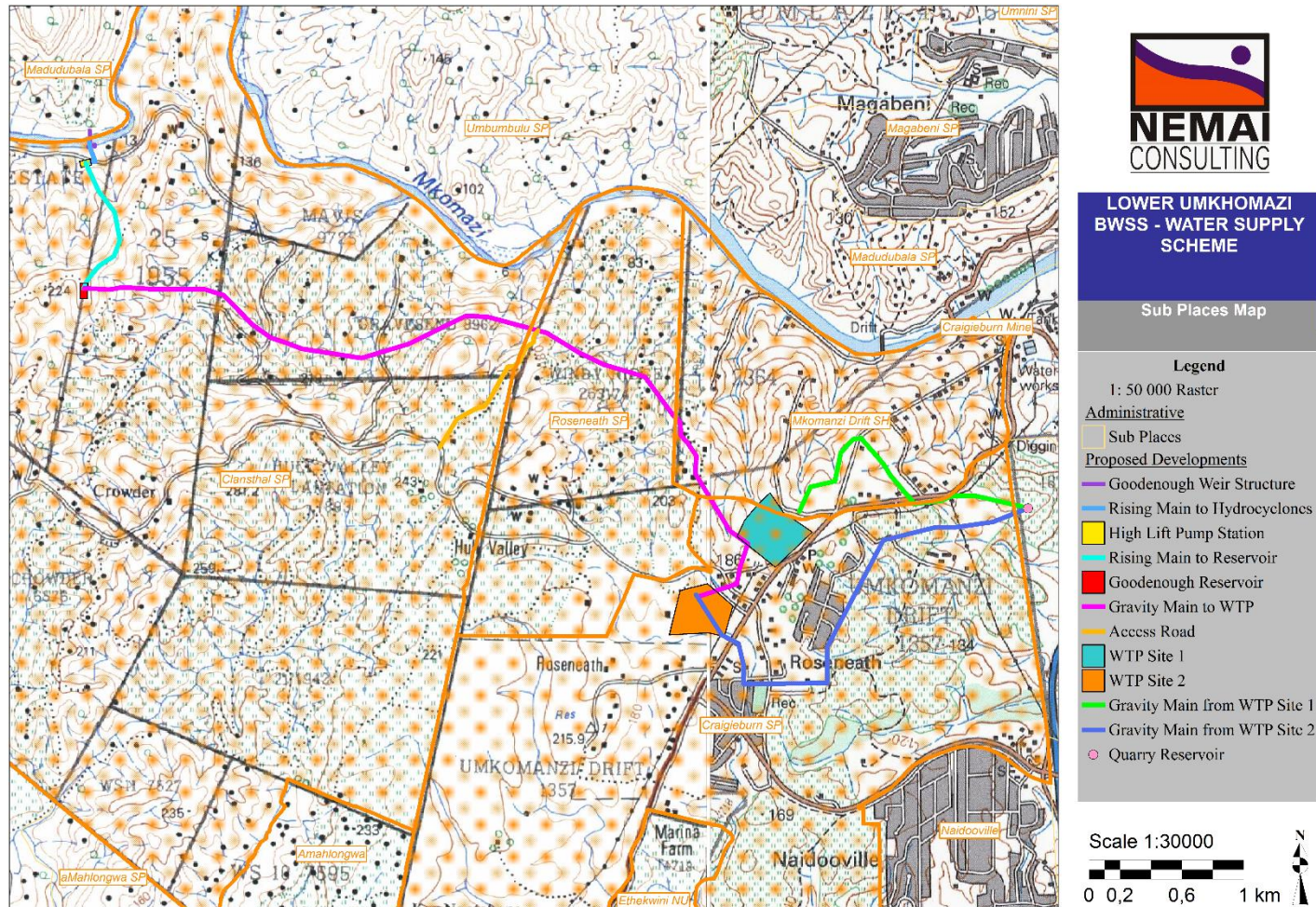


Figure 8: Study Area Municipal Wards and Sub-Places

5.2.1 Population Data

The population of the study area, as determined during Statistics South Africa’s Census 2011, is presented in the pie chart below.

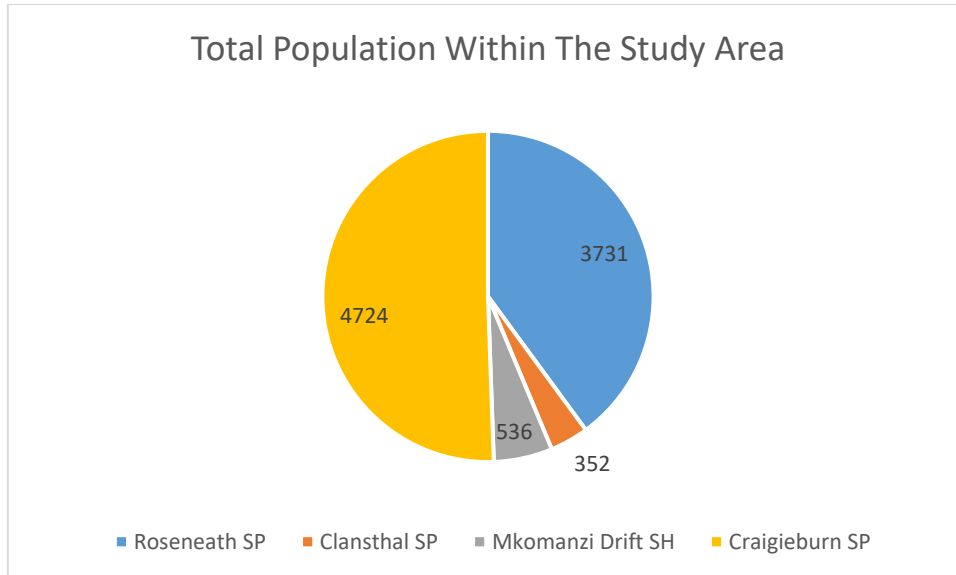


Figure 9: Population Data in the Study Area

Craigeiburn, being the only urban area affected by the project has the highest population, at 4 724, Roseneath, having a peri-urban nature, is the next most populated, at 3 731 people. The most rural sub-place, Clansthal, is the least populated, at 352 people.

The figure below shows the number of households in the study area.

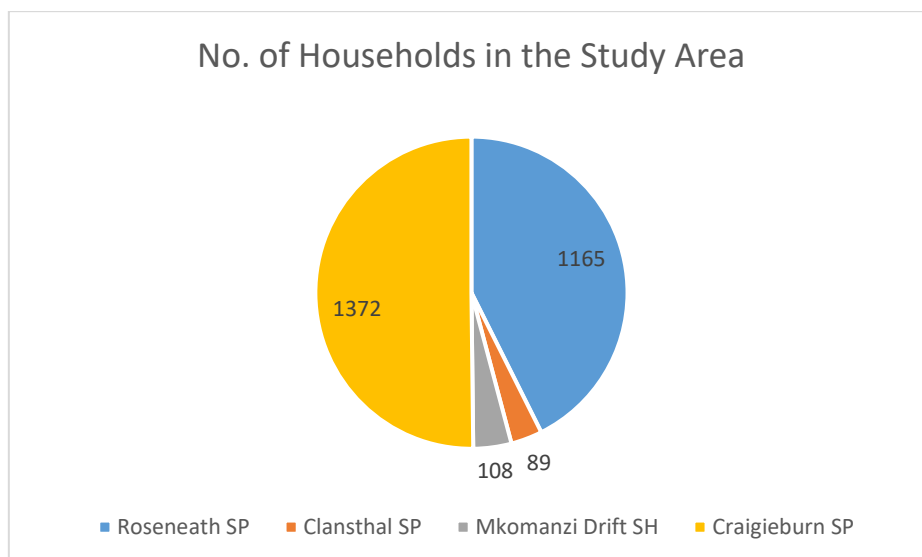


Figure 10: Household Data in the Study Area

The data on the number of households in each sub-place mirrors the population size. Using the population size and the number of households, it is possible to calculate the average household sizes in each sub-place. There are as follows:

- Roseneath – 3.2 persons per household;
- Clansthal – 4.0 persons per household;
- Craigieburn – 3.4 persons per household; and
- Mkomanzi Drift SH – 5.0 persons per household.

5.2.2 Dwelling Type

The characteristics of the dwellings in which households live and their access to various services and facilities provide an important indication of the well-being of household members. It is widely recognised that shelter satisfies a basic human need for physical security and comfort.

According to the Statistics South Africa household classification the following definitions apply to formal and informal housing (**Figure 10**):

- **Formal dwelling** refers to a structure built according to approved plans, i.e. house on a separate stand, flat or apartment, townhouse, room in backyard, rooms or flatlet elsewhere. Contrasted with informal dwelling and traditional dwelling; and
- **Informal dwelling** is a makeshift structure not erected according to approved architectural plans, for example shacks or shanties in informal settlements or in backyards.

The chart below shows the dwelling types located within the study area.

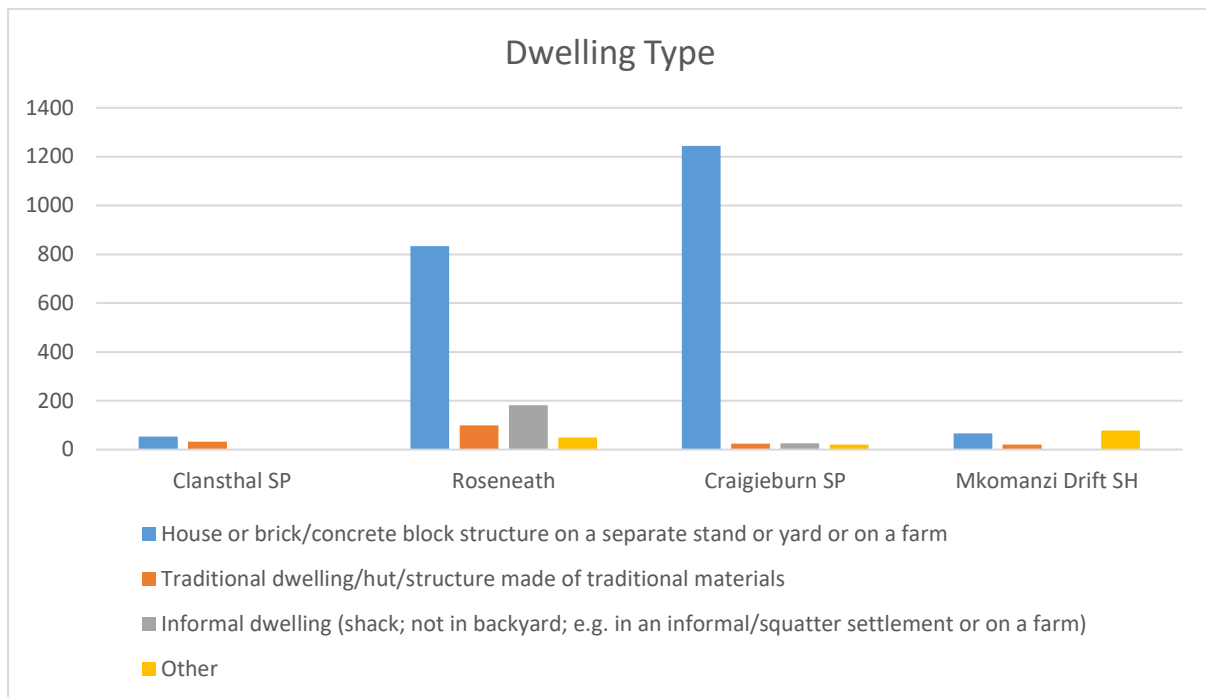


Figure 11: Type of Dwelling

It is apparent that the vast majority of the inhabitants of the study area live in formal, brick dwellings. There are areas where informal settlements exist, notably Roseneath, where there are 182 informal dwellings in the sub-place, fifteen percent of the total. Overall, in the study area, eight percent of the dwellings are informal.

In this sense, standards of living are high and the relative lack of informal dwellings indicate a population that is not transient.

5.2.3 Access to Piped Water

Understanding the water supply at a household level provides insight into the municipal level of service of a community as well on the standard of living. The graph below, which summarises Statistics South Africa’s Census 2011 data, shows the use of the various water supply standards within each of the sub-places.

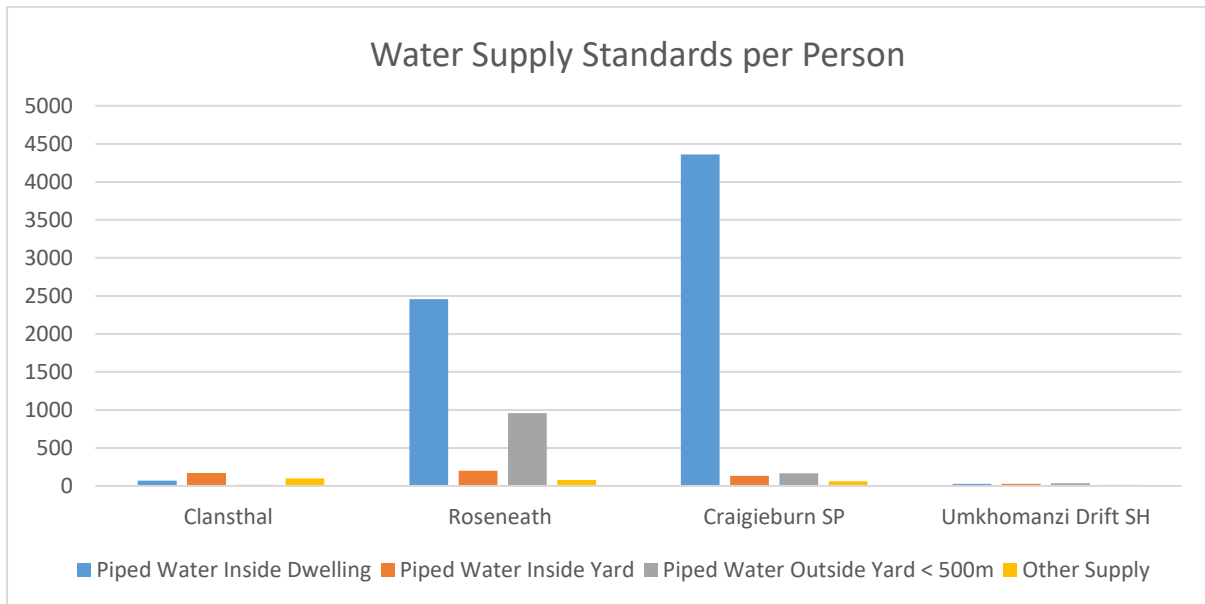


Figure 12: Access to Water in 2011

The majority of the supply area is dominated by a piped water supply inside homes. The exception to this rule is Roseneath where informal settlements are most common and thus there are more households with a water supply point outside the yard.

5.2.4 Sanitation

Access to sanitation services is also an indicator of the standard of living amongst the population in the sub-places. The graph below, which summarises Statistics South Africa’s Census 2011 data, shows the use of the various sanitation standards within each of the sub-places.

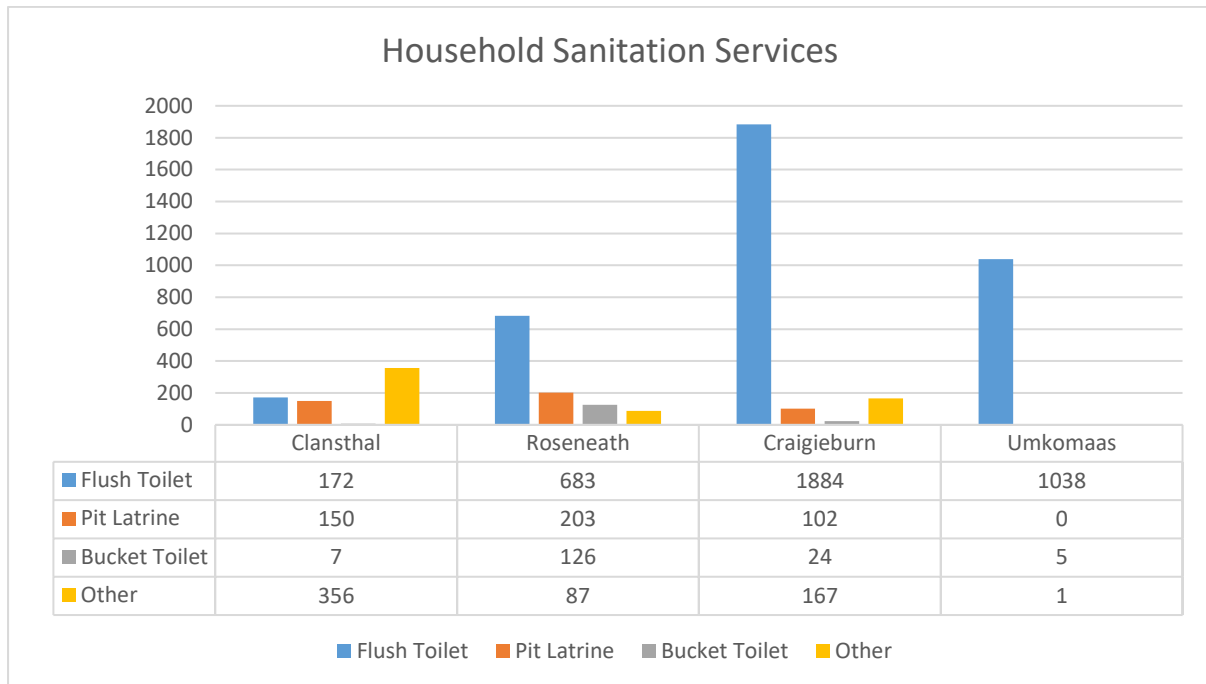


Figure 13: Access to Sanitation Services in 2011

Majority of households in the sub-places use flush toilets. In the rural sub-places of Clansthal and Roseneath, pit latrines and other systems of sanitation are prevalent.

5.2.5 Education

Education levels are assessed in order to understand the potential grade or level of employment as well as livelihood of the community. Furthermore, it indicates the functional literacy and skill level of a community. The graph below provides detail on the education levels within the study area. The figures are taken from Statistics South Africa’s Census 2011.

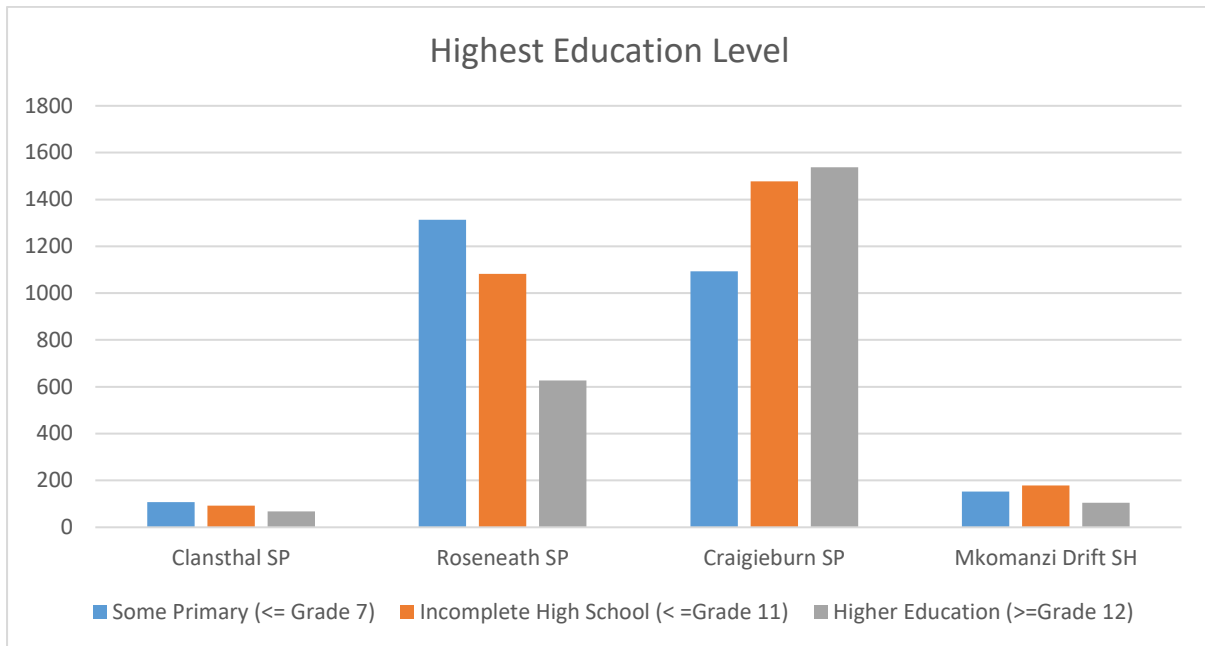


Figure 14: Highest Educational Level by Person Age 20+ in 2011

The graph shows that seventy percent of the inhabitants of the study area have not achieved matric. The remaining thirty percent have achieved matric or have a post matric qualification. The table below provides more detail on the relative levels of education within the study area.

Table 2: Education Levels within the Study Area

Education Level	Clansthal	Roseneath	Craigieburn	Mkomanzi Drift SH
Some Primary (< Grade 7)	40%	43%	27%	35%
Incomplete High School (< Grade 11)	34%	36%	36%	41%
Higher Education (>=Grade 12)	25%	21%	37%	24%

Craigieburn is the sub-place with the highest level of education, where 37% of the population have achieved a matric pass or a higher level of qualification. Clansthal, Roseneath and Mkomanzi Drift SH follow with 25%, 21% and 24% of the population above 20 years old achieving matric or higher.

This data is consistent with the living standards measures presented above.

Economic theory proves that education improves the level and quality of human capital, in turn increasing the productivity of individuals. Thus, increasing the output generated per worker. Education facilitates long term growth and is critical to escape the poverty trap.

Economic theory is proven in practice in a study conducted by Altbeker and Storme (2013). The study shows that while the number of graduates in South Africa has more than doubled

in the past fifteen years; the unemployment rate amongst graduates has declined to around five percent.

Furthermore, the study shows that the employment rate improves as the years of completed education increase (**Figure 15**) (Evelien & Altbeker, 2013). The study demonstrated that only thirty-three percent of those who had less than secondary education (eleven years or fewer) had jobs. This rose by twenty percent on completion of secondary school. With one extra year of education after secondary school, employment increased to seventy-one percent. Those with qualifications that take longer than one year after matric experience improving employments rates, until post-graduate degree holder's employment rate, which was the highest at ninety-six percent (Evelien & Altbeker, 2013).

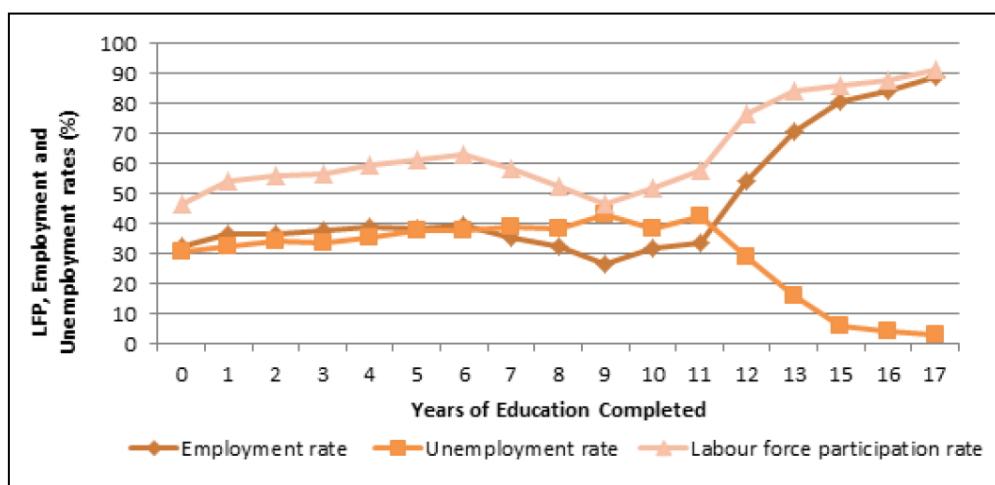


Figure 15: Labour force participation, employment and unemployment rates by years of education (2007)

The education levels in the study area demonstrate that most inhabitants have achieved less than eleven years of education, and the Altbeker and Storme study indicates that the study area is thus likely to be structurally geared towards high unemployment and thus higher levels of poverty.

The community is economically dependent on approximately thirty percent of the population who have completed high school or received a higher education.

The low education levels in the study area indicated a perpetuating cycle of low income and thus perpetuating low education rates. This structural problem requires intervention of an external entity to improve current education levels. A generation of youth with some form of higher education is required to break the poverty cycle in this area.

5.2.6 Annual Household Income

Annual household income is important to assess as it provides information on the poverty level of the community. Unskilled communities tend to generate low incomes per household than higher skilled communities (**Figure 15**).

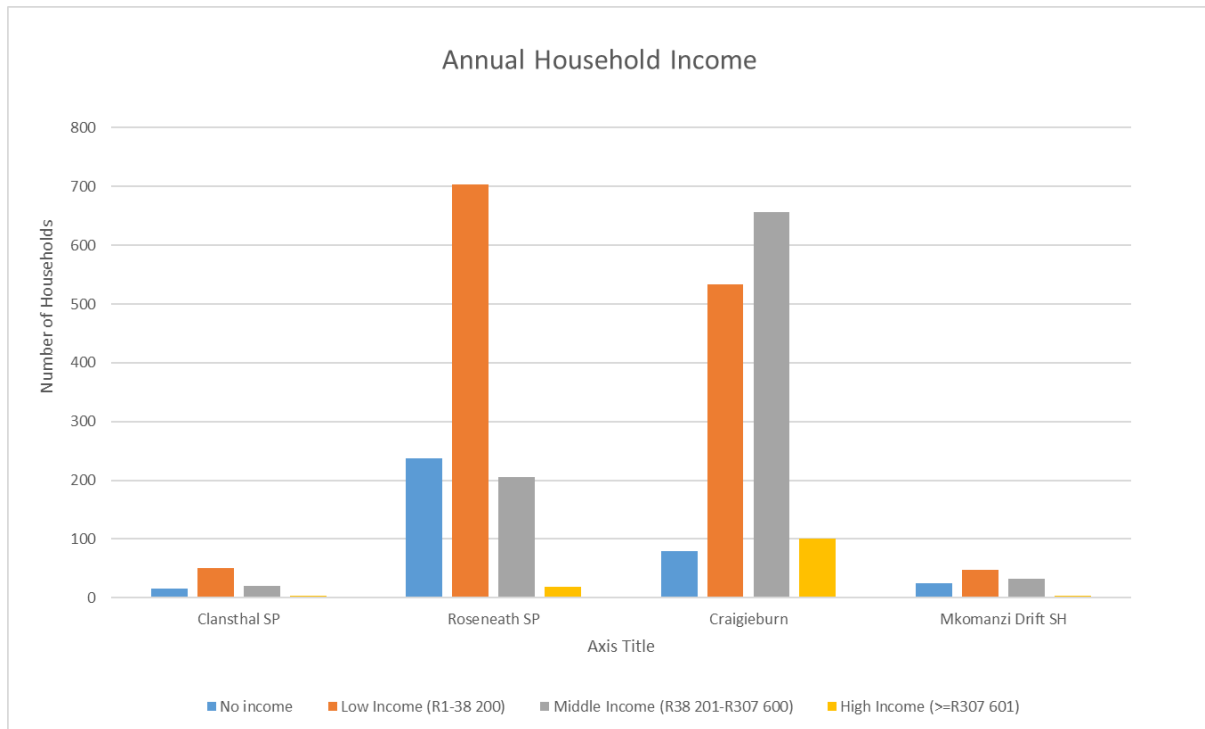


Figure 16: 2011 Annual Household Income

The graph demonstrates that a substantial portion of the Clansthal, Roseneath and Mkhomazi Drift SH sub-places have no or low household income. These communities are poor communities for whom additional employment opportunities would be highly beneficial.

The community of Craigieburn is relatively wealthier and this is mirrored by the data on education.

The table below provides additional detail on the household incomes of the sub-places.

Table 3: Household Income within the Study Area

Education Level	Clansthal	Roseneath	Craigieburn	Mkomanzi Drift SH
No income	17%	20%	6%	23%
Low Income (R1-38 200)	57%	60%	39%	44%
Middle Income (R38 201-R307 600)	23%	18%	48%	30%
High Income (R307 601-R614 400)	3%	2%	7%	3%

In Clansthal and Roseneath, 74% and 80% of the population have no or low income. The poverty levels in these two areas are the most acute in the study area.

Of particular note in the table above are the figures for households with “No Income”. Statistics SA in their publication “Income Dynamics and Poverty Status in Households in South Africa, Census 2011”, (Statistics SA: 2015) define income as being “...all money received from salary,

wages or own business; plus money benefits from employer, such as contributions to medical aid and pension funds; plus all money from other sources, such as additional work activities, remittances from family members living elsewhere, state pension or grant, other pensions or grants, income from investments, etc. The census question asks for the total before tax.”

This definition implies that just less than twenty percent of the households in Clansthal, Roseneath and Mkhomazi Drift receive zero income. To explain this level of income there are three possibilities: the households have either unreported their income; or rely on charity donations of goods; or use subsistence farming to sustain the household’s food and water needs.

5.2.7 Employment

Census 2011 uses the following definitions applicable to employment that are useful for reference purposes:

- “Employed - Those who performed work for pay, profit or family gain for at least one hour in the seven days prior to the interview or who were absent from work during these seven days, but did have some form of paid work to return to”;
- “Economically Active Person - A person of working age who is available for work, and is either employed, or is unemployed but has taken active steps to find work in the reference period”. These are the sum of the employed and unemployed persons;
- “Unemployed – Those people within the economically active population who: (a) did not work during the seven days preceding the census, (b) want to work and are available to start work within two weeks of the interview, and (c) have taken active steps to look for work or start some form of self-employment in the four weeks preceding the census night.”; and
- “Other Not Economically Active – People who are not available for work such as full-time scholars and students, full-time homemakers, those who are retired and those who are unable or unwilling to work”; and

The reported employed and unemployed person in the sub-places is reported in the graph below. These figures use the official definition for unemployment. The sum of the employed persons and the unemployed persons is the actual labour force at the time of the census.

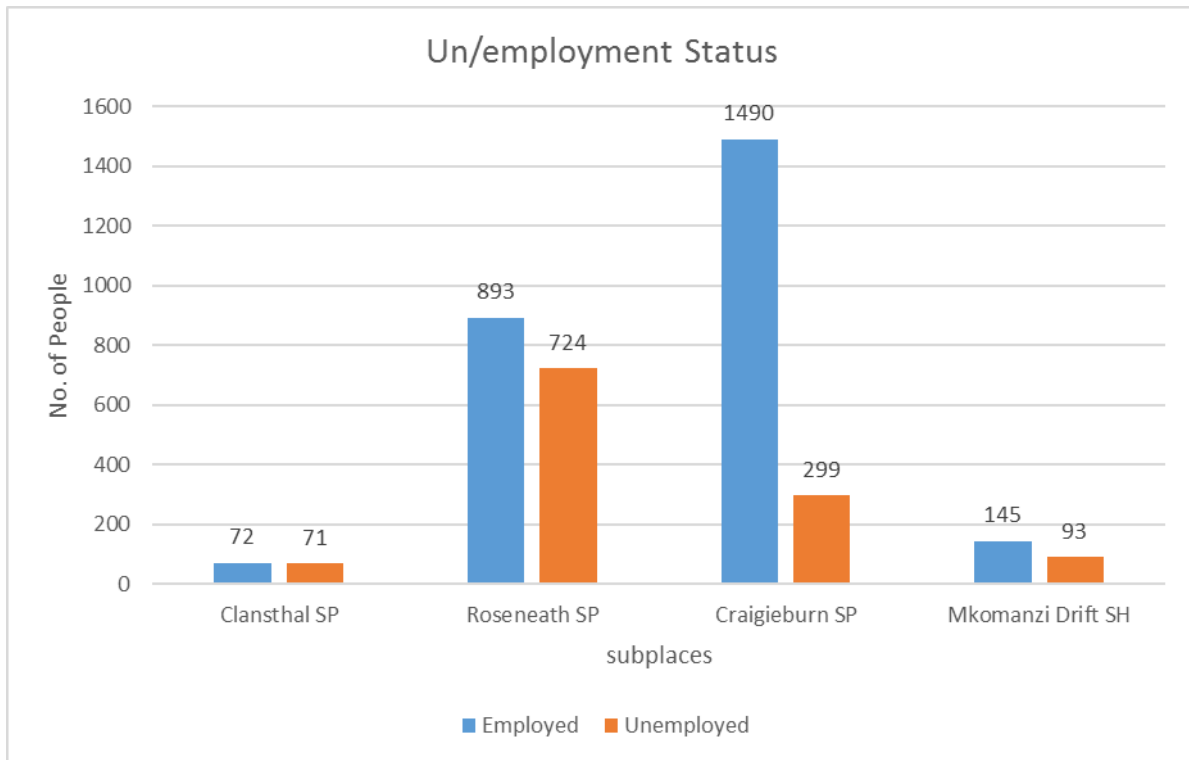


Figure 17: 2011 Employment Status

The graph shows that the unemployment rate is lowest in Craigieburn (at 17%) and highest in Clansthal (at 50%) and Roseneath (at 45%). This data accords with that on household income as well as education: where the employment rate is low, education levels are low and hence household income is low.

Using data collected in the Census, it is possible to arrive at an estimate of the potential labour force in the study area. Once the potential labour force is estimated, the degree to which this labour force is employed can be calculated. This provides a measure of the degree to which the community is deployed in the economy and indicates the degree of engagement with economic system in each community.

The means for calculating this estimate is to take the entire population of each sub-place, and subtract from it: the people who are not economically active; and the people who are underage (less than 15 years old). This provides the figure the report refers to as the potential labour force. The ration between current employment and the potential labour force gives the estimate: potential labour force employment rate. The results of this calculation are contained in the graph below.

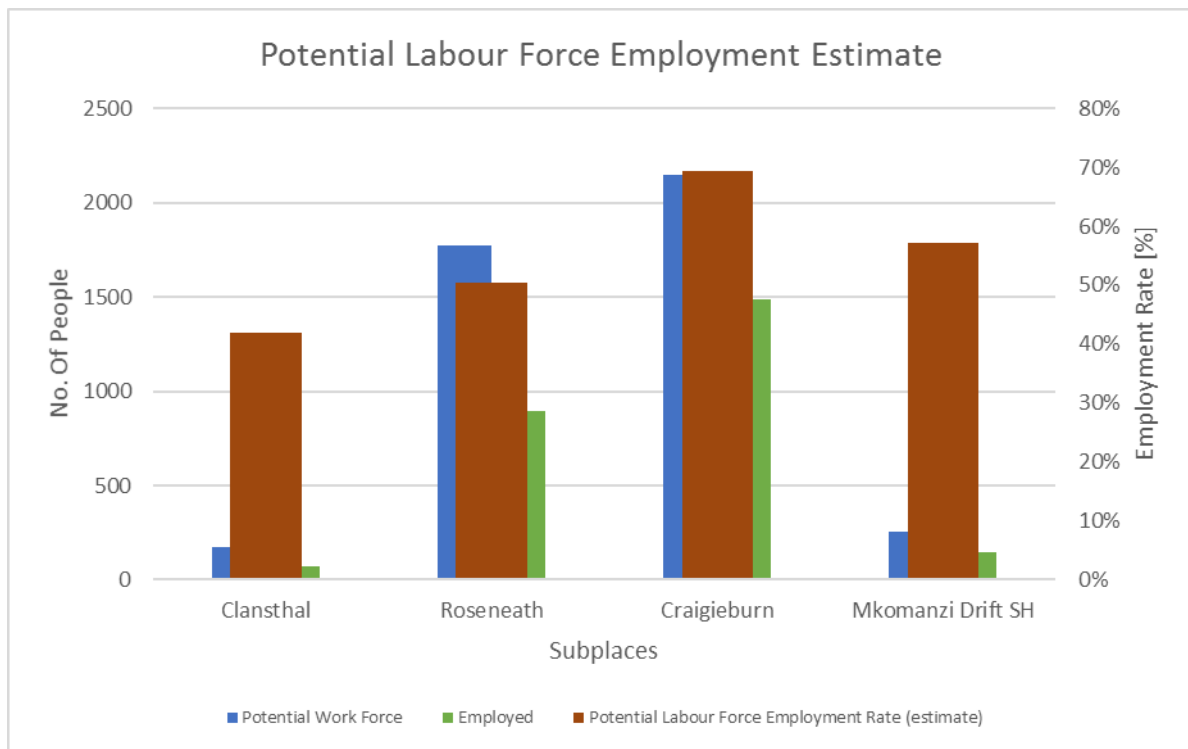


Figure 18: Potential Labour Force Employment Rate

The graph shows that the degree of engagement with economy is lowest in Clansthal, which indicates that forty-two percent of the potential labour force of Clansthal is employed. This accords with the rural nature of the community, where people are employed in agricultural activities only to the extent that they can find jobs. Rural areas generally tend to export their labour force to urban areas, resulting in monetary remittances from urban to rural areas and a high proportion of inhabitants who are not part of the economic system.

The potential labour force employment for Roseneath is at 50%. This indicates a labour sending area: an area where people live to be employed at the closest urban centre. These are economic migrants who live in close proximity to labour absorption areas in order to be employed and access services such as schools and healthcare.

Craigeiburn and Mkomanzi Drift SH are labour absorbing areas where people live and work in urban settings. In these settings, people choose whether or not they form part of the labour force and there is generally more wealth in the communities to support this choice. As a result, the figures for potential labour force employment are similar at 69% and 57%.

5.3 Stakeholder Engagement

The following stakeholder engagement was carried out as part of either the public participation process of the EIA or as part of this SEIA.

5.3.1 Contact with Directly Affected Landowners

Contact with directly affected landowners has been conducted as part of the Public Participation process of the Environmental Impact Assessment. During this process individual meetings were held with many landowners, as well as there being telephonic discussions and two public meetings. During these interactions, the following socio-economic issues related to the proposed project were identified.

- Queries were raised regarding operational **noise** from the pump-stations;
- A query was raised with regards to **lighting** levels at the rural components of the project infrastructure;
- Many landowners were concerned about **financial compensation** for the loss of use of their land or crops. This concern was aligned to previous experience which suggested other developers had in the past been slow to compensate landowners for losses suffered as a result of their projects. These concerns centred around purchase of affected land or servitudes at reasonable prices and compensation for loss of crops. Causes of impact in this regard would be the construction of physical infrastructure on the affected land, access requirements (roads and paid down areas) for this infrastructure as well as the impact of rising water levels;
- **Security issues** were raised by many participants. Concerns with regards to the impact upon security of contractors being present in the area for up to two years, concerns that the project would increase public access to their properties. Related to this issue were concerns with regards trespassing on private land as well as construction working hours;
- Concerns with regards to the project not **reducing their access to amenities** such as the weir for fishing purposes and the river for similar purposes. Concern was raised that, as a result of the project, fishing in the weir would be prohibited;
- **Traffic conditions** were raised as an issue. Many of the roads in the project area are gravel and the impact on these roads, and on public safety, of many more trucks being present were raised. In addition, parking for construction vehicles was raised as being a concern as well as damage to roads during rainy periods;
- **Access to the weir** was raised by several participants. The weir is used as a crossing point, particularly for funerals, and concern was raised that this practice would be halted as a result of the project;
- A landowner raised an issue to do with **crop health**. He stated that the potential for the spread of harmful disease from one area of crops to another is possible. The suggested mitigation measure was not to have work teams working in all areas, all at once;
- **Damage to private property** as a result of contractor action were raised as a concern, such damage would affect the operational efficiencies of farms; and

- The ability of the project to create **direct economic benefits** in the form of local spend and local employment was raised. Participants preferred to see as such as possible of the project budget to be spent locally.

With regards to the amended rising main route from the Water Treatment Works to the Quarry Reservoir, there is a level of concern from within the community. The pipeline crosses land portions 1, 2 and 6 of Erf 3182. These properties are held in trust and are currently undergoing development. At the time of the site, in July 2020, a one storey housing development was being constructed on the sites.

There are other properties affected by the proposed route that are objected to be the landowners in the groups that the pipeline will sterilise future development. These properties include those of Portion 495, 496, 497 and 663 of Erf 1357.

6 IDENTIFICATION OF ACTIVITIES, ASPECTS AND IMPACTS

The methodology for the identification of impacts was threefold. Firstly, an assessment of the scoping phase took place. This was followed a desktop analysis. Finally, a stakeholder and site analysis were conducted.

The assessment of the scoping phase was important to understand the project details, location and possible impacts. In this section, the Geographic Information System was used to conduct a thorough analysis of the area. Project details were understood and located.

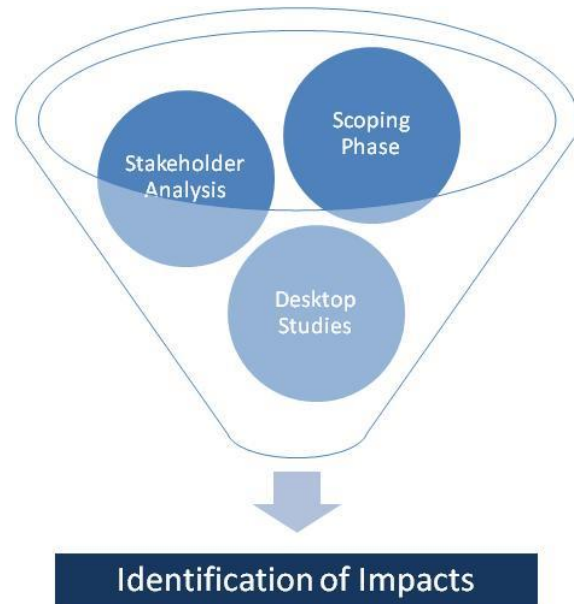
The second aspect to the identification of impacts was a desktop study. Data on the community such as population statistics; health; education; and services were analysed using Census 2011 data. The economic environment of the community was also analysed. A desktop study is important to understand the social and economic conditions of the area. It also allows

one to identify the challenges faced by the community. Not only does the desktop study facilitate site visits; it also directs the discussion during interviews.

Finally, stakeholder engagements were conducted in the form of interviews with directly affected landowners. The Scoping Phase Comments and Response Report and subsequent stakeholder engagements provided valuable insight on interested and affected party's views on the project. Using this methodology, aspects were identified from the activities that proposed. These aspects have triggered impacts which will be discussed in Section 7. In order to contextualise the impacts, the activity and aspects have been outlined and discussed below.

According to ISO 14001-2004 4.3.1 Environmental Aspects; the Organisation shall establish, implement and maintain a procedure(s)

- To identify the environmental aspects of its activities, products and services within the defined scope of the environmental management system that it can control and those it can influence taking into account planned new developments or new or modified activities, products and services, and
- To determine those aspects that have or can have significant impact(s) on the environment (i.e. significant environmental aspects) (International Organization for Standardization, 2011).



6.1 Identification of Activities and Aspects

An “Activity” is defined as a distinct process or risks undertaken by an organisation for which a responsibility can be assigned. Activities also include facilities or pieces of infrastructure that are possessed by an organisation (International Organization for Standardization, 2011).

The activities identified for the amendment application, and which have been previously considered in the original study, for the project are listed below as either high risk or lower risk to the socio-economic environment.

High Risk Activities:

- Land and Servitude Rights Acquisition;
- Construction Works
 - a gravity pipeline to the Water Treatment Plant;
 - a clean water pumped pipeline from the Water Treatment Plant to Quarry Reservoir.

Lower Risk Activities:

- Construction Works
 - of access road and upgrading/maintaining existing roads; and

An aspect is defined as elements of an organisation’s activities or products or services that can interact with the environment.

In order to capture the impacts associated with the proposed infrastructure, an activity – aspect – impact table was created (Table 4). The table presents an overview of the impacts associated with aspects during the various stages of the project. Some impacts, including their mitigation measures, are thereafter discussed in detail while the remaining impacts not discussed in this report are addressed in a separate specialist study as part of the EIA study. If the impact is not significant then no further investigation is recommended.

Table 4: Activity, Aspects and Impacts of the Amendment

Activity	Aspect	Potential Impact
Land and Servitude Rights Acquisition	Land Acquisition	Partial loss of livelihood on the part of landowners
	Servitude Rights	Reduced access to productive land
	Alteration of land use	Sterilisation of development within Craigieburn Visual Impact
Construction Phase	Access into properties	Security Concerns
		Damage to property or equipment
		Damage or wear to access roads
	Improvement of access in the project area	
	Trenching and Pipelaying	Proximity to construction work and associated inconvenience and dangers.

Activity	Aspect	Potential Impact
	Earthworks and Roadworks	Employment of local people
		Sourcing of equipment, machinery and services locally
		Noise
		Dust
	Concrete and Civil Works	Noise
		Influx of workers
		Employment of local people
		Sourcing of equipment, machinery and services locally
		Temporary road closures
	Transport of goods to site and employment of staff	Increased traffic
		Security
		Improved access to amenities

6.2 Impacts and Mitigation Framework

ISO 14001-2004 defines impacts as “any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization’s environmental aspects”.

When considering an assessment of the impacts, the following definitions apply.

Nature	The project could have a positive, negative or neutral impact on the environment.
Extent	<p>Local – extend to the site and its immediate surroundings.</p> <p>Regional – impact on the region but within the province.</p> <p>National – impact on an interprovincial scale.</p> <p>International – impact outside of South Africa.</p>
Magnitude	<p>Degree to which impact may cause irreplaceable loss of resources:</p> <p>Low – natural and social functions and processes are not affected or minimally affected.</p> <p>Medium – affected environment is notably altered; natural and social functions and processes continue albeit in a modified way.</p> <p>High – natural or social functions or processes could be substantially affected or altered to the extent that they could temporarily or permanently cease.</p>
Duration	<p>Short term – 0-5 years.</p> <p>Medium term – 5-11 years.</p> <p>Long term – impact ceases after the operational life cycle of the activity either because of natural processes or by human intervention.</p> <p>Permanent – mitigation either by natural process or by human intervention will not occur in such a way or in such a time span that the impact can be considered transient.</p>
Probability	<p>Almost certain – the event is expected to occur in most circumstances.</p> <p>Likely – the event will probably occur in most circumstances.</p>

	<p>Moderate – the event should occur at some time.</p> <p>Unlikely – the event could occur at some time.</p> <p>Rare/Remote – the event may occur only in exceptional circumstances.</p>
Significance	<p>Provides an overall impression of an impact’s importance, and the degree to which it can be mitigated. The range for significance ratings is as follows-</p> <p>0 – Impact will not affect the environment. No mitigation necessary.</p> <p>1 – No impact after mitigation.</p> <p>2 – Residual impact after mitigation.</p> <p>3 – Impact cannot be mitigated.</p>
Mitigation	<p>Information on the impacts together with literature from social science journals, case studies and field work will be used to provide mitigation recommendations to ensure that any negative impacts are decreased and positive benefits are enhanced.</p>
Monitoring	<p>Monitoring usually involves developing and implementing a monitoring programme to identify deviations from the proposed action and to manage any negative impacts. The recommended mitigation measures will also include monitoring measures.</p>

The assessment of social impacts is complex because of the multi-dimensional nature of human interactions, where an impact can a group of stakeholders differently. There is also the inter-connectedness of impacts, whereby a number of impacts are related and when assessed cumulatively, the implications may be of significance.

The impact assessment scores both before and after mitigation were arrived at by the specialist team engaging in a modified version of the Delphi technique, where the team discussed the scores, and through a process of iteration arrived at a consensus for each of the values. Where additional information was needed to make a determination, the technique would be halted, the necessary information would be uncovered and included in the report, and the technique would be recommenced.

6.3 Impact of Providing Additional, Secured Water Supply

The socio-economic benefits of a secure water supply are fundamental to the project. These benefits will accrue to the residents Upper and Middle South Coast Supply Area.

The United Nations Educational Scientific and Cultural Organisation highlight socio-economic development processes depend upon the human’s use of water since water is a basic essential biological element to humanity.

Serious water shortages may simultaneously be accompanied by chronic illness; thus putting pressure on the hospitals and clinics. Sufficient water supply minimises the spread of diseases within the economy and increases the livelihood status of the individual. Further, water supplies the individual the opportunity to do every day activities such as drinking water, cooking, bathing and cleaning. The ability to prepare healthy food ensures sustenance and strengthens the immune system.

A secure water supply is a basic human need and is an economic good. It contributes substantially to economic growth, thus the service and management of it should be constantly reviewed. Without water, the human system and economic productivity will decline dramatically, because of the positive relation between population and economic growth. A growing economy is most likely to attract other infrastructure investments and result in better education, which uplifts the social status of the economy.

A secure water supply reduces expenditure on health-related costs in a society. In most developing countries people spend at least a third of their income on medical costs mostly from water related diseases such as malaria and diarrhoea. Thus secured water helps the population in redistributing their incomes to other sectors such as education, it increases productivity since time spent on health care matters can be spent on other activities such as harvesting and education (Bloom and Sachs; 1998).

Economies with safe access to secured water enjoy a positive annual growth on average.

Agricultural production, even on a subsistence level, thrives with a secured water supply. Thus, increased water supply reduces food security pressure. These benefits are all realised through an increase and secure water supply.

Environmental Feature		Impacts Created by Providing a Secure, Sufficient Water Supply				
Project life-cycle		Operational Phase				
Potential Impact		Proposed Management Objectives / Mitigation Measures				
Economic		<ul style="list-style-type: none"> • Increased productivity; • Increased education levels; • More flexible economy 				
Social Benefits		<ul style="list-style-type: none"> • Reduces disease burden; • Reduced food security challenges in affected communities 				
	Nature	Extent	Magnitude	Duration	Probability	Significance
Before Mitigation	Positive	Regional	High	Long Term	Likely	3
After Mitigation	Positive	Regional	High	Long Term	Likely	3
Significance of Impact and Preferred Alternatives	<p>Mitigation is not necessary for this positive impact.</p> <p>This mitigation measure does not influence the alternatives considered in the study.</p>					

6.4 Impact Owing to Routing and Site Selection

The implementation of the proposed project could have an impact on landowners in that land would need to be acquired, and servitudes registered for the various project components.

Landowners would have a reduced area of land to generate income and servitude conditions are likely to restrict the erection of structures on a servitude. The pipeline routing within the urban setting of Craigieburn is likely to sterilise development along the route of the servitude.

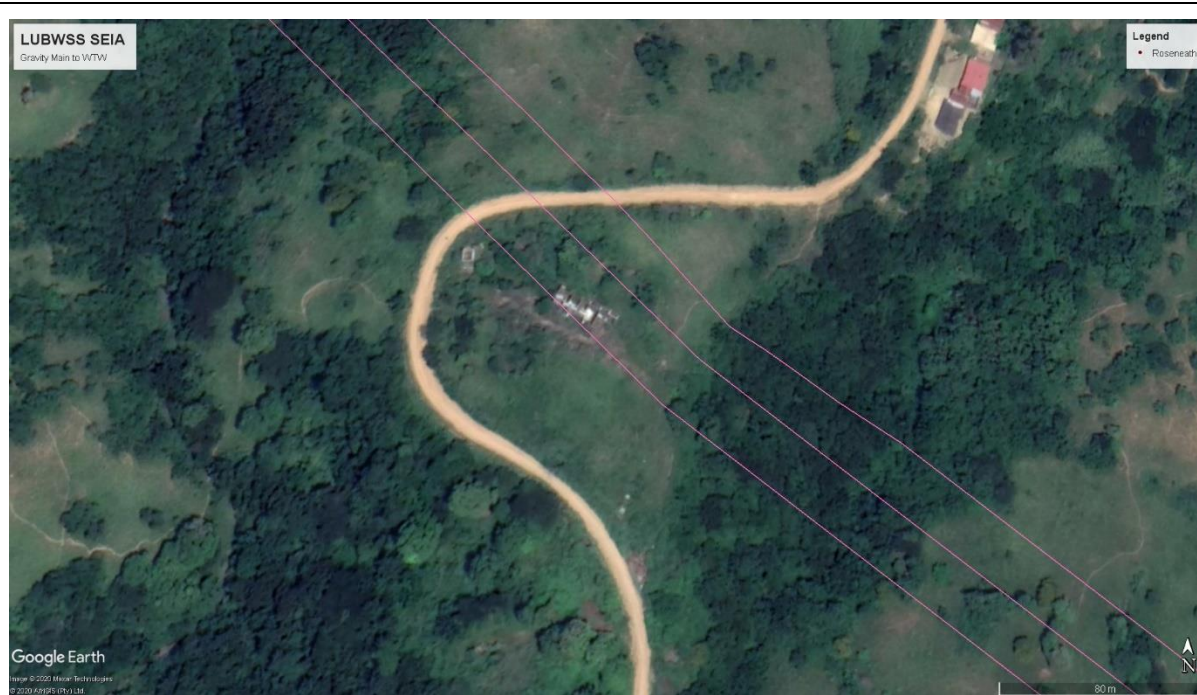
The table below contains images of properties that will be affected by changed pipeline routings. These examples are not exhaustive, but provide insight into the impacts that routing and site selection will have on landowners. These are the impacts that should be mitigated through avoidance in the first place and compensation in the second place.



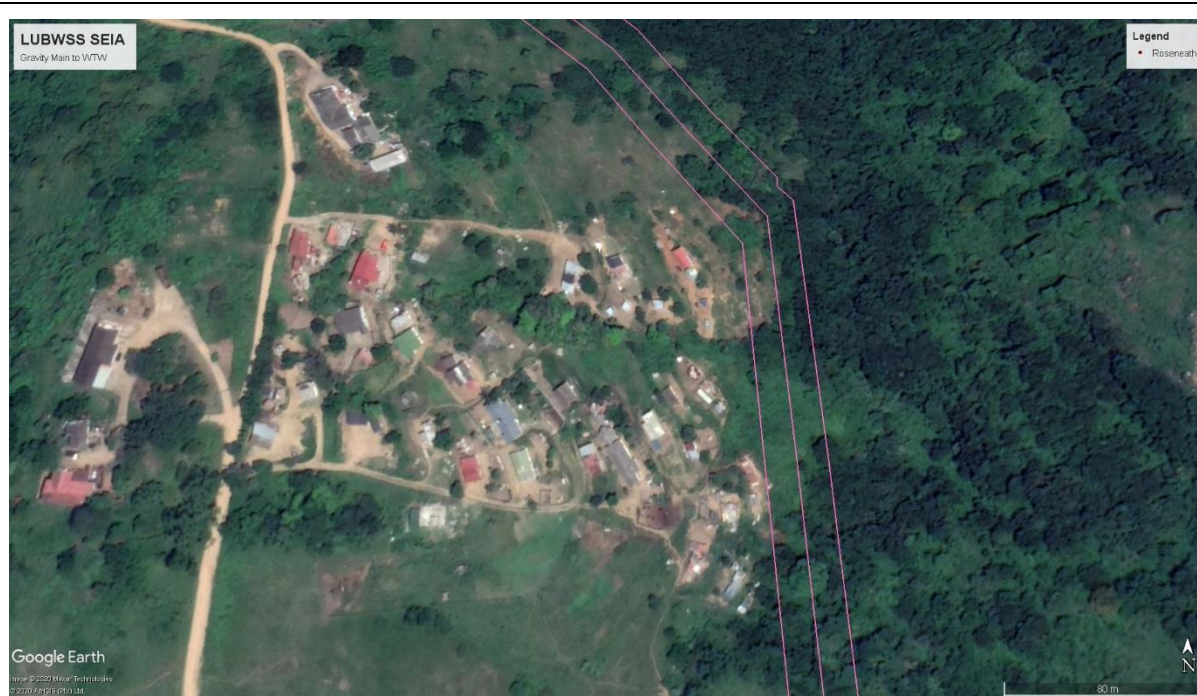
Proximity Impact on farming and dwelling on the Gravity Main to WTW near Fountain View Road



Gravity Main to WTP impact on crops



Gravity Main to WTP passing over an abandoned dwelling



Gravity Main to WTP passing east of northern settlement of Craigieburn.



Gravity Main from WTP proximity impacts on dwellings and business



WTP to Quarry Reservoir, possible sterilisation of land use



WTP to Quarry Reservoir, crossing land portions with housing development



WTP to Quarry Reservoir, proximity impacts and possible sterilisation of land use

Figure 19: Impacts of Routing and Site Selection

Compensation will be required to every landowner whose income will be affected by the proposed project. Those landowners who will be directly affected through the sale of their

property should be compensated for the land, immovable assets and loss of business. Landowners include farmers, private households and industrial users.

Umgeni Water are responsible for land and rights acquisition. They should ensure that during any land purchase compensation will be paid in accordance with the Expropriation Act, 63 of 1975. The process should be a fair and independent valuations conducted by an evaluator who assesses each affected land portion. This process is undertaken prior to construction and will be formally conducted.

Similarly, servitudes would have to be negotiated and registered in terms of the Alienation of Land Act, 68 of 1981. There will be discussions and engagement with landowners to come to an agreement with regards to the servitude registration and servitude restrictions.

Environmental Feature	Impact owing to Land and Rights Acquisition					
Relevant Alternatives & Activities	Acquisition of land					
Project life-cycle	Pre-construction					
Potential Impact	Proposed Management Objectives / Mitigation Measures					
Loss of income from the acquisition of land	<ul style="list-style-type: none"> • Where-ever possible, the final routing of the project infrastructure should be moved to avoid impacts such as close proximity or land sterilisation. For example, if the pipeline servitude is such that it allows pipeline movement to the extent that an impact on a dwelling can be avoided, this should be done. • Where impacts cannot be avoided, all negotiations and payments relating to compensating affected landowners should be conducted and concluded before construction begins. • Those landowners who will be required to sell their property to Umgeni Water must be compensated for any business that is operating on the premises. • All landowners whose businesses will be affected by the proposed project should be compensated to the full value of their immovable assets and any loss of actual income. • Negotiations should take place between the landowner and Umgeni Water for any compensation of potential income denied as a result of the servitude agreements. 					
	Nature	Extent	Magnitude	Duration	Probability	Significance
Before Mitigation	Negative	Regional	Medium	Medium term	Likely	3
After Mitigation	Negative	Local	Medium	Medium term	Likely	1
Significance of Impact and Preferred Alternatives	<p>The final routing of the pipelines is the primary mitigation measure that should be adopted. The final routing should be carried within the proposed servitude so as to reduce the impact as far as possible.</p> <p>There will exist other considerations, such as hydraulic and other engineering considerations that influence the routing and site selection, thus, if it is not possible to avoid the impacts, they should be mitigated through the process of landowner negotiation and compensation for loss.</p> <p>On this basis, and for the avoidance of impact, this study recommends that detailed discussions be held with landowners affected in Craigeburn. Where</p>					

	hydraulically and financially possible, the pipeline should be re-routed on the basis of these negotiations.
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6.5 Impacts During the Construction Phase

The construction activity will impact the social environment both positively and negatively. Given the nature of the project area, construction activity is likely to cause a number of social nuisances as well as possible economic implications on the communities and commercial activities.

6.5.1 Economic Opportunity

The high number of impoverished households shows that there are vulnerable communities in the study area. It is recommended that the appointed contractor use local SMME's and local labour as far as possible during the construction phase to enhance any local economic impact. In addition, this would increase the skills in the area after construction is completed.

Profits generated will stay in the area raising the economic activity and increasing welfare resulting in induced economic opportunity. In South Africa, most employment is generated through small and medium business. Given the size of the proposed project, should contracts between local SMMEs occur, it is likely that there will be an increase in employment by SMMEs for the duration of the contracts.

In particular, the project has the potential to create a number of opportunities for existing and new local SMMEs. These range from site clearing, to fencing and construction, as well the supply of materials. There are also opportunities existing for community members to provide catering, accommodation and other services to the new workers.

Where possible, Umgeni Water should support and encourage the development of SMMEs and local or regional suppliers in line with government policy.

Education levels provide an indication of the level of skill in the community and the degree to which one can be skilled. In two sub-places in the study area, where less a third of the population over age 20 have matriculated, it is not likely that many people are skilled and highly skilled.

Attempts to break the poverty cycle of the area require more than secondary school education. Higher education or further skills training is required. Thus, it is important that the community members under-go skills development. Thus, it is recommended that the Umgeni Water institute a skills development programs during construction.

Umgeni Water should monitor the employment process at all times. Employment audits should be conducted and there should be full transparency of the process. It is important that women are also provided employment opportunities. Audits should pay attention to the employment process of women to ensure that exploitation does not take place.

6.5.2 Noise and Dust

During the construction phase communities may be exposed to increased dust, noise, visual and other nuisance disturbances.

The generation of dust stems from activities such as earthworks and trenching, as well as vehicular movement during the construction phase. This situation will be worst during the dry season and during windy seasons. Air borne particulates may pose a hazard to residents in the vicinity or downwind of the construction site that suffer from upper respiratory tract problems. Mitigation through dust suppression methods will allow for this impact to be effectively managed.

During the construction, heavy equipment will be required for the site clearance, road construction and the construction of the weir, WTP, reservoir, pipelines and pumpstation. Noise generation will be unavoidable. The degree of noise, frequency of noise and individual perception are all important considerations when determining the impact on noise. Drilling; blasting and construction activities will also create noise pollution. Adequate warning of high noise events such as blasting should be communicated to the affected communities.

6.5.3 Worker Health and Safety

The impacts of construction can affect the health and safety of those working on the construction site; disturbance, health and income of the host communities; and disturbance to the environment and animals. These impacts can be mitigated in the Environmental Management Programme (EMPr) and through adherence to the Occupational Health and Safety Act 85 of 1993.

An influx of workers is often characterised by higher health risks, particularly if the influx is male dominated. These include a higher disease burden and rise in HIV/AIDS rates. There should also be awareness and education campaigns on health and social risks such as HIV/AIDs and crime prevention.

6.5.4 Security

There a safety concerns related to the construction activity. Landowners have expressed a number of security concerns including increased access to the farms and crime. Trespassing was cited as a concern as well of damage to property once access is granted.

Mitigation measures include Umgeni Water, prior to construction, must agreeing with farmers on appropriate access points to ensure the safety of the businesses, livestock and residents. A security policy must be drafted and strictly enforced by the contractors, this would include a requirement to obtain landowner permission prior to any property. As good practice and mitigation against security risks, Umgeni Water should provide some level of security and emergency response services for the duration of the construction measure.

All contractors and service providers should obtain permission to enter any property.

6.5.5 Damage to Property Once Access is Granted

Once access to a property is granted, mitigation measures should be taken to ensure that any damage that is caused as a result of this access is made good. This includes damage to infrastructure such as fences, gates, pipelines, electrical connections or roads.

Property damage includes the destruction of crops that may be required at the time of site clearance.

Where there is a risk of damage occurring, the contractor is to document to the condition prior to the start of work. If the condition has deteriorated after the completion of the work, any such damage should be made good. Landowner signed off that the damage has indeed been rectified should be obtained.

6.5.6 Local Road Condition and Traffic Impacts

Local road access will be used during the project, and as a result these roads may be subject to damage. The project is to maintain the local roads for the duration of the contract and should leave them in a state the same or better than they were prior to the start of the construction phase.

Heavy duty trucks and construction vehicles will cause damage to the current road conditions as well as contribute to congestion on the roads.

The greater the number of trucks on the road, the greater the risk of road accidents occurring. It is important that the contractors are sensitive to the road conditions and ensure that throughout the construction process that these roads are maintained and suitable for small vehicles.

Environmental Feature		Economic opportunities arising from the construction phase				
Project life-cycle		Construction phase				
Potential Impact		Proposed Management Objectives / Mitigation Measures				
SMME Creation		<ul style="list-style-type: none"> Local SMMEs should be given an opportunity to participate in the construction of the project through the supply of services, material or equipment. 				
Job Creation and Skills Development		<ul style="list-style-type: none"> The main contractor should employ non-core labour from the four sub-places as far as possible during the construction phase. The principles of Expanded Public Works Programme can be used during construction. 				
Indirect Employment Impacts		<ul style="list-style-type: none"> Spaza shops may open next to the site as a consequence of construction. These should be controlled by the contractor to limit their footprint and to ensure that the eThekweni Metro Municipality – Informal Trading By-Law, 2014 is complied with. 				
	Nature	Extent	Magnitude	Duration	Probability	Significance
Before Mitigation	Positive	Local	Medium	Short Term	Likely	1

Environmental Feature		Economic opportunities arising from the construction phase				
Project life-cycle		Construction phase				
Potential Impact		Proposed Management Objectives / Mitigation Measures				
After Mitigation	Positive	Local	Low	Short Term	Likely	3
Significance of Impact and Preferred Alternatives	Those who will benefit during the construction is limited to those who actively participate in the construction activity through employment, sub-contracting or other economic opportunities. Active participation should be encouraged. The benefits on such a construction will take place irrespective of which routing and site alternative is preferred.					

Environmental Feature		Short-term disturbance arising from the construction phase				
Project life-cycle		Construction phase				
Potential Impact		Proposed Management Objectives / Mitigation Measures				
Traffic	<ul style="list-style-type: none"> Ensure that the necessary signage and traffic measures are implemented for safe and convenient access to the site. The EMPr must include restrictions on the Contractor and its sub-contractors related to minimising impacts on the safety of road users. Restrictions should include appropriate speed limitations, restricting travel times to daylight hours, communication measures and the establishment of haul routes. Measures must be put in place to prevent construction vehicles from entraining dirt onto public roads. 					
Local Road Condition	<ul style="list-style-type: none"> A condition survey of the local roads to be used during the construction phase should be made prior to construction Haul and delivery routes should be defined and adhered to during the construction phase. Maintenance of local roads should take place during the construction phase to ensure that the local roads used by the contractor are left in the same or better condition than they were prior to the start of construction. 					
Increase in Dust	<ul style="list-style-type: none"> Dust and disturbance can be mitigated through the use of appropriate dust suppression mechanisms. Mitigation measures management should be adhered to according to the relevant specialist studies. 					
Influx of workers	<ul style="list-style-type: none"> All employment of locally sourced labour should be controlled on a contractual basis. If possible, and if the relevant Ward Councillors deem it necessary, the employment process should include the affected Ward Councillors. People in search of work may move into the area, however, the project will create a limited number of job opportunities. Locally based people should be given an opportunity. No staff accommodation should be allowed on site. 					
Worker Health and Safety	<ul style="list-style-type: none"> The provisions of the OHS Act 85 of 1993 and the Construction Regulations of 2014 should be implemented on all sites. Account should be taken of the safety impacts on the local community when carrying out the longitudinal aspects of the project, such as the pipelines. Contractors should establish HIV/AIDS awareness programmes at their site camps. 					

Environmental Feature	Short-term disturbance arising from the construction phase					
Project life-cycle	Construction phase					
Potential Impact	Proposed Management Objectives / Mitigation Measures					
Security	<ul style="list-style-type: none"> • The sites should be fenced for the duration of construction and operation phases. • All contractors staff should be easily identifiable through their uniforms. • A security policy should be developed which amongst others requires that permission be obtained prior to entering any property and provisions controlling trespassing by contractor staff. • No staff, apart from security staff, should be allowed to reside at contractor camps. • Contractors should establish a crime awareness programmes at their site camps. 					
Noise impacts	<ul style="list-style-type: none"> • Prior should be given to surrounding communities of blasting events; • Construction work should take place during working hours – defined as 07h00 to 17h00 on weekdays and 07h00 to 14h00 on Saturdays. Should overtime work be required, that will generate noise, consultation with the affected community or landowner should take place. 					
Damage to property	<ul style="list-style-type: none"> • If a risk existing of damage taking place on a property as a result of construction, a condition survey should be undertaken prior to construction • The contractor is to make good any damage that occurs on any property as a result of construction work • Where crops are damaged, compensation is to be paid to the farmer for the loss of these crops. 					
	Nature	Extent	Magnitude	Duration	Probability	Significance
Before Mitigation	Negative	Local	Medium	Short Term	Likely	2
After Mitigation	Negative	Local	Low	Short Term	Moderate	1
Significance of Impact and Preferred Alternatives	<p>Disturbances during the construction phase can be successfully mitigated through contractor specifications issued at tender stage and through monitoring of contractor performance during the construction phase.</p> <p>Negative impacts owing to the construction will be experienced irrespective of the site and routing alternative that is chosen.</p>					

7 CONCLUSION

The study assessed the social and economic impacts of the amendment in the pipeline routing of the project. As expected of any construction project, there were several positive and negative socio-economic impacts.

No socio-economic fatal flaws were identified for the project and the most serious long-term impact would be the routing of the rising main from the Water Treatment Works to the Quarry Reservoir, which may sterilise development along the urban sections of its corridor.

The identified negative impacts can be successfully mitigated and the positive impacts will bring economic and social benefit to the area.

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