GREATER MANGAUNG WATER AUGMENTATION PROJECT: PROPOSED XHARIEP PIPELINE PROJECT: SCHEME 1B, FREE STATE PROVINCE

SOCIAL IMPACT ASSESSMENT

Submitted to: Zutari



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March 2024

EXECUTIVE SUMMARY

Introduction

The Greater Mangaung Augmentation Project - Xhariep Pipeline, as Strategic Integrated Project 19 (SIP) (hereafter referred to as the Xhariep Pipeline Project: Scheme 1B) is a regional bulk water scheme. The Department of Water and Sanitation (DWS) is proposing to construct a potable water pipeline from the Gariep Dam wall connecting to the existing bulk water distribution system for the Greater Bloemfontein Water Supply System (GBWSS). The proposed scheme will traverse the Xhariep District Municipality (XDM) and the Kopanong Local Municipality (KLM) in particular, as well as the Mangaung Metropolitan Municipality (MMM). The entire project will be in the Free State Province.

The proposed project entails construction of a bulk water pipeline and associated distribution infrastructure from the Gariep Dam for augmentation of water supply to the Greater Mangaung Metropolitan area and surrounding smaller urban centres by improving the system yield to meet current and future water requirements. The scheme will pump in the range of 20 - 90 Million m³/a of water for augmentation purposes.

Previous independent feasibility studies have been completed by Mangaung Metropolitan Municipality (MMM) and Vaal Central Water Board (VCWB) (previously known as Bloem Water). These studies led to different conclusions and options. MMM applied for Environmental Authorisation (EA) through a Basic Assessment Process (BAP) for one of the options. This EA was granted but has since lapsed.

The Department of Water and Sanitation (DWS) recognised that a project of this scale must now be considered from a regional and national perspective. DWS appointed Zutari to undertake the current feasibility study. Additionally, this study, in line with the DWS perspective, has added new pipeline route options and the position of infrastructure components have changed since the previous feasibility and environmental studies were undertaken.

As part of the required environmental authorisation for the new proposed route, which is known as Scheme 1B, a Social Impact Assessment (SIA) will be required.

The objectives of the SIA were to update the initial SIA document through the following:

- Identify and update the baseline socio-economic characteristics of landowners and communities within the local area that may potentially be affected by the project;
- Superimpose the baseline socio-economic data to determine and rank the anticipated positive and negative socio-economic impacts associated with the proposed project during the construction, operational and decommissioning phases;
- Provide management and mitigation measures to avoid or minimise negative social impacts and enhancement measures to boost positive impacts associated with the proposed project;
- Provide a Social Management Plan to manage the identified social risks of the proposed development, and to improve the development outcomes;
- Provide key findings and recommendations with regards to the proposed project.

As part of the initial feasibility assessment undertaken by the MMM in 2017, a SIA was undertaken. This document was based on the content of the initial SIA.

Project Location

A bulk water pipeline and associated distribution infrastructure will be constructed. The pipeline will stretch from the Gariep Dam and follow an alignment along the N1 to Bloemfontein (mostly along the N1) and Botshabelo / Thaba Nchu. Various ancillary infrastructure will be based along the route. From Bloemfontein, the pipeline will run in an easterly direction to link with the infrastructure at the Rustfontein WTP.

The first section of the proposed pipeline (from Gariep Dam to north of Edenburg) falls within the Kopanong Local Municipal area. In the area where the alignment splits from the N1 and turns into an easterly direction, it enters the Mangaung Metropolitan Municipal area (for an approximate length of 35km).

The receiving social environment

The project falls within the jurisdiction of the Kopanong Local Municipality (KLM) which falls under the Xhariep District Municipality (XDM). It also traverses the Mangaung Metropolitan Municipality (MMM) in the Bloemfontein area.

The XDM area is a semi-arid rural area with dispersed towns or rural nodes throughout. More than two-thirds of the district comprises of extensive agriculture of livestock farming (sheep and cattle) that produces wool and meat. The KLM area is also predominantly agricultural with limited value-adding activities taking place. Basic agricultural products are exported from the area for processing and re-imported into the area as consumer products. The main towns along the pipeline route include the Gariepdam town, Springfontein, Trompsburg, Edenburg and Bloemfontein.

The rural area of the MMM is characterised by extensive commercial farming, mainly mixed crop production and cattle farming, as well as subsistence and small farmers mostly operating in the areas surrounding Thaba Nchu and Botshabelo.

The MMM and KLM experiences challenges in the provision of basic service delivery and the maintenance of infrastructure. In the MMM this can be attributed to the population growth as Bloemfontein is a key attraction for those in search of employment. The dire financial state of the municipality further hampers implementation. Service provision in the KLM is required over a vast area, but the local municipality also lacks financial sustainability to function effectively.

Key Findings

Based on the analysis of the current socio-economic status of the area and the receiving socioeconomic environment, as well as the assessment of the socio-economic impacts on this environment, the following concluding remarks should be noted:

- The negative social impacts associated with the Xhariep Pipeline Project: Scheme 1B are largely low to moderate in significance and will respond to mitigation.
- The majority of the negative social impacts identified in the SIA are anticipated to materialise during the construction phase. These potential impacts mainly refer to:
 - Intrusion impacts associated with the inflow of workers and jobseekers, movement of vehicles and equipment and possible trespassing on properties with subsequent impacts on community safety and security;

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- The alignment of the pipeline through the southern section of JB Mafora and Bloemanda in Bloemfontein can result in resettlement of households with significant negative impacts. Re-alignment of the pipeline along the road reserves and to the south of the M30 can prevent this impact and successfully mitigate any possible negative impacts.
- Possible impacts on the resource use and agricultural activities with subsequent negative impacts on landowners/farmers;
- Health risks to the construction workers and the local communities. The key concern relate to the spread of HIV/Aids during the construction phase and the increased possibility of construction related accidents;
- The increased risk of fires remains a concern. This can be mitigated through proper site management and worker conduct. Precautionary measures, should however be implemented as recommended in the report;
- Negative intrusion impact on homestead and dwellings where the pipeline is proposed in close proximity to such infrastructure;
- Infrastructure and services that would be temporarily affected during the construction phase, but which can be mitigated in consultation with the relevant governing bodies.
- Construction impacts which are likely to occur are expected to be short-term and can, in most cases, be successfully mitigated. To accomplish this, the mitigation and monitoring plans and procedures would have to be undertaken during project implementation, especially those focused on mitigation of impacts on the landowners and residents of the affected towns.
- Site rehabilitation on completion of the construction period and management during the operational phase are critical to avoid any negative long-term impacts on the resource use of the landowners.
- The proposed project is not expected to have severe negative impacts on the agricultural activities of the landowners, once operational. This impact, however, remains important and should be mitigated as far as possible during the construction phase through proper site rehabilitation. Therefore areas where crop production is undertaken should be avoided as far as possible.

In terms of the positive social impacts, the following should be noted:

- The proposed Xhariep Pipeline Project: Scheme 1B will provide a number of benefits that should be seen in balance to the associated negative impacts. As a direct and significant positive benefit, the infrastructure will assist in providing potable water to a number of local communities.
- During the construction phase, the proposed project would create various employment opportunities with some local employment opportunities, provide a platform for increased spending and possible increased investment in the local area.
- The main positive impacts during the operational phase refer to the improved and reliable water supply and availability of water.
- The provision of a sustainable water supply and system can result in a number of indirect positive benefits. The existing status quo with regards to water supply is currently identified as a constraint to local economic development, but the proposed scheme should provide the capacity to supply current and future demands for water in the Bloemfontein area, which

would create indirect benefits supporting e.g. housing development, the industrial sector and tourism.

- The proposed Xhariep Pipeline Project: Scheme 1B would not create large numbers of job opportunities, but the limited job creation (especially in the lower skilled levels) must still be viewed as a positive aspect. It is imperative that local labour be sourced otherwise no direct benefits would accrue to the locals during the construction phase. Apart from job creation during the construction phase, locals should also be allowed an opportunity to be included in a list of possible local suppliers and service providers. Social benefits in terms of training, skills development and the use of local labour should further be aspired to.
- Such an approach would also limit some negative impacts associated with the influx of large construction teams and the negative impacts associated with the inflow on the social dynamics in the area.

The Xhariep Pipeline Project: Scheme 1B will enable government to avoid future water shortages in the area, resulting in Bloemfontein and possibly the smaller towns not experiencing long-term water security. Government must take adequate actions to ensure that all citizens have access to basic services, of which water is a crucial element. If other measures are not put in place to ensure an adequate continuous supply of potable water to the municipal area, government would not be fulfilling its duty in terms of water service provision to the end-users.

The proposed project would thus, through the upgrading of the capacity of the bulk infrastructure networks and associated infrastructure assist to handle the current rate of development in the area. The proposed Xhariep Pipeline Project: Scheme 1B is therefore critical for the socio-economic well-being of the residents of Mangaung and surrounds.

Although the direct positive impacts are limited in extent, the impact of the overall project benefits should be considered in view of the socio-economic profile of the communities of the area and the indirect benefits that would accrue to the local communities due to the improved water services delivery.

Recommendations

From the Social Assessment, the following concluding remarks and recommendations are made:

- The proposed project will improve the water related infrastructure and services through the provision of a sufficient and stable supply of potable water to the Bloemfontein area. This would have vast indirect positive impacts which would be beneficial to the local economy and the socio-economic development in the area.
- The proposed project could also result in different negative social impacts with varying rates
 of intensity and significance. In most cases, the negative social impacts resulting from the
 proposed development are not perceived to be a threat to the quality of life of the residents
 of the area, but rather as nuisance factors that would mostly occur during the construction
 phase of the project.
- In line with the economic development challenges and opportunities within the municipal area, it is recommended that the project should strive to develop the local human resources through meaningful skills development. The involvement of locals, especially women and the youth are important.

- The project must aim to maximise the use of suitably skilled local labour where applicable and where available, through the development of a Procurement Policy and Procurement Plan. This plan must be transparently and consistently applied.
- The proposed alignment of the water pipeline be concentrated along existing infrastructure corridors, especially in the Bloemfontein area to avoid the southern sections of Bloemanda and JB Mafora and the resettlement of households in this area.
- Mitigation measures are critical. The mitigation measures proposed as part of the Social Management Plan should be incorporated in the EMPR and should be strictly implemented.
- Negotiations with individual property owners regarding the alignment of the pipeline and final locations of the ancillary infrastructure should be undertaken in a considerate and constructive manner. Sensitive issues such as the possible impact on agricultural activities and subsequent economic impact should be taken into account.
- It is recommended that a platform for open communication with the affected landowners be developed should the necessary authorisations be obtained by the applicant. The communications strategy for the proposed project should therefore ensure effective and transparent communication between the project proponent, project managers, contractors and the landowners prior to the construction phase and during the operational phase.
- There is an obligation on the government to deliver sufficient potable water to the beneficiary communities, but it is critical to ensure that this is undertaken in a sustainable manner whereby the negative impacts are minimised and the benefits be enhanced.
- It is critical to ensure that the water quality integrity is maintained. Water of an acceptable potable quality should be continued to be provided to the users.
- In this regard it should be noted that the operation and maintenance of a water distribution system can be greatly affected by the system design and construction practices used. The system components must adhere to construction standards and specifications, and preventative maintenance must be performed on a continuous basis.

It is recommended that the Social Management Plan be implemented and integrated as part of the Environmental Management Programme (EMPr).

Based on the social assessment and considering the concluding remarks and recommendations noted above, it is recommended that the environmental authorisation of the Xhariep Pipeline Project: Scheme 1B be allowed.

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GLOSSARY OF ABBREVIATIONS

BAP:	Basic Assessment Process
EA:	Environmental Authorisation
ECO:	Environmental Control Officer
EIA:	Environmental Impact Assessment
EMP:	Environmental Management Plan
GBWSS:	Greater Bloemfontein Water Supply System
GGP:	Gross Geographic Product
I&APs:	Interested and Affected Parties
IDP:	Integrated Development Plan
KLM:	Kopanong Local Municipality
LED:	Local Economic Development
MMM:	Mangaung Metropolitan Municipality
SIA:	Social Impact Assessment
SIP:	Strategic Integrated Project
StatsSA:	Statistics South Africa
VCWB:	Vaal Central Water Board
WCDM:	Water Conservation and Demand Management
WSA:	Water Service Authority
WSP:	Water Service Provider
WTP:	Water Treatment Plant
XDM:	Xhariep District Municipality

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DOCUMENT STATUS

SOCIAL IMPACT ASSESSMENT: Final		
Date:	22 March 2024	
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1. INTRODUCTION

1.1 Background

The Xhariep Pipeline Project: Scheme 1B was originally identified in the 2012 Reconciliation Strategy for the Greater Bloemfontein Water Supply System (GBWSS) as a future augmentation project to supply the area's water demands. Several other interventions were then also identified in the strategy.

The Greater Mangaung Augmentation Project - Xhariep Pipeline, as Strategic Integrated Project 19 (SIP) (hereafter referred to as the Xhariep Pipeline Project: Scheme 1B) is a regional bulk water scheme under the Department of Water and Sanitation (DWS) and will be implemented by the Vaal Central Water Board (VCWB). The proposed project entails construction of a bulk water pipeline and associated distribution infrastructure from the Gariep Dam for augmentation of water supply to the Greater Mangaung Metropolitan area and surrounding smaller urban centres by improving the system yield to meet current and future water requirements. The scheme will pump in the range of 20 - 90 Million m³/a of water for augmentation purposes.

Previous independent feasibility studies have been completed by Mangaung Metropolitan Municipality (MMM) and Vaal Central Water Board (VCWB) (previously known as Bloem Water). These studies led to different conclusions and options. MMM applied for Environmental Authorisation (EA) through a Basic Assessment Process (BAP) for one of the options. This EA was granted, but has since lapsed.

The Department of Water and Sanitation (DWS) recognised that a project of this scale must now be considered from a regional and national perspective. DWS appointed Zutari to undertake the current feasibility study. Additionally, this study, in line with the DWS perspective, has added new pipeline route options and the position of infrastructure components have changed since the previous feasibility and environmental studies were undertaken.

The Department of Water and Sanitation (DWS) is proposing to construct a potable or raw water pipeline from the Gariep Dam wall to the Bloemfontein surrounding area to relieve the severe water shortages that are often experienced in the Greater Mangaung Metropolitan area. The proposed water augmentation scheme will traverse the Xhariep District Municipality (XDM), as well as the Kopanong Local Municipality (KLM) and Mangaung Metropolitan Municipality (MMM) areas.

An integrated environmental authorisation is required before the proposed project can proceed. Zutari was appointed as the Environmental Assessment Practitioner (EAP) to undertake the necessary Environmental Authorisations as part of the feasibility study for the proposed Xhariep Pipeline Project: Scheme 1B. As part of the required environmental authorisation process, a Social Impact Assessment (SIA) will be required.

1.2 Overview of the Proposed Project

The GBWSS is frequently operating under restrictions and cannot fully meet water requirements as well as the desired. This leads to the Mangaung Metro Municipality (MMM) experiencing several water interruptions and water shortages over the past few years due to bulk water supply problems and the increased demand due to natural growth and migration of people to the metropolitan area. This resulted in the implementation of different water restrictions. An assurance of supply for both

urban and agricultural water requirements and is a critical element for the Greater Mangaung Metropolitan economy.

The proposed Xhariep Pipeline Project: Scheme 1B will involve abstraction at the Gariep Dam through the existing abstraction point, a raw water pumping station, and transfer pipelines to a water treatment works (WTW) located at a suitable site near the Gariep dam. The treated water will be piped to Bloemfontein and Rustfontein Dam with command reservoirs. Support services for bulk power and communication will be provided.

The infrastructure proposed as part of the Xhariep Pipeline Project: Scheme 1B is similar to the previous application undertaken by the MMM, as it includes a low lift pump station from Gariep Dam, a pipeline to a water treatment plant (WTP), the WTP, a high lift pump station, conveyance pipeline and a command reservoir. However, unlike the previously authorised option, the proposed infrastructure also includes a booster pump station and a second command reservoir, as well as two gravity pipelines to feed Bloemfontein and Botshabelo / Thaba Nchu. The infrastructure positions differ from the previous feasibility study. Ancillary infrastructure is also required and must be included in the environmental authorisation application which includes power supply, access roads and borrow pits (if applicable, to be determined during the geotechnical investigation).

The Scheme for consideration will be referred to as Scheme 1B shown as the light purple lines in Figure 1. The Scheme 1B route follows the N1 highway from Gariep Dam but turns eastwards before reaching Tierpoort Dam. The pipeline continues to a command reservoir east of the R702 where it splits into two gravity lines, one feeding Bloemfontein, tying into the MMM bulk network, while the other feeds Botshabelo and Thaba Nchu, tying into the VCWB bulk network. Scheme 1B is potable water to be treated at a new WTP.

Scheme 1A (previously authorised route) is shown in orange for comparative purposes.



Figure 1: Xhariep Pipeline: Scheme 1A and 1B

This project thus entails a bulk water transfer system transferring raw/potable water from Gariep Dam to Bloemfontein, as well as to Botshabelo and Thaba Nchu. Scheme 1B will comprise the following:

- Tie-in at existing pipeline downstream of Gariep Dam;
- A low lift pump station at or near the connection to the Gariep Dam;
- A WTP with a high lift pump station;
- A command reservoir;
- A booster pump station;
- A second command reservoir;
- The entire pipeline route from the Gariep Dam to the connection points in Bloemfontein and near Rustfontein Dam (supplying Botshabelo / Thaba Nchu); and

Infrastructure would be required to connect to Botshabelo and Thaba Nchu. This segment of infrastructure, however, falls outside the scope of the study and the section between the Rustfontein WTP pump station and Botshabela and Thaba Nchu will not be assessed.

At this stage, the Xhariep Pipeline is anticipated to be approximately 186 km long with a capacity of 371Ml per day.

Ancillary infrastructure associated with the Xhariep pipeline includes access roads which are required during the construction phase. During the operational phase, the same roads would be used for maintenance activities. These access roads would provide access to the ancillary infrastructure such as the WTP, pump stations and reservoirs.

Although there are existing power lines in the area, it is anticipated that additional electricity supply requirements would be necessary for the pump stations.

1.3 Technical Aspects of Project

1.3.1 Underground Potable Water Pipeline

The entire length of the pipeline will be situated underground. The construction servitude of 40m would be required for the pipeline, but a final servitude width of 15 would be registered. The pipeline would stretch across \pm 186km.

A 100m wide corridor would be investigated as part of the environmental authorization process to allow for possible deviations in the preferred alignment.

1.3.2 Low Lift Pump Station

The low lift pump station would be loated at or near the connection to the Gariep Dam and close to the existing Gariep WTP on Portion 1 of the farm Waschbank No. 274. The R701 is directly east of both options for the site and will provide access. It would connect into one of the existing 2.1m diameter pipelines from the Gariep Dam wall. The raw water would then be pumped to a new WTP.

The central co-ordinates of the proposed sites for the Low Lift Pump Station are: 30°37'30.01"S and 25°29'03.00"E; or 30°37'32.86"S and 25°29'03.46"E.

1.3.3 Water Treatment Plant and High Lift Pump Station

The proposed WTP would receive water from the low lift pump station and is located approximately 10 km from the low lift pump station on Portion 1 of the farm Inhoek No. 495. The site is located to the south of the N1, but east of the N1 / R701 intersection and approximately 6km north east of the Gariepdam town.

The WTP with a high lift pump station will be located at: 30°32'27.60"S and 25°30'46.80"E.

Access would probably have to be created from the R701. The site is far from watercourses and sludge lagoons would probably be required.

1.3.4 Command Reservoir No 1

The proposed Command Reservoir No 1 will provide balancing capacity and supply the booster pump station. The proposed site for the command reservoir is located to the east of the town of

Springfontein/Maphodi/Williamsville and the N1 on RE of the farm Viljoensdam No. 498. The coordinates for Command Reservoir No 1 are: 30°15'02.00"S and 25°44'18.00"E.

Site access would have to be obtained from the N1.

1.3.5 Booster Pump Station

The proposed booster pump station would receive treated water from Command Reservoir No 1 and pump it to Command Reservoir No 2. Two sites have been identified for the booster pump station. The first site (Site A) is located on Portion 2 of the farm Vaalkop No. 2589, directly to the east of the N1, and approximately 28 km north of Edenburg and approximately 7 km south of the area where the pipeline turns away from the N1 in an easterly direction. The coordinates for Site A are: 29°30'56.00"S and 26°05'15.00"E.

Site B is located 3.9 km to the west of the R702 on the farm Annex No 2522. The site falls within the section of the pipeline route where it turns in an easterly direction from the N1 before it crosses the R702. The coordinates for Site B are: 29°22'13.00"S and 26°21'15.00"E.

1.3.6 Command Reservoir No 2

This command reservoir would gravity feed to the Rustfontein WTP pump station.

The second Command Reservoir (No 2) is located on the farm Lieuw Kop No. 105 situated to the east of the R702. This site is approximately 6 km to the north-east of the proposed Booster Pump Station Site B. The coordinates for the site are: 29°19'17.70"S and 26°23'04.70"E

1.4 Route Description

For ease of reference the route was divided into different geographical sections. The first section of the proposed pipeline (from Gariep Dam to north of Edenburg) falls within the Kopanong Local Municipal area. In the area where the alignment splits from the N1 and turns into an easterly direction, it enters the Mangaung Metropolitan Municipal area (for an approximate length of 35km).

1.4.1 Gariep Dam to N1 Section

A Low Lift Pump Station is proposed to the west of the R701 and to the east of the Gariep Dam Fish Hatchery. The proposed alignment for the water pipeline would exit the pump station in a northerly direction, where it would run more or less in parallel with the R701. It would pass the Gariepdam Town and Oranjekrag to the west. Just north of the Gariepdam Town, the line passes the R33 and continues in a northerly direction along the R701. It then reaches the N1/R701 interchange, and turns east towards the proposed WTP and High Lift Pump Station. This infrastructure is located approximately 6km north east of the Gariepdam town on Portion 1 of the farm Inhoek No. 495. The site will extend over an area of approximately 60ha located to the east of the N1 highway.

1.4.2 N1 to Springfontein Section

From the WTP and High Lift Pump Station the pipeline alignment is proposed to the east of the N1. It continues to the east of the N1 for approximately 35km until it passes the R715. From here it passes the railway line and after ±5km from the R715 it reaches the proposed sites for the Command Reservoir No. 1 on the farm Viljoensdam No. 498, which is also to the east of the N1 and the town of Springfontein.

1.4.3 Springfontein to Trompsburg Section

From the Command Reservoir No. 1 and Springfontein the pipeline continues to follow the alignment of the N1 for approximately 27km. The proposed pipeline then traverses the farm Trompsburg where it reaches the town of Trompsburg/Madikgetla/Noordmanville. It passes the town to the east.

1.4.4 Trompsburg to Edenburg Section

From Tromspburg, the alignment continues in a northerly direction along the alignment of the N1 for approximately 40km to pass the town of Edenburg/Ha-Rasebei to the east. To the north of Edenburg, the alignment exists the Kopanong Local Municipal area and enters the Mangaung Metropolitan Municipality area.

1.4.5 Edenburg to Booster Pump Station area

From Edenburg the alignment follows the alignment of the N1 where it will either link with proposed Site A for the booster pump station on the farm Vaalkop No. 2589 or where it would continue further north, but turn east before the N1/R702 interchange where it crosses the R702 to link with proposed Site B for the booster pump station on the farm Annex No 2522.

1.4.6 Booster Pump Station Site A to Bloemfontein Section

From the booster pump station Site A, the pipeline will continue northwards towards Bloemfontein. It would follow an alignment along the N1, past the Tierpoort Dam. Near the town it passes the Hope Orchards Smallholdings which is located to the western side of the N1. It further passes the Driehoek and Bonnievale Smallholdings to the east. The alignment crosses the N1/M30 interchange and enters Bloemfontein from the south. It still runs parallel to the N1 for approximately 1km where it turns in an easterly direction. Here it passes between the Suidpark Cemetery (Elrich Park) and crosses the Bloemfontein South Park Landfill Site to continue to the Longridge Reservoir from the south.

1.4.7 Booster Pump Station Site B to Rustfontein

From the booster pump station Site B, the alignment of the gravity pipeline runs in an easterly direction to the R702. Once it reaches this road, it turns north to the Command Reservoir No. 2. When exiting the command reservoir it runs in a north-easterly direction, crosses the railway line and links with the Rustfontein WTP pump station located to the north of the Rustfontein Dam.

Infrastructure would be required to connect to Botshabelo and Thaba Nchu. This segment of infrastructure, however, falls outside the scope of the study and the section between the Rustfontein WTP pump station and Botshabela and Thaba Nchu will not be assessed.

1.4.8 Longridge Reservoir to Rustfontein

From the Longridge Reservoir in Bloemfontein, the pipeline will connect to the Rustfontein WTP pump station by following an alignment in a south-easterly direction to cross the N6 and to pass or to traverse the southern section of the JB Mafora and Bloemanda settlement. It will continue south-east through privately owned land to link with the R702 alignment where it would turn east to the Command Reservoir No 2. From this reservoir, the alignment would then continue east for approximately 5.5km where it would turn north-eastwards to the Rustfontein WTP.

1.5 Locality

The project locality is indicated in



Figure 2 and Figure 3 below.



Figure 2: Map of the southern section of the study area



Figure 3: Map of the northern section of the study area

1.6 SIA Overview

The International Principles for Social Impact Assessment (SIA) defines SIA as being "the processes of analysing, monitoring and managing the intended and unintended social consequences, both positive and negative, of planned interventions (policies, programs, plans, projects) and any social change processes invoked by those interventions" (IAIA: 2015).

Burdge (1995) describes a SIA as the "...systematic analysis in advance of the likely impacts a development event (or project) will have on the day-to-day life (environmental) of persons and communities." Becker and Vanclay (2003) consider that social impacts are "all social and cultural consequences to human populations of any public or private actions that alter the ways in which people live, work, play, relate to one another, organize to meet their needs, and generally cope as members of society", including "changes to the norms, values, and beliefs of individuals that guide and rationalize their cognition of themselves and their society."

Vanclay (2003) identified three primary reasons for undertaking SIAs, namely:

- SIA is a part of the democratic process that can assist in ensuring equity and transparency of decision-making;
- SIA is a form of assessment whereby the identification of the likely impact of development is assessed to ensure that future benefits will outweigh the costs of a proposed project; and
- By using a participatory process, SIA can lead to better decision-making by accessing and incorporating local knowledge.

A SIA can be applied to determine anticipated impacts with regards to a planned development, but it can also be used to assess the impacts of existing facilities or infrastructure.

A Socio-Economic Impact Assessment (SEIA) therefore attempts to analyse, monitor and manage the anticipated socio-economic aspects and future consequences of a proposed or existing development. A SEIA is still focused on the human dimensions of the environment, but it aims to balance social, economic and environmental objectives and seeks to predict, anticipate and understand the potential socio-economic impacts of development. It aims to engage communities or to achieve the best outcomes for society in terms of sustainable development, or even good project design.

The SEIA can further assist in assessing and managing socio-economic issues of operational projects and/or facilities and infrastructure throughout the life of such projects/facilities/infrastructure and in the event of closure planning. Through ongoing assessment, any project related changes can be addressed using best practices in adaptive management.

In this sense then, the SIA or SEIA is an indispensable part of the Environmental Impact Assessment processes, the Environmental Management Plan (EMP) and any participative activity (e.g. community involvement in mitigation and monitoring during planning and implementation).

1.7 Purpose of the SIA Report

The objectives of the SIA were to update the initial SIA document through the following:

• Identify and update the baseline socio-economic characteristics of landowners and communities within the local area that may potentially be affected by the project;

- Superimpose the baseline socio-economic data to determine and rank the anticipated positive and negative socio-economic impacts associated with the proposed project during the construction, operational and decommissioning phases;
- Provide management and mitigation measures to avoid or minimise negative social impacts and enhancement measures to boost positive impacts associated with the proposed project;
- Provide a Social Management Plan to manage the identified social risks of the proposed development, and to improve the development outcomes;
- Provide key findings and recommendations with regards to the proposed project.

As part of the initial feasibility assessment undertaken by the MMM in 2017, a SIA was undertaken. This document was based on the content of the initial SIA.

2. LEGAL REQUIREMENTS AND GUIDELINES

2.1 NEMA

In South Africa, the NEMA, provides the legal framework for the correct use and management of the environment. Many developments undertaken by both public and private sector organisations require, by legislation, an EIA.

A Scoping and Environmental Impact Assessment (S&EIA) and Basic Assessment is dependent on the type, scale and size of the specific development. The NEMA: EIA Regulations were published on 18 June 2010 and came into operation on 02 August 2010. These Regulations has been superseded with the 2014 EIA Regulations, GNR 982 published on 04 December 2014 and came into operation on 08 December 2014.

2.2 Other National, Provincial and Local Applicable Legislation and Policies

Other national, provincial and local legislation and policies that are applicable and which were also considered (Refer to **Table 1**) include the following:

Acts and Guidelines	Acts and Guidelines
National	National Water Act, 1998 (Act No. 36 of 1998) (NWA); National Heritage Resources Act (NHRA) (Act No. 25 of 1999) South Africa's National Development Plan (NDP) 2030 Occupational Health and Safety Act (No 85 of 1993) and Regulations
Provincial	Free State Province: Final Draft Free State Spatial Development Framework (FSSDF) (2012)
Local	Kopanong Local Municipality. Draft Integrated Development Plan 2022/2023 – 2026/2027 Kopanong Local Municipality. Local Economic Development Strategy 2013-2018 Mangaung Metropolitan Municipality. Integrated Development Plan: 2023-2024 Xhariep District Municipality Integrated Development Plan: 2022

2.3 Legal Framework applicable to SIAs

Table 2 summarises some of the main legal framework, legal requirements and policy guidelines

 within which SIAs are undertaken and which must be considered in the compilation of SIAs.

Table 2: Relevant Legislation

Act	Description
Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996)	Section 24 of the Constitution of the Republic of South Africa states that 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 secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.
	A comprehensive SIA process whereby the potential socio-economic impacts associated with the project are identified and where management measures are prescribed to minimise negative impacts and enhance the project's contribution to socio-economic development, will be in line with Section 24 of the Constitution.
National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA)	NEMA is the overarching environmental legislation for the management of the environment in South Africa. The objective of the NEMA is to provide for co-operative environmental governance through a series of principles. It also provides a framework for sustainable development.
	The EIA Regulations of 2014, as amended, promulgated in terms of the NEMA, further prescribe the content of specialist assessments as well as the legal requirements for stakeholder engagement.
	NEMA and the NEMA: EIA Regulations provide a suite of principles and tools to guide South Africa on a path to sustainable development. "Environment' is defined in holistic terms and includes biophysical, social, and economic components, as well as the connections within and between these components. While the act does not prescribe a specific methodology in terms of SIA, it highlights the necessity to include socio-economic issues in EIAs.
Environmental Impact Assessment (EIA) Regulations, 2014 (GN R982 of 2014, as amended in June 2021) ¹ EIA Regulations Listing Notice 1 of 2014 (GN R983 of 2014, as amended) ²	The EIA Regulations determine that an EA is required for certain listed activities prior to the commencement of a listed activity, which might have a detrimental effect on the environment. An EA application must be submitted to the relevant Competent Authority in terms of section 24 of the NEMA for consideration. The EIA Regulations prescribe various activities listed in the three Listing Notices which must be consulted to determine the process to be followed.
······································	Various specialist assessments must be undertaken as part of the above processes to investigate potential impacts of proposed projects.

¹ GN R982 of 4 December 2014 as amended by GN R326 of 7 April 2017, GN 706 of 13 July 2018, GN 599 of 29 May 2020 and GN 517 of 11 June 2021.

 2 GN R983 in GG 38282 of 4 December 2014 as amended by GN R327 in GG 40772 of 7 April 2017, GN 706 in GG 41766 of 13 July 2018 and GN 517 in GG 44701 of 11 June 2021.

Act	Description
EIA Regulations Listing Notice 2 of 2014 (GN R984 of 2014, as amended) ³ EIA Regulations Listing Notice 3 of 2014 (GN R985 of 2014, as amended) ⁴	Appendix 6 of the EIA Regulations of 2014, as amended, prescribes specifications with regard to specialist assessments.
Department of Forestry, Fisheries and the Environment (DFFE)5 Screening Tool6 NEMA: Procedures for assessment and minimum criteria for reporting on identified environmental themes when applying for environmental authorisation (GN R320 of 2020)7	The DFFE requires that their Environmental Screening Tool be utilised prior to undertaking an application for any EA and that the screening report generated by the tool be submitted with the EA application as per Regulation $16(1)(b)(v)$ of the EIA Regulations (2014). The tool is a geographically based web-enabled application which allows a proponent intending to apply for an EA to pre-screen their proposed site for any environmental sensitivities. The screening report includes environmental themes and the sensitivity of each with regards to a specific site and also prescribe the specialist assessments which need to be undertaken.
	A notice in terms of procedures for assessment and minimum criteria for reporting on identified environmental themes when applying for EA was published by the DFFE under the sections 24(5)(a), (h) and 44 of the NEMA. This notice prescribes general requirements for undertaking site sensitivity verification where a specialist assessment is required and provides protocols for the assessment with minimum report content requirements for each environmental theme. Each protocol applies exclusively to the environmental theme identified within its scope. Multiple themes may apply to a single application for environmental authorisation, and assessments for these themes must be undertaken in accordance with the relevant protocol.
	The specialist protocols prescribe that an Applicant intending to undertake an activity identified in the scope of a specified protocol on a site identified by the screening tool as being of "medium sensitivity" for each environmental theme must submit either a full Specialist Assessment Report or a Compliance Statement, depending on the outcome of a site inspection. Similarly, an Applicant intending to undertake an activity identified in the scope of a protocol on a site identified by the screening tool as being of "low" sensitivity must submit a Compliance Statement.
	In terms of undertaking a specialist assessment where no specific protocol has been prescribed, general requirements stipulated in Schedule A of the GN 320, where the required level of assessment must

 $^{^3}$ GN R984 in GG 38282 of 4 December 2014, as amended by GN R325 in 40772 of 7 April 2017 and GN 517 in GG 44701 of 11 June 2021.

 $^{^4}$ GN R985 in GG 38282 of 4 December 2014, as amended by GN R324 in 40772 of 7 April 2017, GN 706 in GG 41766 of 13 July 2018 and GN 517 in GG 44701 of 11 June 2021.

⁵ Previously known as the Department of Environmental Affairs (DEA)

⁶ https://screening.environment.gov.za/screeningtool

⁷ GN R 320 in GG 43110 of 20 March 2020

Act	Description
	be based on the findings of the site sensitivity verification must be followed. There is no specific specialist protocol that guides SIAs; thus, a general protocol would apply, and the assessment would need to comply with Appendix 6 of the EIA Regulations.
Overview of Integrated Environmental Management (IEM) Information Series 0 (Department of Environmental Affairs and Tourism (DEAT)8, 2004)9;	Integrated Environmental Management (IEM) is a key instrument of South Africa's NEMA. IEM provides the overarching framework for the integration of environmental assessment and management principles into environmental decision-making. It includes the use of several environmental assessment and management tools that are appropriate for the various levels of decision-making. The aim of the IEM Information Series guideline is to provide general information on techniques, tools and processes for environmental assessment and management.
	The Socio-Economic Impact Assessment, Integrated Environmental Management Information Series 22 of the former DEAT (now DFFE) published in 2006, is a comprehensive reference document that can be used as guideline as it provides valuable information on the SIA process, research techniques and approaches, as well as practical guidance for SIA practitioners.
	The series guidelines relevant to SIAs are provided below.
Integrated Environmental Management (IEM) Information Series 4: Specialist Studies	The focus of this document is to provide a guideline on the specialist study phase of the EIA process, over and above the legislated specialist protocols:
(Department of Environmental Affairs and Tourism (DEAT),	• Defining the scope of work.
2002)10;	Establishing baseline environmental conditions.
Integrated Environmental Management (IEM) Information	Field surveys and data collection.
Series 22: Socio-Economic Impact	Identifying and predicting potential impacts.
Assessment (Department of Environmental Affairs and Tourism	 Prescribing mitigation measures and their implications. Implementing monitoring requirements
(DEAT), 2006)11	A separate guideline document is also available for Socio-Economic Impact Assessments. This document describes the background to Socio-economic Impact Assessment (SEIA) and introduces the reader to the concept of SEIA and how it forms part of IEM. The aim of SEIA is to understand the current social and economic environment and use it as a baseline for predictions and measurements.

¹¹ DEAT (2006) Socio-Economic Impact Assessment, Integrated Environmental Management Information Series 22, Department of Environmental Affairs and Tourism (DEAT), Pretoria

⁸ Now known as the DFFE

⁹ DEAT (2004) Overview of Integrated Environmental Management, Integrated Environmental Management, Information Series 0, Department of Environmental Affairs and Tourism (DEAT), Pretoria

¹⁰ DEAT (2002) Specialist Studies, Information Series 4, Department of Environmental Affairs and Tourism (DEAT), Pretoria.

Act	Description
Guidelines and Principles for Social Impact Assessment published by the International Association of Impact Assessment (2003)	The purpose of this guideline is to provide information on good practice, to provide an overarching understanding of the SIA field, appraisal of social impact assessment (SIA) and social impact management processes, especially in relation to project development.



2.4 Requirements for Specialist Reports as specified in the 2014 EIA Regulations (as amended) and Protocols

The following table outlines the requirements for Specialist Reports and indicates the crossreference of the requirements in this document.

EIA CO	REGULATIONS 2014 GNR 982 Appendix 6 NTENT OF THE SPECIALIST REPORTS	Status / Cross-reference in this Report	
a)	details of the specialist who prepared the report; and the expertise of that specialist to compile a specialist report including a curriculum vitae;	Section 12	
b)	a declaration that the specialist is independent in a form as may be specified by the competent authority;	Section 12	
c)	an indication of the scope of, and the purpose for which, the report was prepared	Sections 1 and Error! R eference source not found.	
cA)	an indication of the quality and age of base data used for the specialist report	Most recent and available statistics from StatsSA were used.	
cB)	a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change	Sections Error! Reference s ource not found., Error! Reference source not found., 7 and 8	
d)	the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Sections Error! Reference s ource not found. and 4	
e)	a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Section Error! Reference s ource not found.	
f)	details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Sections Error! Reference s ource not found., Error! Reference source not found., 7 and 8	
g)	an identification of any areas to be avoided, including buffers;	Sections 9 and 10	
h)	a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers	Section 1	
i)	a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 3.7	
j)	a description of the findings and potential implications of such findings on the impact of the proposed activity or activities;	Section 10	
k)	any mitigation measures for inclusion in the EMPr	Section 9	
I)	any conditions for inclusion in the environmental authorisation;	Sections 9 and 10	
m)	any monitoring requirements for inclusion in the EMPr or environmental authorisation;	Sections 9 and 10	

Table 3: Requirements for Specialist Reports

EIA CO	REGULATIONS 2014 GNR 982 Appendix 6 NTENT OF THE SPECIALIST REPORTS	Status / Cross-reference in this Report	
n)	a reasoned opinion	Section 10	
	 whether the proposed activity, activities or portions thereof should be authorised; regarding the acceptability of the proposed activity or activities; and if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan; 		
o)	a description of any consultation process that was undertaken during the course of preparing the specialist report;	Stakeholder Engagement Process to be undertaken by EAP	
p)	a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Stakeholder Engagement Process to be undertaken by EAP	
q)	any other information requested by the competent authority	Not applicable	
2)	Where a government notice gazetted by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply.	Not applicable	

3. SCOPE OF WORK AND METHODOLOGY

The broad steps followed as part of the Basic Social Impact Assessment are discussed below.

3.1 Literature Review, Analysis and Desktop Studies

The literature review and desktop studies of more recent literature assisted the consultants in updating information pertaining to the social setting and characteristics of the study area, as well as the key economic activities.

3.2 Scope of Work

The level of detail and complexity of the SIA depend on the level of impacts and risks associated with each project. One of the initial steps was to determine the updated project scope and context through establishing an understanding of the project details, technical aspects and location of new infrastructure. This assisted in determining the level of assessment required, and which international guidelines and standards would be applicable and how the national policy context would be adhered to.

3.3 Literature Review

The secondary sources used in the study include (See Section 11 for a full list of sources used):

- Public documents including the most recent Integrated Development Plans (IDPs) and Spatial Development Frameworks (SDFs) of the relevant municipalities;
- Statistics South Africa data including Census 2022;
- Recent media articles related to the local area;
- Academic literature related to the local area; and

• Specialists reports responsible for different EIA work streams (where available at the time of the study.

3.4 Socio-Economic Impact Categories

The International Principles for SIAs considers that social impacts include all the issues associated with a planned intervention (i.e. a project) that affect or concern people, whether directly or indirectly (IAIA: 2015).

More specifically, social impacts are changes to the affected communities':

- Population profile or demographics;
- Livelihood or quality of life;
- Cohesion, character and stability;
- Use of infrastructure and facilities;
- Sense of place;
- Physical environment in which they live (e.g. Impact on the air quality, the quality and quantity of the water resources, dust and noise);
- Safety and security impacts; and
- Personal and property rights (Vanclay: 2003).

For assessing the impacts associated with the proposed project, the above variables were adapted to allow the assessment of the full range of socio-economic impacts relevant to the specific project and its socio-economic setting.

The economic assessment is mainly based on direct and indirect socio-economic impacts such as the possible changes in income patterns and employment opportunities due to the proposed project, as well as linkages to local suppliers. Anticipated cumulative impacts due to the overall increase in income levels and increased spending on goods and services which could lead to a further increase in production and employment in the local area, are further noted.

3.5 Consultation

Once the Stakeholder Engagement Process (SEP) (public participation process) has been initiated, consultation with key stakeholders will be conducted. Based on the inputs received, and responses obtained from representatives of the agricultural unions, landowners, municipal representatives and so forth, the SIA document will be updated. Concerns and proposed mitigation measures with regards to the possible negative impacts on the agricultural practices and land-use in the area will be noted.

3.6 Impact Methodology and Impact Evaluation

This section outlines the proposed method for assessing the significance of the potential environmental impacts. For each predicted impact, criteria are ascribed, and these include the intensity (size or degree scale), which also includes the type of impact, being either a positive or negative impact; the duration (temporal scale); and the extent (spatial scale), as well as the probability (likelihood). The methodology is quantitative, whereby professional judgement is used to identify a rating for each criteria based on a seven-point scale (refer to Table 4); and the

significance is auto-generated using a spreadsheet through application of the calculations in Figure 4 (Refer to spreadsheet attached to this document).

Calculations

For each predicted impact, certain criteria are applied to establish the likely **significance** of the impact, firstly in the case of no mitigation being applied and then with the most effective mitigation measure(s) in place.

These criteria include the **intensity** (size or degree scale), which also includes the **type** of impact, being either a positive or negative impact; the **duration** (temporal scale); and the **extent** (spatial scale). These numerical ratings are used in an equation whereby the **consequence** of the impact can be calculated. Consequence is calculated as follows:

Consequence = type x (intensity + duration + extent)

To calculate the significance of an impact, the **probability** (or likelihood) of that impact occurring is applied to the consequence.

Significance = consequence x probability

Depending on the numerical result, the impact would fall into a significance category as negligible, minor, moderate or major, and the type would be either positive or negative.

Figure 4: Calculation of significance

Table 4: Assessment criteria for the evaluation of impacts

Criteria	Numerical Rating	Category	Description		
	1	Immediate	Impact will self-remedy immediately		
	2	Brief	Impact will not last longer than 1 year		
	3	Short term	hort term Impact will last between 1 and 5 years		
Duration	4	Medium term	Medium term Impact will last between 5 and 10 years		
	5	Long term	Impact will last between 10 and 15 years		
	6	On-going	Impact will last between 15 and 20 years		
	7	Permanent	Impact may be permanent, or in excess of 20 years		
	1	Very limited	Limited to specific isolated parts of the site		
	2	Limited	Limited to the site and its immediate surroundings		
	3	Local	Extending across the site and to nearby settlements		
Extent	4	Municipal area	Impacts felt at a municipal level		
	5	Regional	Impacts felt at a regional level		
	6	National	Impacts felt at a national level		
	7	International	Impacts felt at an international level		
	1	Negligible	Natural and/ or social functions and/ or processes are negligibly altered		
Intoncity	2	Very low	Natural and/ or social functions and/ or processes are slightly altered		
Intensity	3	Low	Natural and/ or social functions and/ or processes are somewhat altered		
	4	Moderate	Natural and/ or social functions and/ or processes are moderately altered		

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Criteria	Numerical Rating	Category	Description	
	5	High	Natural and/ or social functions and/ or processes are notably altered	
	6	Very high	Natural and/ or social functions and/ or processes are majorly altered	
	7	Extremely high	Natural and/ or social functions and/ or processes are severely altered	
Probability	1	Highly unlikely / None	Expected never to happen	
	2	Rare / improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere	
	3	Unlikely	Has not happened yet but could happen once in the lifetime of the project, therefore there is a possibility that the impact will occur	
	4	Probable	Has occurred here or elsewhere and could therefore occur	
	5	Likely	The impact may occur	
	6	Almost certain / Highly probable	It is most likely that the impact will occur	
	7	Certain / Definite	There are sound scientific reasons to expect that the impact will definitely occur	

When assessing impacts, broader considerations are also taken into account. These include the level of confidence in the assessment rating; the reversibility of the impact; and the irreplaceability of the resource as set out in Table 5: Definition of confidence ratingsTable 5, Table 6, and Table 7.

Table 5: Definition of confidence ratings

Category	Description
Low	Judgement is based on intuition
Medium	Determination is based on common sense and general knowledge
High	Substantive supportive data exists to verify the assessment

Table 6: Definition of reversibility ratings

Category	Description
Low	The affected environment will not be able to recover from the impact - permanently
	modified
Medium	The affected environment will only recover from the impact with significant intervention
High	The affected environmental will be able to recover from the impact

Table 7: Definition of irreplaceability ratings

Category	Description
Low	The resource is not damaged irreparably or is not scarce
Medium	The resource is damaged irreparably but is represented elsewhere
High	The resource is irreparably damaged and is not represented elsewhere

3.7 Gaps, Limitations and Assumptions

With regards to the SIA undertaken, the following should be noted:

• The socio-economic impact assessment aims to identify possible socio-economic impacts that could occur in future. These impacts are based on existing baseline information. There

is thus always some form of uncertainty with regards to the anticipated impact actually occurring, as well as the intensity thereof. Impact predictions have been made as accurately as possible based on the information available at the time of the study.

- Sources consulted are not exhaustive and additional information can still come to the fore to influence the contents, findings, ratings and conclusions made.
- Technical and other information provided by the environmental consultant is assumed to be correct.
- No consultation has been undertaken in compiling this report. The stakeholder engagement process will be undertaken by the EAP. Information gathered during this process will be included and if required, additional consultation will be undertaken before finalisation of the SIA.
- Socio-economic baseline information was mainly based on the most recent and available official statistics from Stats SA, as well as municipal documentation. The lack of recent official socio-economic data on municipal level is not anticipated to influence the outcome of the report.

4. DESCRIPTION OF THE RECEIVING ENVIRONMENT

Each community is unique as it is shaped by its social networks, cultural influences, values and norms, politics and the infrastructure in the area. The report therefore provides an overview of the social characteristics of the area in order to determine its current capacity and its ability to manage change.

4.1 Free State Province

The Free State, located in the geographical centre of South Africa, is the third-largest province as it covers an area of approximately 130 000km² and has a population of 2 964 412. It can be described as a rural province of farmland, mountains, mining areas and widely dispersed towns. Its capital is Bloemfontein, the judicial capital of South Africa. The province has the second lowest population profile in South Africa and the second lowest population density (StatsSA, 2023).

The provincial economy is dominated by agriculture, mining and manufacturing. Approximately 90% of the province is under cultivation for crop production. It produces approximately 70% of the total grain production of South Africa. The mining sector is the major employer.

The Free State is divided into one metropolitan municipality (Mangaung Metropolitan Municipality) and four district municipalities, which are further subdivided into eighteen local municipalities (Local Government, 2023).

The proposed project falls under the jurisdiction of the Mangaung Metropolitan Municipality (MMM) area, as well as the Kopanong Local Municipality (KLM). The latter municipality falls within the Xhariep District Municipality (XDM) area.



Figure 5: Map indicating the Xhariep pipeline project: Scheme 1B crossing the various municipal areas

4.2 Xhariep District Municipality

The Xhariep District Municipality (XDM) is a Category C municipality situated in the southern part of the Free State. It is bordered by the Mangaung Metro to the north, Eastern Cape to the south, Lesotho to the east, and Northern Cape to the west.

It is the largest district in the province and comprises three local municipalities: Letsemeng, Kopanong and Mohokare. Its administrative headquarters are in Trompsburg, which is approximately 125km south of Bloemfontein.

The area is a semi-arid rural area with dispersed towns or rural nodes throughout. Approximately 74% of the district comprises of extensive agriculture of livestock farming (sheep and cattle) that produces wool and meat. Areas adjacent the Orange River are also used for irrigated agriculture which includes maize, wheat and lucerne production (XDM IDP, 2022).

The main national roads traversing the area are the N1 (Gauteng to Western Cape), N6 (Eastern Cape to Bloemfontein) and N8 (Bloemfontein to Kimberley).

Development challenges in the XDM include the following:

- Poverty and unemployment;
- Inadequate access to basic services (water, sanitation, refuse collection, electricity, and housing and primary health care);

- Infrastructure, maintenance and service backlogs;
- HIV and AIDS prevalence rate, antenatal care and Tuberculosis (TB);
- Substance abuse;
- Illegal dumping;
- High rate of illiteracy and lack of tertiary institutions; and
- Lack of integrated planning between the three spheres of government (XDM IDP, 2022).

With a GDP of R7.86 billion in 2017, the XDM contributed 3.36% to the Free State Province GDP. There is an annual average of 2.2% growth in the GDP. The main employment sectors are the trade sector, followed by the community service sector. In 2017, the percentage of people living in poverty in the district was calculated at 57.9% which was slightly lower compared to the national figure in this regard (XDM IDP, 2022).

4.3 Kopanong Local Municipality

The Kopanong Local Municipality (KLM) is a Category B municipality situated within the Xhariep District of the Free State Province. Its surface area covers 15 663 km². The towns situated in the KLM are Trompsburg (municipal head office), Gariepdam, Springfontein, Bethulie, Philippolis, Jagersfontein, Fauresmith, Edenburg and Reddersburg.

The municipality also accommodates Bethany which is part of a national land restitution case. The Bethany Land Restitution Project is situated on the farm Bethany 610 to the north of Trompsburg and near Edenburg on the N1 near the Bethany Mission (along the Wurasoord-Reddersburg Road).

The municipal area is predominantly agricultural with limited value-adding activities taking place. Basic agricultural products are exported from the area for processing and re-imported into the area as consumer products.

The characteristics of the main towns along the proposed pipeline alignment are briefly discussed below.

Gariepdam town serves as a key regional tourist destination linked to water sports and water recreational activities. Gariepdam has two main tourist attractions in the Free State, namely the Gariep Dam Nature Reserve and the Forever Resorts Gariep, a holiday resort. There are also a number of guest houses and bed and breakfast facilities at Gariepdam to cater for the visitors. There is a need for the integration of the former separated town areas through infilling planning and sustainable land management. In 2011, the town had a population of 1 568 individuals. It is anticipated that this figure grew steadily as per the growth rate of the district.

Springfontein/Maphodi/Williamsville serves as a general agricultural service centre and is situated approximately 22 km south of Trompsburg. Access to the town is via the N1 between Bloemfontein and Colesberg. There is a need for commercial and social integration of the former separated town areas, where Springfontein is to the west of the railway line and Maphodi and Williamsville to the east. A shortage of especially lower income housing creates further challenges. Various developmental projects were initiated in the area, but not completed. According to recent articles 90% of the people of Springfontein depend on grants and have to travel to Trompsburg for basic necessities (Lategan, 2023 & ActionSA, 2023).

Trompsburg/Madikgetla serves as the regional administrative seat within KLM. It is situated approximately 108 km south of Bloemfontein. Access to the town is via the N1 between Bloemfontein and Colesberg. The main social and economic functions of the town include its function as a local municipal administrative centre, and regional agricultural, as well as social services centre. There is a lack of sufficient housing and sustainable land-use management (XDM IDP, 2022).

Edenburg/Ha-Rasebei also serves as a general agricultural service centre within KLM. It is approximately 39km north of Trompsburg. The town also require social integration and housing for lower income individuals (XDM IDP, 2022).

4.4 Mangaung Metropolitan Municipality

Mangaung Metropolitan Municipality (MMM) includes three urban centres, namely Bloemfontein, Botshabelo, and Thaba Nchu. It covers an area of 9886 km² and had a population density of 86 people per km² in 2019.

Botshabelo was established in the early 1980s and is located 55km to the east of Bloemfontein. It was intended to provide labour to Bloemfontein whereas Thaba Nchu is situated 12km further to the east of Botshabelo and used to be part of the Bophuthatswana area. As a result it exhibits a large area of rural settlements on former trusts lands (MMM IDP, 2023).

In 2016, the Naledi Municipalitiy and the town of Soutpan merged under the MMM. The expansion of MMM meant that the municipality had not only serve more people but had to further expand its infrastructure over a larger geographical area. The municipality were challenged by the financial pressure and was placed under administration in 2019. This made MMM more dependent on external grants which also affected the development of infrastructure. It therefore requires:

- Good intergovernmental relations to translate into joint planning and transformation;
- Build on existing state capability to accelare progress; and
- An effective socio-political administrative interface for project planning (SA Cities Network, 2021).

The rural area of the MMM is characterised by extensive commercial farming, mainly mixed crop production and cattle farming, as well as subsistence and small farmers mostly operating in the areas surrounding Thaba Nchu and Botshabelo (MMM IDP, 2023).

The Mangaung residential area which represents the south-eastern quadrant of the metropolitan area is the most densely populated section. Originally this area developed southwards in a narrow strip to the east of Hamilton industrial area and Church Street (along Maphisa Road and Moshoeshoe Street up to Rocklands) located between the existing rail and road infrastructure in the south-eastern parts of the city. The area expanded rapidly to the south-east on both sides of Dr Belcher Road (R702). A large percentage of these residential areas include informal settlements especially to the south where the proposed pipeline alignment would travers. Pockets of illegal occupation of land occur in this area of Mangaung, where the majority of the various informal settlements in the metropolitan area are located. This stimulates urban sprawl as there is continuous pressure to formalise these settlements. This land use pattern within the southern edge of the urban footprint leads to longer travelling distances for the urban poor. It also creates a travel

demand from these areas along the major roads to the CBD resulting in traffic congestion along these routes (MMM SDF, 2020).



Figure 6: Mangaung Metropolitan Municipality and Kopanong Local Municipality

4.5 Demographic Baseline Profile

Table 8 below outlines the key demographic characteristics of the local (Kopanong Local Municipality) and metropolitan municipal (Mangaung), district (Xhariep) and provincial profiles (Free State).

KEY DEMOGRAPHICS	Free State	XDM	KLM	МММ
Population Size				
Individuals	2 964 412	131 901	51 832	811 431
No. of Households	845 250	36 064	14 578	229 426
Household Size	3.5	3.7	3.6	3.5
Age distribution				
Young children: > 14 years	26.6%	28%	27.8%	25.1%
Working age: 15 - 64 years	66.4%	64.3%	63.4%	68.2%

Table 8: Key Demographics
KEY DEMOGRAPHICS		Free State	XDM	KLM	МММ
Elderly: 65 years	+	7.0%	7.7%	8.8%	6.7%

(Source: StatsSA Census 2022)

The following key points can be noted:

- According to Census 2011, the MMM had a population of 747 431 individuals. There was a 14.9% change in the population since then. In 2016 the estimated population was 787 804. In 2022, the population totalled 811 431 with 229 426 households (Census 2011, 2016, 2022 & SA Cities Network, 2021). There has thus been a further increase from the 2016 estimated number of individuals and households that all require services and infrastructure from the MMM.
- The KLM had an increase in its population from 49 171 in 2011 to 51 832 in 2022. Prior to 2011 there was even a negative growth in KLM as was experienced in the XDM. This very low increase from 2011 is probably an indication of the migration of young people to urban areas such as the MMM in search of employment due to the lowering of available jobs in the agricultural sector which forms the main economic sector within the KLM.
- Although lower than the district and provincial, as well as the KLM age categories, the age structure of the study area indicates a fairly young population for all areas. There would thus be a definite need for educational and recreational facilities, youth development, as well as training and employment opportunities in the area in future.
- Due to the limited number of employment opportunities in the rural areas and adjacent municipalities, it is anticipated that Bloemfontein would experience a continued influx of people as Bloemfontein serves as the economic hub, with the other areas then possibly experiencing long term declines. This large influx represents both challenges and opportunities for the MM, such as increase in demand for basic services and human settlement, while the opportunities are amongst others revenue income for the municipality (MMM IDP, 2023).

4.6 Employment and Income

South Africa's unemployment rate decreased by 1,0 percentage point to 32,9% in Q3:2022 compared to Q2:2022 and the expanded unemployment rate decreased by 1,0 percentage point to 43,1% in Q3:2022 compared to Q2:2022. The Free State Province had an unemployment rate of 33.8% and an expanded unemployment rate of 40.8% in 2022. In 2021, the MMM unemployment was 38.2% (StatsSA QLFS, 2022 & SA Cities Network, 2021).

The employment profile for the study area provided below is based on the Community Survey of 2016, also for the Free State Province for comparability. No breakdown figures as part of the Census 2022 for the province, municipality and district could be sourced.

EMPLOYMENT AND INCOME	Free State	XDM	KLM	МММ
Employment levels				
Employed	36.2%	36.5%	36.3%	41%

Table 9: Employment Profile

EMPLOYMENT AND INCOME	Free State	XDM	KLM	МММ
Unemployed	17%	13%	13%	16%
Discouraged work-seeker	6%	7%	7%	4%
Other non-economically active	41%	43%	44%	39%
Income Levels				
Annual household income below R40k incl. no-income households	62%	68%	68%	55%

(Source: StatsSA; Community survey 2016)

The following key points can be noted:

- The provincial unemployment increased significantly from 2011 until 2022. It can thus be expected that the district, metropolitan and municipal unemployment rates also increased to a similar extent.
- Income levels are low and numerous households live below the poverty line.
- The employment and income levels within the MMM indicated better compared to the KLM, XDM and Free State. This can be attributed to the fact that Bloemfontein within the MMM serves as the main economic centre in the district and province.
- Bloemfontein continues to experience a large influx of jobseekers to the area, as this town forms the economic hub of the MMM and Free State Province.

The national youth unemployment figures are of concern. Youth (those aged 15-24 years and 25-34 years) recorded the highest unemployment rates of 59,6% and 40,5% respectively in South African in 2022 (StatsSA QLFS, 2022). The MMM implemented the Youth Enterprise Development programme in 2015. This programme was aimed at unlocking opportunities for skills training and knowledge creation, and to develop and nurture the skills base in order to better employment prospects for the youth, by exposing them to on-the-job training, and supporting entrepreneurial skills among young people. No updated information on the progress in this regard could be sourced.

4.7 Education and Skills Levels

The Free State Province experience a significant rise in school attendance during 2011 to 2022 with the percentage of individuals aged 5 to 24 years attending educational institutions increasing by nearly four percentage points, from 73,1% to 76,8%. Those in the province that completed secondary school were at 36.5% (2022 statistics) and those busy with post school education were at 10,2% which also indicate a provincial increase from the 2016 information as indicated below (StatsSA, 2022).

The following table provides a summary of the education levels within the province and study area.

EDUCATION AND SKILLS LEVELS	Free State	XDM	KLM	МММ
No Schooling	6%	11%	11%	5%
Some Primary	12%	16%	15%	10%
Primary	5%	7%	6%	4%
Some Secondary	35%	33%	34%	32%
		1		

Table 10: Education and Skills Levels

EDUCATION AND SKILLS LEVELS	Free State	XDM	KLM	МММ
Completed Secondary (Grade 12)	33%	28%	26%	36%
Tertiary	6%	6%	5%	9%

(Source: StatsSA; Community survey 2016)

The following key points can be noted:

- The education levels are directly linked with the population's level of employability.
- Persons with no schooling are defined as people who have never received any form of formal education. This implies illiteracy in most cases and would possibly limit the person to performing manual labour.
- Those that completed matric and those with a tertiary education in the MMM were higher compared to the other areas in 2016. This can be due to the number of schools within the metropolitan area, and availability of tertiary education facilities such as the University of the Free State (UFS), Central University of Technology, TVET College and Nurses Training College.
- A limited 5% of those within the KLM had a tertiary education with 9% within the MMM. The KLM, together with the national and provincial educational authorities should embark on a programme to ensure a suitable environment for education and training. Efforts should also be focused on ensuring that learners complete their secondary education.

4.8 Water Services Delivery

The MMM is both a Water Services Authority (WSA) and Water Service Provider (WSP) and its mandate is thus to provide access to safe and reliable potable water to its consumers. The MMM has to provide water services to its 229 426 households. In the MMM IDP of 2022 it was indicated that there was a backlog of approximately 15 000 households.

Bulk water supply problems and ageing infrastructure result in frequent water interruptions and shortages. Due to the average population growth, and the rapid spread of informal settlements, the water demand in the metropole will continue to increase.

The proposed Xhariep Pipeline Project: Scheme 1B will involve abstraction at the Gariep Dam and transfer via pipelines and ancillary infrastructure to the Mangaung Metropolitan Municipality and its associated towns to assist MMM in the supply of water.

A Water Conservation and Water Demand Management Plan has to be developed for the KLM. These plans will focus on water losses, reduction in consumption, recycling of water, and the implementation of monitoring and control of water consumption (KLM IDP, 2022).

4.9 Key challenges in study area

The MMM faces severe challenges in terms of the provision of water and electricity services. Vital service infrastructure, including roads, and sewerage further requires upgrading and maintenance to ensure successful service delivery. Residents' complaints are focused on water leaks, potholes, uncollected refuse and unpaid service providers. In 2018, the service delivery performance was as follows:

• 98% of households had access to electricity;

- 89.3% of households had access to basic sanitation which was lower compared to 2015 (90.3%);
- 86.4% of households had access to basic water supply which indicated that the MMM cannot keep up with the growing population and demand (97.1% in 2015); and
- 77.3% of households had access to weekly waste removal services (also lower compared to 90.3% in 2015) (SA Cities Network: State of Cities Report, 2021).

The following strategic risks that relate to water infrastructure have been identified within the MMM (MMM IDP, 2022):

- Unreliable bulk water supply from the source;
- Decline in water revenue, bulk and reticulation backlog in relation to water, sanitation, electricity, road and storm-water due to ageing infrastructure that increases pressure on repairs and the maintenance budget; and
- Maintenance backlogs in respect of service delivery infrastructure.

As part of the KLM IDP process of 2022 the KLM identified the following areas that require urgent interventions:

- Ensuring financial sustainability of the municipality in order to fulfil its statutory obligations or mandate is critical. In 2022 the municipality was places under administration and regularly fails to pay its workers and other debt. The KLM struggles to collect revenue, and currently, the municipality's revenue is far lower than its expenses;
- Upgrading of the transport, roads and storm water infrastructure;
- Upgrading of water and sanitation infrastructure;
- Addressing the housing backlog;
- Improving safety and security; and
- Addressing economic development and poverty.

The service delivery challenges faced by the KLM thus do not differ from the other local municipalities in the Free State Province.

4.10 Local Economy

The MMM has a smaller economy than other metros and is not home to any large enterprises or headquarters of national or international corporations. MMM's dominant economic sectors are therefore government services and regional services. Bloemfontein is ideally equipped to support industrial activities and is the base of a huge agricultural area. The consumer market in Mangaung and its immediate vicinity is extensive as it not only includes local residents, but also the buying power of Lesotho citizens, with farmers from the surrounding rural areas, boosting the retail market (MMM IDP).

In 2016 the MMM contributed R57 billion to the Gross Value Added (GVA) of the national economy which was increased to R59 billion in 2019 (SA Cities Network, 2023). Compared to the Free State Province (0.29%), the MMM had a higher average annual growth rate of 1.15% over the period 2012 to 2019. It is estimated that the value of the economy will grow to around R 111.3 billion by 2026 (MMM IDP, 2022).

Three projects have been identified to address the socioeconomic inequalities in MMM by revitalising the local economy, increasing densities, improving transport, creating an industrial base, and linking economic development, residential development and heritage. These projects include the Airport Node Development, the Waaihoek Precinct, and the Naval Hill Re-development (SA Cities Network, 2021).

The MMM, however, faces a number of challenges in respect of economic development. These include:

- Coordinating and building on all the attempts to support economic development in the municipal area. Specifically, the coordination of activities of national government, the Free State Province, Motheo District Municipality as well as the private sector.
- Addressing the specific economic development priorities identified by communities in the ward planning process, as well as strategically in the IDP.
- The establishment of a broad stakeholder based economic development strategy and partnership is seen as a key mechanism for addressing these challenges and facilitating economic development in the area (MMM IDP, 2022).

The main economic sectors in KLM include agriculture (38%), general government (23%), finance (13.3%), and trade (10.2%).

The KLM area has a high potential for farming and agricultural crops can do well because of deep soils, mainly in the Bethulie, Gariep Dam and Reddersburg areas. The climate and topography favour mostly agricultural crops such as maize, beans and potatoes. Maize is also the main agricultural field crop on which the emerging farmers are focused on. The relative reliable local market assists in this regard.

In light of challenges currently facing the agricultural sector in Kopanong, there is a need for the formulation of an agricultural plan for the area. Such a plan should guide the development of the agricultural sector and allow the Kopanong Local Municipality to co-ordinate agricultural economic activities in the area (KLM LED, 2013).

Tourism can furthermore be seen as a priority sector in the municipality. Although tourism potential exists, the benefits are not currently maximized. The municipality has recognised the importance of understanding the close interrelationship between the tourism product and marketing efforts of the area. They will aim to ensure that the limited resources at hand are effectively and efficiently spent.

The strategic location of the KLM and the road network are some of the strengths identified in terms of local economic growth. Some of the weaknesses that need to be overcome include aging infrastructure; illiteracy; available local markets, weak local economy and low education levels and large proportions of unskilled labour.

The following focus areas that were previously identified to stimulate local economic growth remain and include:

- Facilitate job creation within KLM;
- Promote the area's tourism, natural and cultural assets;
- Promote the reduction of poverty in KLM;

- Encourage investment, business retention and expansion;
- Promote the creation and growth of small enterprise owned and managed by Kopanong's entrepreneurs;
- Foster productive economic linkages between KLM and the wider regional economy;
- Facilitate the development of skills to enable residents to participate in the local economy; and
- Enhance the stability and growth prospects of the KLM (KLM LED, 2013 & KLM IDP, 2022)

The main strategies noted for economic development were the following:

- Creation of a sustainable economic environment that would support entrepreneurial development;
- Capacity building and training;
- Business support and advice; and
- Development of programmes focused on institutional development.

The KLM further aims to ensure business development by ensuring economic growth and employment generation through the economic growth which is generated by small and medium sized enterprises (SMMEs) that are already established in the community. This would include the creation of linkages and networks among the local agencies concerned with the different components of SMME development, as well as building sustainable partnerships among local government bodies, government organizations and private sector, NGOs and communities. Such efforts could assist in ensuring continued support for SMMEs to grow, sustain and expand their businesses (KLM LED, 2013).

5. ANTICIPATED IMPACTS DURING THE CONSTRUCTION PHASE

5.1 Introduction

During the construction phase, the following activities could be undertaken:

- Vegetation clearing along the pipeline route servitude;
- Earthworks (digging) for trenching to accommodate the various services;
- Installation and positioning of the pipeline;
- Installation of foundations for infrastructure where required;
- Transportation of materials;
- Crossings of roads and streams;
- Construction of access roads and rehabilitation of existing road surfacing if affected by the works;
- Delivery, assembly and general civil engineering work related to installation of pipeline and other infrastructure such as reservoirs and pump stations;
- Traffic management in areas where construction activities have an effect on traffic flow patterns (in and around urban areas); and
- Rehabilitation of construction sites.

The construction activities are estimated to run over a period of forty-eight months or approximately four years. During the construction period various teams could be deployed along the length of the pipeline and at the associated infrastructure's construction sites. There will be various teams of different sizes working at the stationary construction sites and at points along the pipeline route. Once a specific section has been completed and rehabilitated, the construction activities would move to the following section of the route.

On average, the teams would be able to complete a hundred (100m) meters of pipe laying per day in open areas, but in built-up areas, pipe laying production is anticipated to be 20m to 40m per day. The teams will later return to construct the chambers along the pipeline route. Constructing a chamber can take up to 6 weeks.

The construction servitude width that would be required for the movement of construction vehicles and equipment, trenching and so forth would likely be up to 60m, but would also be area dependent. The final registered servitude width would be between 15m to 18m, but these details must still be finalised with DWS.

Laydown areas have been allocated for within the proposed areas allowed for the water treatment works and reservoirs sites. These areas would typically not exceed 2ha.

Impacts associated with the construction phase of the project is thus temporary in nature, but could have long term effects on the surrounding environment.

When referring to the associated (ancillary) infrastructure that has to be constructed it refers to the following:

- Low Lift Pump Station;
- Water Treatment Plant and High Lift Pump Station;
- Command Reservoirs; and

• Booster Pump Station.

5.2 Employment Opportunities

Contractors will be appointed and be responsible for the different construction activities. Various factors will determine the number of individuals to be appointed to construct the pipeline and associated infrastructure. At this stage it is anticipated that 100 full-time direct job opportunities will be created for a duration of the 48 months/4 years' construction phase. The number of workers during the peak construction period can increase to 200 individuals but would depend on the construction management plan and the size of the different teams.

Further production in industries supplying the proposed development, and the increased demand for consumer goods and services in the area during the construction phase, will create or sustain additional employment opportunities.

In the KLM area, construction contributes very little to the local economy, as there are currently no known large scale construction activities. The IDP (KLM IDP, 2022) also stated that the construction sector was reduced, but did not indicate percentages. It is then anticipated that the immediate local area surrounding the smaller towns in the study area have a limited number of local businesses or contractors that could benefit from the contract opportunities. Contractors would possibly be sourced from within the province or even outside the provincial boundaries.

Pipeline construction requires manual labour e.g. during the installation of gates in cases where the pipeline would cross fence lines, erection of fences, clearance of the servitude, land stabilisation, repairing roads and streets, restoration of top soil, and so forth. Irrespective of the appointment of the main contractor, there would thus be opportunities for low (\pm 70% of the workforce) to medium-skilled labour (\pm 30% of the workforce). Medium skilled workers refer to those with technical qualifications up to grade 12: NQF Level 1- 4 and the lower skilled workers include those with no NQF level skills up to Grade 8. Some specialist skills would also be required. It is anticipated that individuals with these skills will form part of the main contractor team.

Due to the high unemployment rates that prevail in the KLM and MMM, the creation of employment for the locals must remain a priority, even if the extent is limited and only temporary, as this would enhance the potential positive impact of the project. Involvement of small businesses would stimulate the local economy and again create further local job opportunities for individuals employed by these small businesses.

Failure to involve the local population, emerging contractors and SMMEs during construction could lead to negative attitude formation against the proposed project. Sites where the installation of critical infrastructure occur and construction sites throughout South Africa are being invaded by the so-called construction mafia. Care should thus be taken that legitimate business forums are consulted to avoid extortion, disruptions and delays in the construction timeframe.

Another possible negative impact with regards to employment relates to contesting remuneration packages. Concerns relate to the possibility that the employment opportunities created by the proposed project in the area would lead to a situation where farm workers would leave their current employment in search of better paid work during the construction phase of the proposed project. This could result in conflict between construction workers and the local communities, as well as

result in individuals losing their permanent positions as farmworkers. The probability of this occurring is unlikely but should be noted. This negative impact was not rated as part of the rating matrix.

5.3 Inflow of Temporary Workers and Jobseekers

The majority of the construction activities related to the pipeline and associated infrastructure would be undertaken by the main appointed contractor. Such a main contractor can use their own teams of personnel or appoint sub-contractors to undertake the construction activities, especially those specialised tasks requiring various highly technically skilled individuals with specific experience in a particular type of construction field.

The inflow of workers could result in temporary intrusion impacts, which are anticipated to have some negative impact on the residents throughout the study area, where construction is undertaken in close proximity to the towns. The local communities would be used to a quiet rural environment and the presence of the construction workforce could disturb this lifestyle, which could further lead to possible social conflict and interruptions in the social networks. This could in worst cases refer to littering, increased noise levels, short-term unsustainable relationships, the possible spread of sexually transmitted diseases, intrusions on dwellings and households, general misbehaviour of workers, indecent and unruly conduct of these workers seeking recreational opportunities in local communities, an increase in alcohol abuse, the development of informal vending stations and possible added pressure on the service levels and infrastructure development in the area.

Specific intrusions will be experienced by landowners with regards to agricultural activities and movement on their properties. This will be more intense where the servitude could traverse near homesteads on farms. This aspect is further discussed under Sections 465.8 and 5.10.

As the construction team sizes would differ, the impact of the inflow of the temporary workforce would differ in specific areas. At the stationary construction sites such as at the reservoir and pump station, the average construction team size would be between 20 to 30 individuals. At the water treatment works, the team can include up to 50 people. Construction activities at these areas are also expected to last longer in one concentrated area. The intrusions felt by the movement of the workforce and construction vehicles and equipment will be more marked in these areas.

Along the pipeline route, the average size of the construction workforce can be about between 10 to 20 people.

The proposed construction activities are anticipated to result in an inflow of jobseekers to the construction sites or areas. Jobseekers refer to local unemployed persons and even individuals from outside the municipal boundaries. This could even materialise prior to the construction phase when people become aware of the proposed project. As the proposed pipeline alignment is along the N1 and in close proximity to the Mangaung area and the informal settlement of..... it is likely that this impact will occur.

Jobseekers coming to the towns in close proximity to the construction areas could add to the pressure on the local services and infrastructure and even cause social disruption when coming into conflict with the local community members in search of employment. Long term impacts can continue if the jobseekers remain in the area after the construction has been completed.

Property owners will also have concerns with regards to the impact on criminal activity in the area during the construction phase as a result of more people movement and the possibility of the inflow of jobseekers.

The extent of the impacts associated with the inflow of jobseekers is difficult to anticipate and avoiding the impact is challenging. Pro-active mitigation measures should thus be strictly implemented to deal with the possible impacts associated with the anticipated jobseekers.

The intensity of the impact would further depend on whether local labour would be employed. Negative impacts on the social dynamics and networks in the area due to the inflow of temporary workers can thus be mitigated.

5.4 Accommodation of workforce

Unsuitable accommodation arrangements and facilities can result in conflict between the workforce and the local community members, as well as result in environmental pollution.

The contractor will be responsible to plan for accommodation as no accommodation will be permitted on site. The construction workforce will probably make use of existing accommodation facilities in the nearby towns and will be transported to site on a daily basis. Within the more remote areas, there is the option to rent farmhouses (if available and suitable) to limit the travelling distances and to lower the transportation costs.

The requirement for accommodation facilities would therefore depend on the number of locals that could be employed, the phasing of the construction process, financial considerations and practical aspects, and the availability of local accommodation facilities.

The local hospitality industry can experience temporary financial gain where workers would be accommodated in established accommodation facilities in towns.

5.5 Local Economic Contribution

The proposed project will result in an economic injection into the area with various positive impacts.

The local and regional economies will benefit from civil contractor work, labour and general building materials that will be required on site if the proposed project is approved. The local and regional economic benefits from the proposed project will relate to the following issues:

- The direct capital investment into the local economy;
- The purchase and/or contract of local goods and services associated with the construction industry which can lead to various spin-offs such as the procurement of local businesses and long-term employment associated with such businesses.
- Direct and indirect employment creation as a result of the construction activities; and
- Temporary indirect local socio-economic benefits in the rural towns through the increased buying power of construction workers.

Overall, a positive impact on the local and regional economy is foreseen, although it could be focused on specific suppliers and service providers only. It is recommended that the contractors commit to involving locals (HDSAs and SMMEs) in the procurement of general capital goods, consumables and services, if these are locally available and economically feasible. This would benefit the local building and construction industry and other business services sectors.

5.6 Impact on Metropolitan and Local Municipality

Although the project falls within the jurisdiction of both the MMM and KLM, these municipalities would not directly contribute to the project, but would assist in improving the overall service delivery.

The proposed project could furthermore address concerns raised by stakeholders and community members with regards to the provision and reliability of potable water in the area. The implementation of this project can create the opportunity to supply sufficient potable water to Bloemfontein and surrounds.

5.7 Community Health Risks

Health risks, such as the spread of HIV/Aids with long-term possible regional consequences, are usually associated with construction projects. One of the key challenges of the MMM and KLM is addressing the impacts of HIV/Aids on the socio-economic condition and the quality of life of many suffering from the disease. Any increased people movement and the presence of an outside workforce, combined with high density areas (such as the densely populated area of Bloemfontein/Mangaung south) where the youth form a large section of the population profile, could increase the spread of the disease. This area and the towns within the larger study area along the pipeline route host many poor households which do not have the economic means to combat the health risks associated with HIV/Aids.

Maximising the employment of localised individuals could assist in limiting these types of health risks.

Poor construction site management can result in environmental health risks such as water pollution, littering, improper sanitation facilities, and inefficient solid waste management. Adherence to and implementation of the mitigation and management measures as part of the Environmental Management Programme report (EMPr) would avoid and minimise such potential impacts.

The construction activities in itself increase the risks of construction related accidents and injury to the workforce. The increased traffic volumes, due to the transportation of the workforce and construction equipment e.g. low-beds transporting excavators, further intensifies this risk. The additional risk of accidents could put more pressure on the local emergency services, although only for a short period of time.

Accidents during the construction phase will remain a source of concern.

5.8 Community Safety Risks

Short-term safety and security related impacts relate to the perceived loss of security during the construction phase of the proposed project due to the influx of workers or outsiders to the individual farms (as an influx of newcomers are usually associated with an increase in crime) and the perceived change that the proposed project would bring to the quiet rural area. Crime levels are anticipated to increase if the project also attracts large numbers of jobseekers, especially if these jobseekers gather at the smaller towns along the pipeline route such as the Gariepdam town, Edenburg, Springfontein and Trompsburg.

In the Bloemfontein area it should be noted that there is an existing movement and influx of informal workers at and around the landfill site, which is situated to the west of the Longridge Reservoir.

The movement of an increased number of outsiders in that area could exacerbate the risks of criminal activity.

The increased risks of veld fires, due to possible construction worker practices (e.g. cooking/heating), are further safety and security related impacts that should be mitigated.

Where the proposed location of the construction sites (pipeline and ancillary infrastructure) would be in close proximity to farm dwellings, the local towns and densely populated sections of Bloemfontein, the anticipated impacts could be more intense and would mainly relate to the following:

- movement of construction vehicles (e.g. heavy machinery, earthmoving equipment), possibly through the residential areas increasing the risk of accidents;
- unauthorised entry to the construction sites (including children); and
- the influx of an outside workforce and potential jobseekers would lead to an increase in the local population which could impact on the crime risks.

Mitigation in this regard remains critical.

5.9 Impact on Infrastructure and Services

Although the contractor through the construction management plan and adherence to the EMPr would do their utmost to avoid disruptions of any infrastructure and/or services during the construction of the pipeline and associated infrastructure, some services could be temporarily affected as the proposed pipeline would mainly run parallel to N1 national road, and would cross provincial roads, railway lines as well as farming and water related infrastructure. Where road crossing would occur, roads could be closed for short periods of time. Construction standards and guidelines to be adhered to may differ depending on the category of road to be crossed. The possible impact on the servitude management of Eskom powerlines should also be noted.

Due to the fact that the majority of land affected by the proposed project is privately owned, the possible impact on the infrastructure on the various properties should be included as part of the servitude negotiations. This could complicate negotiations and could in worst cases thus have an impact on the timeframe of the project planning phase, as well as the cost of the project.

Impacts on infrastructure and services could further occur if the proposed pipeline would enter the Transnet Freight Rail's Right of Way (RoW) or where the pipeline would cross underneath the railway lines. The engineering aspects should then take note of the location of culverts, road over rail bridges, existing water pipelines, Eskom lines, level crossings, cables and other services within the RoW boundaries. The presence of other services within the road servitude must be considered and the standards for permitting services within the road reserves must be adhered to.

It is thus imperative that the construction approach ensures that no existing infrastructure is damaged and that the pipeline alignment does not negatively impact on possible roads and possible upgrades of these roads the railway line and/or infrastructure maintenance projects.

5.10 Impact on Agricultural Practices

The majority of farms within the study area are used for livestock farming. Game farming can also occur as land-use. Pipeline construction could result in disruption of farming practices (e.g.

rotational grazing and access to drinking water) and productivity, stock and game losses, and loss of capital invested in farms (e.g. preparation of land and irrigation systems (where applicable)). It is thus important to avoid areas where crop production is taking place as far as possible.

The main impacts associated with the construction phase on these agricultural or farming areas would thus relate to the following:

- Clearance of vegetation to accommodate the construction of the pipeline and the associated infrastructure;
- Negative impact on rotational grazing system where areas are taken out of the feeding cycle and which could thus not be utilised for certain periods of time due to construction activities. The impact on the rotational grazing system could further result in farmers not having sufficient feed for their livestock with subsequent economic impacts.
- Impact on resource use where crop production is undertaken;
- Temporary removal of fences (where required only), which is an inconvenience for the farming practices, but which could also lead to slackening of the entire fence;
- Movement of heavy vehicles and possible damage to veld;
- Intrusion as a result of the presence and movement of workers in close proximity to the agricultural activities and animals;
- The possible intrusion of construction workers on sections of the farms outside of the construction areas;
- Dust pollution;
- The possibility of game and stock losses due to theft and/or poaching and in cases where gates were left open;
- The possibility of theft of plants (e.g. medicinal plants);
- Possible erosion due to the removal of plant cover and excavations, which could result in
 erosion and/or the productivity of the soil, especially in areas where the veld is extremely
 sensitive and take years to rehabilitate sufficiently;
- Possible increase in growth of weeds or invasive species (e.g. 'boetebossie' or burweed) due to soil removal. This could again impact on the veld quality, in certain stages be toxic to animals, and impact on the quality of the sheep's wool due to burs or seed pots in the wool;
- Damage to farming infrastructure (e.g. livestock pen, fences, boreholes, small scale solar panels and windmills); and
- Increased risk of veld fires.

Veld fires as a result of the presence of construction workers in the area are a serious risk as damage to the veld could take some time to be rehabilitated or recover and the possible loss of animals and or wildlife could be seen as a permanent negative impact with severe financial consequences.

From a social perspective, the significance of the impacts on these farms and farming activities can be mitigated by ensuring that the construction sites and activities are properly managed through adherence to the EMPr, and by finalising a route alignment with the least negative impacts on the farming activities. The negative short term risks could thus be contained to ensure that no financial losses as a result of the construction activities on the farming practices occur. The above mentioned temporary construction related impacts would also be applicable for the areas where the ancillary infrastructure is proposed. However, it is anticipated that the impacts would be more severe due to the sterilisation of large sections of farmland, loss of the resource use, length of the construction in those areas, intensity of the construction activities, and the level of construction related movement (workers, machinery and heavy vehicles) in the concentrated area.

5.11 Impact on Daily Living and Movement Patterns and Possible Relocation

In cases where the pipe would be constructed outside road reserves, intrusion impacts on properties during the construction phase would occur. This could include the temporary removal of fences, earthworks, dust impacts, increased noise levels, traffic, visual impacts and increase in construction related traffic on local roads. In the areas where the ancillary infrastructure would be constructed, the impacts would continue for a longer duration and could be more intense. In Bloemfontein, the impacts would mainly be concentrated around the proposed Longridge Reservoir and in close proximity to the high density settlement located in the southern section of Bloemanda and JB Mafora just north of the M30 and east of the M30.

These intrusions as a result of the construction activities and movement of workers would have negative impacts on the daily living and movement patterns of the locals in the study area and residents of the towns. It would also be more intense where construction would take place in close proximity to homesteads and other dwellings.

In this regard it must be noted that the proposed alignment that would traverse the high-density settlement located in the southern section of Bloemanda and JB Mafora just north of the M30 and east of the M30 will result in resettlement if a servitude would have to be registered through the settlement for the proposed alignment.

With regards to resettlement, the following possible impacts and cumulative issues should be noted:

- Resettlement and the process to be followed such as the compilation of a Resettlement Action Plan (RAP) and the actual resettlement of residents do not form part of the EIA process. A RAP usually assesses the full impact of the resettlement process as well as the potential impact on the relocation site.
- Resettlement is a lengthy process associated with various levels of conflict arising between residents due to the perceived benefits that could accrue to those being resettled. Most groups in a settlement usually struggle to obtain as much benefit from the process as possible.
- The socio-economic status of the different residents (e.g. poor households / possible children headed households as a result of the impact of HIV/Aids) in the affected area could worsen the intricacy of the process. Resettlement of such households would severely affect their social cohesion and increase the insecurity experienced by these households.
- Political influences could exacerbate the complexity of the process.
- Settling of individuals and / or jobseekers from outside of the study area could occur as these individuals could aim to take advantage of the relocation process by posing as residents that should be resettled.
- Suitable land for the resettlement of individuals is usually not readily available.

- Negotiations with the owners of so-called "informal shacks", where no title deeds have been registered could be problematic. This situation could become even more complex if one would be dealing with heads of households who are underage.
- Resettlement is a complex and lengthy process with various negative impacts on those involved.
- Tension between the host community and the resettled communities, usually arising out of poor resettlement implementation, could also result in violence between the different groupings forced to cohabit.

From a social perspective it is therefore recommended that the proposed alignment of the water pipeline be concentrated along existing infrastructure corridors such as the M30 road servitude areas, to avoid the southern sections of Bloemanda and JB Mafora and resettlement of households.

The construction of the ancillary infrastructure would also entail the construction of access roads which are planned to be used during the construction phase, but also during the operational phase for maintenance purposes, where existing access roads are not available and/or up to standard.

5.12 Noise Impact

During the construction phase, general construction activities create different types of noise, such as noise associated with the movement of construction vehicles, the reverse indicator of trucks, the loading or movement of material and activities at a construction site and so forth. These types of noises would have different nuisance impacts on those living in close proximity to the construction site, especially if undertaken after normal working hours.

However, the only densely populated areas along the pipeline routes are concentrated along the towns of Gariepdam, Springfontein, Trompsburg and Edenburg and the section within Bloemfontein that would be affected by the alignment of the pipeline near the Longridge reservoir and from the reservoir where residential areas would be traversed.

In most cases, the noise intrusion impacts are expected to be relatively low along the pipeline construction areas, due to the distances of dwellings and number of dwellings to the pipeline alignment.

5.13 Dust Impacts

Dust can be generated from land clearing activities, and from cleared areas exposed to wind. Dust generation has the potential to be a physical and health hazard, and can adversely affect the wellbeing of the construction staff, the residents of the towns, landowners and agricultural crops (where applicable) and areas used for grazing of animals.

5.14 Visual Impact and Sense of Place

The social impact associated with the impact on the sense of place relates to the change in the landscape character and visual impact of the proposed development during the construction phase. The following discussion should thus be read from a social perspective as the impact on the sense of place.

Temporary visual intrusions are expected during the construction phase due to the construction sites and construction activities. The construction areas would probably be visible from the R701

and R33 in the Gariepdam area, sections of the N1, the M30 in Bloemfontein and areas where other roads would be crossed. This impact, however, would not have a severe influence on the social environment (land owners, land-users, local communities and commuters) as stockpiling of soil, construction debris and visual intrusive aspects of the construction sites would only be temporary.

In areas where the construction of the ancillary infrastructure is in close proximity to homesteads or where the pipeline would be constructed in close proximity to homestead and other dwellings, a more marked temporary visual impact can be expected.

6. ANTICIPATED IMPACTS DURING THE OPERATIONAL PHASE

6.1 Introduction

The operational phase includes monitoring of the system and its operation, management of the system, as well as enforcing policies and procedures. Maintenance would include investigations with regards to the system, assessment, servicing, repair and replacement of system components.

The operational life of water pipelines and the associated infrastructure is a long term process. The impacts usually associated with this phase are therefore perceived by affected parties to be more severe, although not necessarily the case as such infrastructure could be viewed by many as a dormant operation. The duration of these impacts, however, should not only be the critical issue, but aspects such as the extent, the intensity and significance would have to be considered.

This following section provides a description of the impacts anticipated to occur during the operational stages of the proposed project, which includes all activities after construction, including the operation and maintenance of the proposed development.

When referring to the associated (ancillary) infrastructure it refers to the following:

- Low Lift Pump Station;
- Water Treatment Plant and High Lift Pump Station;
- Command Reservoirs;
- Booster Pump Station;
- Longridge Reservoir in Bloemfontein; and
- The existing the Rustfontein WTP pump station.

6.2 Employment Opportunities

During the operational phase it is not expected that a large number of permanent job opportunities would be created. At this stage it is anticipated that nineteen (19) direct and 188 indirect job opportunities would become available during the operational phase of the project. This could include jobs required for the operation, management and maintenance of the ancillary infrastructure such as the pump stations where some skilled personnel would be required.

Maintenance and operation of the system would involve ensuring that:

- Physical factors do not influence the load on the system;
- Water pressure be kept at levels where it would not damage pipes and fittings;
- The flow rate be kept constant;
- There is no damage to the system by vandalism or lack of knowledge;

- There is no erosion, excessive exposure to sunlight, corrosion and so forth;
- There is no damage to the components of the system including any brickwork or plaster of the associated infrastructure;
- Timeous inspections, repairs, replacements and general maintenance of the system are undertaken; and
- The water quality is monitored on a continuous basis.

Overall control of the system will possibly be from a centralised control room, with local control only as and when required. Plant supervisors would only oversee the effective operation of e.g. the water treatment plant. These supervisors would probably be representatives of a company specialising in this field who would be appointed to supervise and maintain the plant operations on a contract basis.

6.3 Inflow of workers

Limited workers are anticipated to conduct maintenance and operational work on the water pipeline at specific intervals during the operational phase of the project. This would have limited to no impact on the population figures and thus the social environment, if good conduct prevails.

Maintenance of the pipeline would involve route inspections, servitude maintenance (e.g. removal of vegetation and invasive species), monitoring of possible erosion, as well as cleaning of the pipeline if and when required. Maintenance is expected to be undertaken at approximately yearly intervals. Specialised equipment will be used during these activities. The maintenance teams should adhere to a code of conduct and the EMPr when accessing private properties. Security protocols would have to be followed and landowners must be pro-actively notified of scheduled maintenance activities.

Due to the small number of workers involved with the daily operations at the ancillary infrastructure, the impact on local facilities and services is likely to be minimal with some of these workers choosing to even reside outside the local area.

No jobseekers are also expected during the operational phase of the project due to the limited employment opportunities and the stagnant operation of the pipeline and associated facilities.

The inflow of workers to the area during the operational phase is therefore not expected to result in any noteworthy negative social impacts.

6.4 Local Economic Contribution

Apart from the increase in the GDP, the main positive economic impacts associated with the project, would be avoiding water shortages in Bloemfontein by the provision of potable water to the Bloemfontein area. The increased water security for Bloemfontein and possibly the other affected small towns, would have various indirect economic spin-offs, as the water security would assist in unlocking the economic potential of the areas and support increased residential development.

Should water also be better priced in this area, the residents of Bloemfontein would reap the direct economic benefits. This, option, however, is still being investigated.

There could further be economic benefits for the immediate, local and/or regional areas if the project promotes local employment, training opportunities, buying local resources and contracting local services, even on a very limited scale.

6.5 Impacts on Daily Living and Movement Patterns

The current dominant land-uses in the study area are agriculture, rural and urban residential areas, as well as some tourism-based industries. The establishment of the scheme will probably have a negligible direct impact on the current land-uses due to the linear nature of the pipeline and its limited footprint. The proposed water pipeline is thus not expected to have severe negative impacts on the daily living and movement patterns of the community members and landowners in the affected areas. Certain restrictions with regards to the servitude, would however, be in place that could hamper select farming activities e.g. ploughing within the servitude (if applicable).

During the operational and maintenance phase property owners such as the farmers would experience some intrusions when maintenance and emergency work is undertaken along the pipeline and at the ancillary infrastructure. Possible negative impacts refer to littering, speeding, leaving gates open, driving on private roads and so forth. Should the maintenance and emergency workers remain responsible in their actions and adhere to good conduct the negative impacts in this regard could be mitigated.

6.6 Impact on Agricultural Practices

The proposed pipeline is not expected to severely impact on land used for agricultural purposes in the various communities in the study area. The alignment generally follows the N1 alignment. Due to the type of agricultural activities undertaken in the area e.g. sheep farming, the impact of the servitude would be limited. It is anticipated that the sheep farming could continue undisturbed once the pipeline has been constructed. However, depending on the depth and strength of the pipeline, it might result in farmers not being able to drive over the pipeline with heavy vehicles (such as tractors and planters). This might lead to loss of income.

Farmland would be lost (with subsequent financial impacts) to the development footprint of the ancillary infrastructure.

Communication and negotiations with landowners when servitude agreements are drawn up would mitigate the impact on the resource use.

6.7 Community Health Risks

The aim of the project is to provide potable water to the water end users. This would thus have an overall regional possible impact on the health of the wider community.

It is however critical for the DWS and MMM to continue to guarantee the water quality integrity. The public would depend on the water distribution system for ensuring safe and potable drinking water. A direct consequence of the loss of the water quality would result in health risks. Consumers falling within the vulnerable spectrum would thus be more dependent on safe municipal water supply as they could be more vulnerable to the effects of water-borne diseases (due to possible lower levels of nutrition), lack of adequate health care systems and the burden of immuno-compromising diseases such as HIV/AIDS.

Although there is a limited possibility of disasters (e.g. pipes bursting or mechanical failures of the ancillary infrastructure) it remains a concern. Precautionary measures should thus be taken to ensure that the infrastructure is well maintained to avoid reactive maintenance.

6.8 Community Safety and Security Risks

Once operational, it is highly unlikely that the pipeline, and ancillary infrastructure would create any safety and security risks. Possible unauthorised connections to the bulk water pipeline and the potential danger of pipes bursting, or infrastructure failures should however be noted. Maintenance of the pipeline and the conduct of the maintenance workers, as well as the mitigation in this regard remain relevant.

All necessary measures must be taken to ensure that the infrastructure is properly secured. This would include fencing of the sites where the ancillary infrastructure is located, a guardhouse at the entrance to the sites and possibly CCTV cameras. Unauthorised entry to these sites should be avoided for general safety purposes through the presence of permanent security personnel at these facilities.

6.9 Visual Impact and Sense of Place

Visual impact describes the change in the aesthetic landscape and the local sense of place. The stationary infrastructure, especially the reservoirs, is likely to have some visual impacts on the local environment. The water pipeline, however, will result in a negligible visual impact after rehabilitation of the construction areas has been implemented.

Screening measures at the different sites could reduce the visual impacts, although the type of infrastructure and topography makes screening difficult.

6.10 Noise Impact

A possible increase in noise due to the increase in traffic volumes are anticipated on the access roads leading to the water treatment works, the pump station, and reservoir. This impact, however, is of a negligent significance. No mitigation measures are proposed.

7. DECOMMISSIONING

The operational life of water pipelines and the associated infrastructure is a long-term process. It may be deactivated temporarily, decommissioned or retired. Through all the processes, the infrastructure remains the responsibility of the operator. If a pipeline is decommissioned, it will be properly cleaned, capped and maintained. If a pipeline is permanently retired, the regulator will assess whether it is best to leave the line in place or remove the pipeline from the ground.

At this stage, it is not anticipated that the pipeline or associated infrastructure would be decommissioned or retired in the near future. Some infrastructure, however, might be dismantled and/or be replaced with newer technology.

During any decommissioning or possible deactivation of the pipeline, the operator should follow the required procedures from the applicable regulator, which should aim to limit any possible negative environmental and social impacts.

Possible social impacts to be experienced during replacement of infrastructure with newer technology options would be similar to the impacts described as part of the construction process, although more limited in extent.

In the event that decommissioning does take place, the typical social impacts anticipated could include:

- Job-losses of permanent workers;
- The change in community infrastructure;
- The inflow of workers to undertake the decommissioning;
- Disruptions and nuisance factors associated with the actual decommissioning of the infrastructure such as noise and visual impacts; and
- Safety factors associated with the decommissioning of the infrastructure.

It is therefore recommended that a detailed Social Impact Assessment be undertaken in the event of decommissioning to determine the actual impacts on the changing social environment.

8. THE NO-GO ALTERNATIVE

Should the proposed project not proceed, no construction related impacts would realise which could, in some instances, be viewed as a positive aspect where severe negative impacts on the social environment is expected.

The MMM has experienced several water interruptions and water shortages over the past few years which resulted in the implementation of different water restrictions. This is due to various bulk water supply problems. In addition, additional pressure is placed on the MMM to cater for the increasing demand due to the population growth patterns in the municipal area. Estimations are that this demand would continue to increase. Water conservation and the re-use of water cannot solve the problem on its own but should still be used as additions to addressing the water problem.

Should the project not continue, the MMM would thus be unable to avoid future water shortages resulting in Bloemfontein and possibly the smaller towns not experiencing long-term water security. Government must take adequate actions to ensure that all citizens have access to basic services, of which water is a crucial element. If other measures are not put in place to ensure an adequate continuous supply of potable water to the municipal area, government would not be fulfilling its duty in terms of water service provision to the end-users.

The proposed project would thus, through the upgrading of the capacity of the bulk infrastructure networks and associated infrastructure assist to handle the current rate of development in the area. The proposed Xhariep Pipeline Project: Scheme 1B is therefore critical and the no-go option is thus not recommended from a social perspective.

9. SOCIAL MANAGEMENT PLAN

The Social Management Plan's objectives and actions outlined in the tables below aim to:

- Manage the identified social risks of the proposed development;
- Improve the development outcomes;
- Mitigate potential negative socio-economic impacts of the proposed development and to enhance the benefits of the potential positive socio-economic impacts.
- Provide recommendations on steps/actions to ensure social compliance, including establishing of accessible and effective channels of communication to promote positive interactions between the project proponent and the local communities.

These objectives should be included in the Environmental Management Programme.

9.1 Employment Creation and Local Procurement

OBJECTIVE: Enhance the positive impacts with regards to employment creation and local procurement

Project component/s	Employment creation and loca	al procurement.		
Potential Impact	Employment creation and local procurement could be enhanced by implementing certain measures and by maximising local employment where the applicable skills are available.			
Activity/risk source	Employment creation and local procurement during the construction phase and to a lesser extent during the operational phase.			
Mitigation: Target/Objective	Employment of local labourers where possible and local procurement of materials and services during the construction and operational phase.			
Mitigation: Action/control Responsibility Timeframe			Timeframe	
Maximise the use of suitably skilled local labour where applicable and where available.		Project Proponent, Contractors, Procurement Team	Pre-Construction & Construction Phase	
Development of a Procurement Policy and Procurement Plan and ensure that it is transparently and consistently applied. Develop specific local recruitment targets for the different skill categories as part of the plan.		Project Proponent, Contractors, Procurement Team	Pre-Construction	
Prioritise unskilled and semi-skilled local labour in the recruitment process as part of contractors' own recruitment policy or as part of the contractor management plan.		Project Proponent, Project Manager, Contractors, Procurement Team	Pre-Construction, and Construction Phase	

Communicate with legitimate business associations and local leaders (local business chamber, municipal and provincial authorities) in the procurement of local labour.	Project Proponent, Project Manager, Contractors, Procurement Team	Pre-Construction, and Construction Phase
Create an awareness and/or communication campaign that can include referring jobseekers to make use of the Department of Labour's web-based employment database, namely the Employment Services of South Africa (ESSA) where employment seekers can register. Project Proponent to make use of the database if required.	Project Proponent, Project Manager, Contractors, Procurement Team	Pre-Construction, and Construction Phase
Contractors can access the Extended Public Works Program (EPWP), where municipalities register employment seekers on a database, to source general workers and employment seekers.	Project Proponent, Project Manager, Contractors, Procurement Team	Pre-Construction, and Construction Phase
Local leaders such as ward councillors can be involved in the procurement process through the ESSA and EPWP.	Project Proponent, Project Manager, Contractors, Procurement Team	Pre-Construction, and Construction Phase
The procurement and recruitment process must be communicated to local leaders and business forums.	Project Proponent, Project Manager, Contractors, Procurement Team	Pre-Construction, and Construction Phase
An independent Community Liaison Officer (CLO) appointed by the project proponent can assist with certain aspects of employment and procurement e.g. to ensure that medical testing and other general legislative requirements are met before members of the community are employed.	Project Proponent, Project Manager,	Pre-Construction, and Construction Phase
The role and responsibilities of a CLO must be clearly defined as part of the Contractor Management Plan.	Project Proponent, Project Manager, Contractors	Pre-Construction, and Construction Phase
Provide up-skilling opportunities for unskilled and semi-skilled local workers during the construction phase	Project Proponent, Project Manager, Contractors	Construction Phase
Develop a Construction Risk Management Plan, as part of the Contractor Management Plan, also focusing on the risks associated with jobseekers, possible protests and construction delays	Project Proponent, Project Manager, Contractors	Pre-Construction, and Construction Phase
Put a Contractor Management Plan (including direct service providers) in place to ensure that the local employment and procurement targets of the operations are met.	Project Proponent, Project Manager, Contractors	Construction and Operational Phase
Develop a Skills Development Policy for the employees and implement accordingly	Project Proponent, Project Manager, Contractors	Construction and Operational Phase

Performance Indicator	 Meet provincial employment and procurement targets. Adherence to the contractor management plan and quarterly reviews of this plan Appropriately skilled local labour is optimised. Local procurement is implemented where feasible and available.
Monitoring	Project Proponent, Main Contractor, Contractor Manager, Project Manager, and CLO

9.2 Inflow of workers and Jobseekers

OBJECTIVE: Manage the inflow of workers and jobseekers

Project component/s	Inflow of workers and pose construction phase. Inflow of undertaken.	sible inflow of jobse workers during maint	eekers during the enance work to be		
Potential Impact	Movement of construction workforce can result in intrusions and impacts on daily living and movement patterns.				
	Inflow of workers can result in social conflict with locals if local labour is not maximised.				
	Negative intrusion impacts on the property owners and possible impact on resources and infrastructure should jobseekers remain in the area.				
Activity/risk source	Social conflict between locals and	d non-localised workers			
	Gathering of jobseekers at the co	onstruction sites and are	as		
	Movement of people in the area can increase criminal activity or opportunities for criminals.				
	Gatherings could turn into protests and possible violence.				
	Possible unlawful capturing of employment and procurement processes resulting in project construction delays.				
	Possible environmental pollution				
Mitigation: Target/Objective	Develop and monitor implemen conduct.	tation of a construction	workforce code of		
Mitigation: Action/co	ntrol	Responsibility	Timeframe		
Maximise the use of suitably skilled local labour where applicable and where available.		Project Proponent, Contractors, Procurement Team	Pre-Construction & Construction Phase		
Development of a Procurement Policy and Procurement Plan and ensure that it is transparently and consistently applied. Develop specific local recruitment targets for the different skill categories as part of the plan.		Project Proponent, Contractors, Procurement Team	Pre-Construction		
Communicate with legi local leaders (local bu provincial authorities) i	timate business associations and usiness chamber, municipal and n the procurement of local labour.	Project Proponent, Project Manager,	Pre-Construction, and Construction Phase		

		Contractors, Procurement Team	
Develop a Construction of the Contractor Man the risks associated w and construction delay	n Risk Management Plan, as part agement Plan, also focusing on ith jobseekers, possible protests 's	Project Proponent, Project Manager, Contractors	Pre-Construction, and Construction Phase
Labourers and workers should be accommodated in existing establishments within local towns and be transported to and from the construction sites on a daily basis.		Contractor	Construction Phase
Details of the contrac construction schedules relevant parties and sp	tors, size of the workforce and s should be communicated to all becifically the landowners.	Contractor, Landowners, Farmers' Unions etc.	Pre-Construction & Construction Phase
The workforce should carry identification documents and wear uniforms to be easily identifiable. Construction workers should abide to a code of conduct.		Project Proponent and Contractors	Construction Phase
Develop a strategy to minimise the influx of jobseekers to the area through transparent communication processes and by employing local labour where suitable skills are available.		Project Proponent and Contractors	Construction Phase
Unrealistic employment expectations should not be created.		Project Proponent and Contractors	Construction Phase
Maintenance and oper Code of Conduct.	ational teams should adhere to a	Project Proponent and Contractors	Operational Phase
Landowners should schedules.	be informed of maintenance	Project Proponent and Contractors	Operational Phase
Adhere to the EMPr		Project Proponent and Contractors	Construction Phase
A Complaints Register, where complaints can be lodged, must be accessible and available to all concerned e.g. at the security office		Project Proponent, Project Manager, ECO	Construction and Operational Phase
Performance Indicator	No negative intrusion impacts on landowners.		
Manitarin-			at of workors
wonitoring	Landowners and affected parties should monitor conduct of workers. Grievances registers should be kept and submitted to the Contractor and/or MMM.		

9.3 Impact on Daily Living and Movement Patterns

OBJECTIVE: Limit negative impacts on the daily living and movement patterns of affected landowners

Project component/s	Daily living and movement patterns.			
Potential Impact	Noise and dust pollution.			
	Increased traffic, movement and operation of heavy machinery.			
	Impact on quality of life of affe criminal activity, intrusions and	ected landowners due to so forth.	o possible increase in	
	Intermittent impact on daily livin activities.	g and movement patterr	ns during maintenance	
Activity/risk source	Risk of traffic accidents due to in local roads and at the stationary	ncreased vehicle moven y site entrances	nent, especially on the	
	Noise and dust related to consti	ruction activities.		
	Construction accidents and eme	ergencies.		
	Environmental pollution resultin	g in social impacts.		
	Possible noise impacts.			
Mitigation:	Construction activities undertak	en according to best pra	actice.	
Target/Objective	Maintenance activities undertak	en according to best pra	actice.	
Mitigation: Action/control		Responsibility	Timeframe	
Avoid an alignment that is in close proximity to homesteads and other dwellings. Concentrate the proposed alignment along existing infrastructure such as the road and railway line.		Engineers, Project Proponent and Contractor	Pre-Construction Phase	
Develop a Construction Management Plan including a Construction Method Statement that adheres to the EMPr		Project Proponent, Project Manager, Contractors, ECO	Pre-Construction, and Construction Phase	
Access roads and entrances to the ancillary facilities' construction sites should be carefully planned to limit any intrusion impacts, noise and dust pollution, as well as to limit any risks of accidents.		Project Proponent and Contractor	Construction Phase	
Ensure compliance to the Rural Safety Protocol developed by all affected Agricultural and Farmers Unions in the affected areas.		Project Manager, Contractor	Construction and Operational Phase	
Working hours should be kept to normal working hours (e.g. 7 am until 5 pm during weekdays) during the construction phase.		Project Manager, Contractor	Construction Phase	
Construction vehicles Speeding on gravel ro	should keep to the speed limits. bads should also be avoided to	Project Manager, Contractor	Construction Phase	

limit any excess dust pollution and danger to other vehicles and pedestrians.		
Construction vehicles and those transporting materials and goods should be inspected to ensure that these are in good working order and not overloaded.	Project Manager, Contractor	Construction Phase
Clear warning signs should be erected at strategic places during the construction phase.	Project Manager, Contractor	Construction Phase
The contractor should contact affected landowners before construction commences to inform them of the contractor's plans, procedures, and schedules.	Project Manager, Contractor	Construction Phase
Strict security measures should be put in place. Security personnel should be on site on a permanent basis.	Project Manager, Contractor	Construction Phase
Construction activities should keep to normal working hours e.g. 7 am until 5 pm during weekdays.	Project Manager, Contractor	Construction Phase
Access to properties should be maintained as far as possible. Expected difficulties with regards to access to properties should be clarified with the affected landowners	Project Manager, Contractor	Construction Phase
Properties not affected by the proposed servitude area should preferably not be used to gain access to the construction sites.	Project Manager, Contractor	Construction Phase
Stationary construction sites should be fenced off to limit unauthorised entry.	Project Manager, Contractor	Construction Phase
Sufficient water and sanitation facilities should be provided for the workers on site during the construction period.	Project Manager, Contractor	Construction Phase
Pro-active warning signs should be erected in the case of disruption or diversion of traffic during the construction phases.	Project Manager, Contractor	Construction Phase
The construction schedules of the various road crossings must be discussed and finalised with the relevant government departments such as the Free State Department of Public Works, Roads and Transport, SANRAL, Eskom and the relevant local municipality (if applicable). All relevant regulations in this regard should be adhered to.	Project Proponent and Contractor	Construction Phase
Keep the width of the pipeline construction corridor to a minimum where possible.	Project Proponent and Contractor	Construction Phase
Use construction methods and machinery that produce the least amount of noise (e.g. no night time works).	Project Manager, Contractor	Construction Phase

Construction sites sho the construction activit	nstruction sites should be rehabilitated as soon as construction activities and planning allow.		Construction Phase	
On completion of consolution of consolution of consolution of the second	struction, the access roads and should be rehabilitated as per nents.	Project Manager, Contractor	Construction Phase	
Any infrastructure (e. buildings, fences, priv irrigation equipment infrastructure) damage construction phase r repaired. Landowner dealing with this aspect	g. access roads, structures or ately owned pipelines such as cables and other linear ged or removed during the nust be compensated for or consent must be provided in ct.	Project Proponent and Contractor	Construction Phase	
If the proposed pipeline would enter the Transnet Freight Rail's Right of Way (RoW), the engineering aspects should then take note of the location of culverts, road over rail bridges, existing water pipelines, Eskom lines, level crossings, cables and other services within the RoW boundaries.		Project Proponent and Contractor	Construction Phase	
Maintenance schedules should be communicated to the affected landowners, prior to maintenance being undertaken.		Project Proponent and Contractor	Operational Phase	
Adherence to and implementation of Occupational Health and Safety Act (No 85 of 1993)		Project Proponent, Project Manager, Contractor, ECO	Construction and Operational Phase	
Implementation of SHEQ principles		Project Proponent, Project Manager, Contractor, ECO, SHEQ Manager	Construction and Operational Phase	
A Complaints Register, where complaints can be lodged, must be accessible and available to all concerned		Project Proponent, Project Manager, ECO	Construction and Operational Phase	
Performance	Minimum community complaints	3		
Indicator	Noise levels within limits as specified in noise standards			
	No community protests directed	l at the project.		
	No environmental pollution			
	No criminal activities associated with the project.			
Monitoring	Project Proponent, Main Contractor, Contractor Manager, Project Manager, and ECO			

9.4 Impact on Agricultural Practices

OBJECTIVE: Limit negative impacts on the agricultural practices taking place along the pipeline route and the sites where the associated infrastructure are proposed

Project component/s	Agricultural Practices			
Potential Impact	Negative impact on agricultura sterilisation of the land used for possible negative financial implice	I practices during the or the servitude, loss cations for the landown	e construction phase, of resource use and ers.	
Activity/risk source	Construction related pollution an	d accidents.		
	Loss of resource use.			
	Sterilisation of the land.			
Mitigation:	Limited to no impact on agricultu	ral practices.		
Target/Objective	No criminal activities			
	No complaints from landowners			
Mitigation: Action/co	ntrol	Responsibility	Timeframe	
Coordinate the timing of the construction works with the affected landowners, land-users, as well as relevant Farmers' Unions and keep them up to date on construction progress, changes in the programme and any possible impacts.		Project Manager, Contractor	Pre-Construction and construction Phase	
Construction activities should be undertaken as stipulated in the EMPr.		Project Manager, Contractor, ECO	Construction Phase	
Appoint an on-site communications officer (this could be the Environmental Control Officer (ECO)) to coordinate the receipt, investigation and resolution of complaints.		Project Manager, Contractor, ECO	Construction Phase	
The contact details of the on-site communications officer and the ECO should be made available to all affected landowners, land-users, as well as relevant Farmers' Unions.		Project Manager, Contractor, ECO	Construction Phase	
The workforce should carry identification tags and have specific uniforms to be easily identifiable. It should furthermore be ensured that the inflow of workers and their presence near the towns do not create conflict within these surrounding communities.		Project Manager, Contractor, ECO	Construction Phase	
Working hours should be kept to normal working hours.		Project Manager, Contractor	Construction Phase	
Littering should be pl facilities at the constru	revented by ensuring adequate ction sites to dispose of refuse.	Project Manager, Contractor, ECO	Construction Phase	

Sufficient water and sanitation facilities should be provided for the workers on site during the construction period.	Project Manager, Contractor, ECO	Construction Phase
Areas where crop production is undertaken must be avoided as far as possible.	Project Proponent, Project Manager, Contractor	Pre-construction and Construction Phase
Where fences would be dismantled it should be reconstructed to its prior state as soon as the construction activities allow.	Project Manager, Contractor	Construction Phase
Gates should not be left open.	Project Manager, Contractor, ECO	Construction Phase
No fires (e.g. for cooking purposes) should be allowed at the construction sites.	Project Manager, Contractor, ECO	Construction Phase
Dust management must be implemented as per the EMPr.	Project Manager, Contractor	Construction Phase
Property specific conditions and reservations must be allowed and included when servitude agreements would be drawn up. This would assist the project proponent to be successful in securing and finalising servitude agreements.	Project Proponent	Pre-construction Phase
Compensation and compensation procedures for damages incurred must be stipulated and agreed upon as part of the servitude agreements	Project Proponent	Pre-construction Phase
Proper conduct by contractors must be adhered to at all times to avoid conflict between landowners and project contractors.	Project Manager, Contractor	Construction and Operational Phase
It is vital that contractors respect private property and landowner rights at all times, to ensure good relations and proper conduct for the life of the project.	Project Manager, Contractor	Construction and Operational Phase
It is critical that property owners be informed prior to any contractors and/or maintenance personnel accessing private property, even though the servitude agreements would provide contractors and maintenance personnel with certain access rights. Although advance notification with long lead times is not possible in the event of emergency repairs, landowners must still be informed prior to their property being accessed.	Project Manager, Contractor	Construction and Operational Phase
Any removal/damage to land, land-uses, and infrastructure during the operational phase should be compensated for in a process similar to that done during the construction process.	Project Manager, Contractor	Operational Phase
Landowners and other stakeholders must be provided with a contact number in order to report any leaks or breakages in the pipeline system.	Project Manager, Contractor	Operational Phase

During the operational phase, the landowner is to be contacted prior to any access of their property.		Project Manager, Contractor	Operational Phase
Ensure compliance to the Rural Safety Protocol developed by all affected Agricultural and Farmers Unions in the affected areas.		Project Manager, Contractor	Construction and Operational Phase
Performance Indicator	No complaints received by landowners. No damage to infrastructure on private properties. No loss of resources.		
Monitoring	Landowners to monitor maintenance activities and servitude management.		

9.5 Safety and Security Risks

OBJECTIVE: Limit any safety and security risks

Project component/s	Safety and security risks as a result of the construction activities and maintenance activities			
Potential Impact	Increased safety and security ri	sks as a result of the	proposed project.	
Activity/risk source	Possible accidents during construction activities, and movement of construction vehicles. Intrusions associated with the inflow of workers.			
Mitigation: Target/Objective	No complaints from property owner with regards to the conduct of workers and damage to properties. No accidents and/or fires.			
Mitigation: Action/control Responsibility Timeframe			Timeframe	
Before construction commences, representatives from the MMM, KLM, the landowners, land-users and Farmer's Unions, as well as neighbouring communities should be informed of the details of the construction company, size of the workforce and construction schedules.		Project Manager, Contractor	Pre-Construction and construction Phase	
Ensure compliance to the Rural Safety Protocol developed by all affected Agricultural and Farmers Unions in the affected areas.		Project Manager, Contractor	Construction and Operational Phase	
Local labour should be employed as far as possible to limit the number of outsiders in the area.		Project Manager, Contractor	Construction and Operational Phase	
The movement of workers should be confined to the work site to avoid any increased safety and security risks on individual properties.		Project Manager, Contractor	Construction and Operational Phase	

Working hours should be kept to normal working hours (e.g. 7 am until 5 pm during weekdays) during the construction phase.	Project Manager, Contractor	Construction Phase	
Construction vehicles should keep to the speed limits.	Project Manager, Contractor	Construction Phase	
Construction workers and permanent employees should be easily identifiable by wearing uniforms and have identification documentation.	Project Manager, Contractor	Construction Phase	
Construction workers should remain within the construction site boundaries.	Project Manager, Contractor	Construction Phase	
The stationary construction sites should be properly fenced and access should be controlled to limit unauthorised entry.	Project Manager, Contractor	Construction Phase	
Criminal incidents should be communicated to the workforce to ensure a general awareness of the safety situation in the area.	Project Manager, Contractor	Construction Phase	
Operational safety risks should be addressed as part of the Occupational Health and Safety Act (1993 incl. amendments of 2014).	Project Manager, Contractor	Construction and Operational Phase	
A fire prevention and management plan must be implemented	Project Manager, Contractor	Construction and Operational Phase	
Open fires for cooking and related purposes should not be allowed on site.	Project Manager, Contractor	Construction and Operational Phase	
Appropriate firefighting equipment should be on site and construction workers should be appropriately trained for fire fighting	Project Manager, Contractor	Construction and Operational Phase	
Appoint an on-site communications officer (this could be the Environmental Control Officer (ECO)) to coordinate the receipt, investigation and resolution of complaints	Project Manager, Contractor	Construction Phase	
The construction area should be fenced or access to the area should be controlled to avoid animals or unauthorised people entering the area without authorisation.	Project Manager, Contractor	Construction Phase	
Speed limits must be imposed within the active construction areas. Signage indicating the speed limit must be displayed within construction areas.	Project Manager, Contractor	Construction Phase	
Open excavations must be fenced and demarcated where there is a risk of public access.	Project Manager, Contractor	Construction Phase	
Machinery that is located in publicly accessible locations must be secured (in a locked compound	Project Manager, Contractor	Construction Phase	

where practicable) who ccupied.	nen the construction site is not		
The contractors shou about the public safet construction phase.	ld raise community awareness y and risks associated with the	Project Manager, Contractor	Construction Phase
Advisory warning boards identifying hazards, risks, safety requirements and emergency phone numbers must be installed at each entry to all stationary construction areas.		Project Manager, Contractor	Construction Phase
The contact details of the on-site project manager and the ECO should be made available to all affected landowners, land-users, as well as relevant Farmer's Unions.		Project Manager, Contractor	Construction Phase
Maintenance work to be undertaken should adhere to the guidelines and recommendations as stipulated for the construction phase.		Project Manager, Contractor	Operational Phase
Affected landowners s of maintenance and e	hould be contacted in the event mergency work.	Project Manager, Contractor	Operational Phase
Performance Indicator	Zero accidents or safety incidents EMPr compliance SHEQ compliance No criminal activity directly related to the project. No safety breaches. No complaints from property owner. No accidents and/or fires.		
Monitoring	Project Proponent, Project Manager, Main Contractor, SHEQ Manager, and ECO		

9.6 Communication and Complaints Management

OBJECTIVE: To develop an effective and user-friendly mechanism where complaints can be lodged through a Grievance Mechanism.

Project component/s	Development of a Communication Process between the Project Proponent, Contractors and Landowners, as well as Land-users. Development of a complaints mechanism and register.
Potential Impact	Negative impact associated with the construction and operational phases.
Activity/risk source	Construction related accidents and risks. Operational related accidents and risks.

Mitigation: Target/Objective	Establish a way in which negative impact associated with the construction phase can be dealt with.				
	Establish a way in which negative impact associated with the maintenance and operational activities can be dealt with.				
Mitigation: Action/co	ntrol	Responsibility	Timeframe		
Appoint an Environme would be on-site durin with any queries and c	ntal Control Officer(s) (ECO) that g the construction phase to deal complaints.	Project Proponent, Project Manager, Contractor	Pre-Construction Phase		
Coordinate the receipt complaints.	t, investigation and resolution of	Project Proponent, Project Manager, Contractor, ECO	Construction and Operational Phase		
Provide the contact email address) through to the landowners and Unions.	details (telephone number and h which complaints can be made l land-users, as well as Farmers'	Project Proponent, Project Manager, Contractor, ECO	Construction and Operational Phase		
Display the above-me external fence to each	entioned contact details at the stationary construction site.	Project Proponent, Project Manager, Contractor, ECO	Construction and Operational Phase		
 It is recommended that the relevant ECO (construction phase) and/or Project Manager (operational phase) take the following actions when a complaint is received: Record all complaints. Written acknowledgement of the receipt of the complaints within 48 hours should be given to the complainant. Provide the complaint record to the appropriate management personnel for the project to initiate investigations and rectification. Provide the complainant with a regular update of the status of efforts to redress the complaint. This communication should also be done in writing. Continue to liaise with the complainant until the matter is resolved. Complete the complaint was addressed. Keep records of all of the above 		Project Proponent, Project Manager, Contractor, ECO	Construction and Operational Phase		
A summary of the complaints received should be discussed with the contractors and project applicant on e.g. a monthly basis.		Project Proponent, Project Manager, Contractor, ECO	Construction and Operational Phase		
Performance Indicator	Successful resolution of complain	nts			
Monitoring	Project Proponent, Project Manager, Main Contractor, SHEQ Manager, and ECO				

10. CONCLUDING REMARKS

10.1 Risk Classification of anticipated impacts

The risk significance prior and after mitigation are summarised in the table below. Also refer to the separate risk classification undertaken as part of the assessment.

Table 11:	: Risk	Classification	of	anticipated	impacts
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Construction Phase				
Potential impact	Rating prior to mitigation	Rating after mitigation		
Employment Opportunities	Minor - Positive	Moderate - positive		
Inflow of workers and jobseekers	Minor - Negative	Minor - Negative		
Accommodation of workforce	Minor - Negative	Minor - Positive		
Local Economic Contribution	Minor - positive	Minor - positive		
Impact on Metropolitan and Local municipality	Minor - positive	Moderate - positive		
Community Health risks	Minor - negative	Minor - negative		
Community Safety and Security Risks	Minor - negative	Minor - negative		
Impact on Infrastructure and Services	Minor - negative	Negligible - negative		
Impact on Agricultural Practices	Minor - negative	Minor - negative		
Daily Living and Movement Patterns and Possible Relocation	Moderate - negative	Minor - negative		
Noise Impacts	Minor - negative	Negligible - negative		
Dust Impacts	Minor - negative	Negligible - negative		
Visual Impact and Sense of Place	Minor - negative	Negligible - negative		
Operationa	al Phase			
Potential impact	Rating prior to mitigation	Rating after mitigation		
Employment Opportunities	Minor - positive			
Inflow of workers and jobseekers	Minor - negative			
Local Economic Contribution	Moderate - positive			
Daily Living and Movement Patterns	Minor - negative			
Impact on Agricultural Practices	Minor - negative			
Community Health risks	Minor - negative			
Community Safety and Security Risks	Minor - negative			
Visual Impact and Sense of Place	Minor - negative			
Noise impact	Negligible - negative			

10.2 Key Findings and Conclusions

10.2.1 Negative Impacts

In terms of the negative social impacts, the following should be noted:

• The negative social impacts associated with the Xhariep Pipeline Project: Scheme 1B are largely low to moderate in significance and will respond to mitigation.

- The majority of the negative social impacts identified in the SIA are anticipated to materialise during the construction phase. These potential impacts include:
 - Intrusion impacts associated with the inflow of workers and jobseekers, which could result in negative impacts on the social dynamics and networks in the area. Conflict between local community members and the outside workforce could thus materialise. The use of local labour would mitigate this impact;
 - Alignment of the pipeline through the southern section of JB Mafora and Bloemanda in Bloemfontein can result in resettlement of households with significant negative impacts. Realignment of the pipeline along the road reserves and to the south of the M30 can prevent this impact and successfully mitigate any possible negative impacts.
 - Impacts on the resource use in areas where crop production is undertaken could result in negative financial impacts for the landowners;
 - Negative impacts on the daily living and movement patterns of landowners as a result of dust and noise nuisances, movement of workers, construction vehicles and equipment;
 - Increased risks in terms of safety and security. The presence of construction workers in the area would remain a source of concern, particularly with regards to the impact on safety;
 - Health risks to the construction workers and the local communities. The key concern relate to the spread of HIV/Aids during the construction phase and the increased possibility of construction related accidents;
 - The increased risk of fires remains a concern. This can be mitigated through proper site management and worker conduct. Precautionary measures, should however be implemented as recommended in the report;
 - Negative intrusion impact on homestead and dwellings where the pipeline is proposed in close proximity to such infrastructure;
 - Infrastructure and services that would be temporarily affected during the construction phase, but which can be mitigated in consultation with the relevant governing bodies.
- Construction impacts which are likely to occur are expected to be short-term and can, in most cases, be successfully mitigated. To accomplish this, the mitigation and monitoring plans and procedures would have to be undertaken during project implementation, especially those focused on mitigation of impacts on the landowners and residents of the affected towns.
- Site rehabilitation on completion of the construction period and management during the operational phase are critical to avoid any negative long-term impacts on the resource use of the landowners.
- The proposed project is not expected to have severe negative impacts on the agricultural activities of the landowners, once operational. This impact, however, remains important and should be mitigated as far as possible during the construction phase through proper site rehabilitation. Therefore areas where crop production is undertaken should be avoided as far as possible.

10.2.2 Positive Impacts

In terms of the positive social impacts, the following should be noted:

• The proposed Xhariep Pipeline Project: Scheme 1B will provide a number of benefits that should be seen in balance to the associated negative impacts. As a direct and significant

positive benefit, the infrastructure will assist in providing potable water to a number of local communities.

- During the construction phase, the proposed project would create various employment opportunities with some local employment opportunities, provide a platform for increased spending and possible increased investment in the local area.
- The main positive impacts during the operational phase refer to the improved and reliable water supply and availability of water.
- The provision of a sustainable water supply and system can result in a number of indirect positive benefits. The existing status quo with regards to water supply is currently identified as a constraint to local economic development, but the proposed scheme should provide the capacity to supply current and future demands for water in the Bloemfontein area, which would create indirect benefits supporting e.g. housing development, the industrial sector and tourism.
- The proposed Xhariep Pipeline Project: Scheme 1B would not create large numbers of job opportunities, but the limited job creation (especially in the lower skilled levels) must still be viewed as a positive aspect. It is imperative that local labour be sourced otherwise no direct benefits would accrue to the locals during the construction phase. Apart from job creation during the construction phase, locals should also be allowed an opportunity to be included in a list of possible local suppliers and service providers. Social benefits in terms of training, skills development and the use of local labour should further be aspired to.
- Such an approach would also limit some negative impacts associated with the influx of large construction teams and the negative impacts associated with the inflow on the social dynamics in the area.
- The proposed project would not have a marked influence on the daily living and movement patterns of residents during the operational phase, although it would definitely assist in improving the overall community health and well-being through the provision of sustainable potable water to the end-users.

The Xhariep Pipeline Project: Scheme 1B will enable government to avoid future water shortages in the area, resulting in Bloemfontein and possibly the smaller towns not experiencing long-term water security. Government must take adequate actions to ensure that all citizens have access to basic services, of which water is a crucial element. If other measures are not put in place to ensure an adequate continuous supply of potable water to the municipal area, government would not be fulfilling its duty in terms of water service provision to the end-users.

The proposed project would thus, through the upgrading of the capacity of the bulk infrastructure networks and associated infrastructure assist to handle the current rate of development in the area. The proposed Xhariep Pipeline Project: Scheme 1B is therefore critical for the socio-economic well-being of the residents of Mangaung and surrounds.

Although the direct positive impacts are limited in extent, the impact of the overall project benefits should be considered in view of the socio-economic profile of the communities of the area and the indirect benefits that would accrue to the local communities due to the improved water services delivery.
10.3 Recommendations

From the Social Assessment, the following concluding remarks and recommendations are made:

- The proposed project will improve the water related infrastructure and services through the provision of a sufficient and stable supply of potable water to the Bloemfontein area. This would have vast indirect positive impacts which would be beneficial to the local economy and the socio-economic development in the area.
- The proposed project could also result in different negative social impacts with varying rates
 of intensity and significance. In most cases, the negative social impacts resulting from the
 proposed development are not perceived to be a threat to the quality of life of the residents
 of the area, but rather as nuisance factors that would mostly occur during the construction
 phase of the project.
- In line with the economic development challenges and opportunities within the municipal area, it is recommended that the project should strive to develop the local human resources through meaningful skills development. The involvement of locals, especially women and the youth are important.
- The project must aim to maximise the use of suitably skilled local labour where applicable and where available, through the development of a Procurement Policy and Procurement Plan. This plan must be transparently and consistently applied.
- The proposed alignment of the water pipeline be concentrated along existing infrastructure corridors, especially in the Bloemfontein area to avoid the southern sections of Bloemanda and JB Mafora and the resettlement of households in this area.
- Mitigation measures are critical. The mitigation measures proposed as part of the Social Management Plan should be incorporated in the EMPR and should be strictly implemented.
- Negotiations with individual property owners regarding the alignment of the pipeline and final locations of the ancillary infrastructure should be undertaken in a considerate and constructive manner. Sensitive issues such as the possible impact on agricultural activities and subsequent economic impact should be taken into account.
- It is recommended that a platform for open communication with the affected landowners be developed should the necessary authorisations be obtained by the applicant. The communications strategy for the proposed project should therefore ensure effective and transparent communication between the project proponent, project managers, contractors and the landowners prior to the construction phase and during the operational phase.
- There is an obligation on the government to deliver sufficient potable water to the beneficiary communities, but it is critical to ensure that this is undertaken in a sustainable manner whereby the negative impacts are minimised and the benefits be enhanced.
- It is critical to ensure that the water quality integrity is maintained. Water of an acceptable potable quality should be continued to be provided to the users.
- In this regard it should be noted that the operation and maintenance of a water distribution system can be greatly affected by the system design and construction practices used. The system components must adhere to construction standards and specifications, and preventative maintenance must be performed on a continuous basis.

Based on the social assessment and considering the concluding remarks and recommendations noted above, it is recommended that the environmental authorisation of the Xhariep Pipeline Project: Scheme 1B be allowed.



11. SOURCES CONSULTED

ActionSA (2023) Springfontein: A tale of forgotten people. Available at: https://www.actionsa.org.za/springfontein-a-tale-of-forgotten-people/

Armstrong, T. & Meyer, J. (2022) Illicit Business Forums in South Africa: A Survey. Journal of Anti-Corruption Law (6) 2

Becker, H.A. (1997) Social Impact Assessment: Method and experience in Europe, North America and the developing world. UCL Press: London

Becker, H.A. & Vanclay, F. (eds) (2003) The International Handbook of Social Impact Assessment: Conceptual and Methodological Advances. Edward Elgar: Cheltenham

Burdge, R.J. (1995) A community guide to Social Impact Assessment. Social Ecology Press: Middleton

Dennis Moss Partnership (2012) Free State Province: Final Draft Free State Spatial Development Framework (FSSDF)

Finsterbusch, K., L.G. Llewellyn and C.P. Wolf. (1983) Social Impact Assessment Methods.

Kopanong Local Municipality (2022) Draft Integrated Development Plan 2022/2023 – 2026/2027

Kopanong Local Municipality (2013) Local Economic Development Strategy 2013-2018

Local Government (2024). Municipalities of South Africa. Available at: https://www.localgovernment.co.za.

Mangaung Metropolitan Municipality (2023) Integrated Development Plan: 2023-2024

Mangaung Metropolitan Municipality (2020) Metropolitan Spatial Development Framework

Municipal Demarcation Board (2021) Available at https://www.demarcation.org.za/

SA Cities Network (2021) The state of cities in South Africa: Mangaung Metropolitan Municipality. Available at sacities.net

SANRAL: Committee of Transport Officials (2012) South African Manual for Permitting Services in Road Reserves

Soderstrom, E.J. (1981) Social Impact Assessment: Experimental Methods and Approaches.

Stats SA (2016) Community Survey, Stats SA, Pretoria

StatsSA (2022) Quarterly Labour Force Survey (QLFS): Q3:2022

Stats SA (2023) Statistical Release: Census 2022. Available at https://www.statssa.gov.za/

Lategan, H. (2023) Vrye Weekblad: Springfontein: The death of a town. Available at: https://www.vryeweekblad.com/en/people-and-culture/2023-08-11-springfontein-the-death-of-a-town/

Xhariep District Municipality (2022) Integrated Development Plan

12. ANNEXURE A

12.1 CURRICULUM VITAE OF SPECIALIST

CURRICULUM VITAE: INGRID SNYMAN

Name: Profession: Years of Experience: Ingrid Helene Snyman Social Development Consultant 20 + years



KEY QUALIFICATIONS

- Social Impact Assessment (SIA)
- Socio-Economic Impact Assessment (SEIA)
- Public Participation programmes
- Communication, development of community structures and community facilitation
- Community-based training and
- Workshop reports

EDUCATION

1992:	B A (Political Science) University of Pretoria
1995:	B A (Hons) Anthropology University of Pretoria
1996 - 1997:	Train the Trainers Centre for Development Administration – UNISA

EXPERIENCE RECORD

2000 to date	Independent Social Consultant: Batho Earth
1996 to 2000	Social Consultant: Afrosearch (Pty) Ltd.

SECTOR	PROJECT EXPERIENCE
Photovoltaic and Wind	Steelpoort PV Facility
Energy Facilities	Prieska Renewable Energy Hub
	Modderfontein Wind Energy Facility
	Christiana PV facility on the farm Hartebeestpan
	Hertzogville PV facility on the farms Albert and Wigt
	Morgenzon PV facility on the farm Morgenzon
	Exxaro Photovoltaic Facility
	Upington Solar Energy Facility
	Kleinbegin Solar Energy Facility
	Ilanga solar thermal power plant Facility
	Karoo Renewable Energy Facility
	Wag'nbiekiespan Solar Energy Facility
	Kathu and Sishen Solar Energy Facilities
	Thupela Waterberg Photovoltaic Plant
	Kannikwa Vlakte Wind Farm Project

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SECTOR	PROJECT EXPERIENCE
Mining Industry	Etoile Mine: Phase 2, Lubumbashi, DRC
	Samancor TC Smelter
	Implats Strategic Framework and Guideline for SIA's for TSFs and TSF failure
	events Delevitives desetes a Design to North West Devices
	Driekuli Wonderstone Project, North West Province
	Vlakfontein Mine, Mpumalanga
	Lion Energy Conversion Facility (A Glencore Merafe Venture)
	Springfield Mine (co-author of SIA)
	Beeshoek Optimisation Project
	Lesego Platinum Mine
	Dispatch Rider Project
	Pilgrim's Rest Underground Mining for TGME
	Gloucester development
	Blesboklaagte Colliery
	Kareerand Tailings Storage Facility (TSF) Expansion Project
	Khumani Mine, Mokaning Expansion
	Theta Hill Gold Mining Project near Pilgrim's Rest
	Khulu TSF at Dwarsrivier Mine
	Vandyksdrift Central (VDDC) Mining
	Dwarsrivier Chrome Mine
	Project 10161 and Project 10167 (Gold Mining) by Stonewall (Pty) Ltd
	Manganese Mine North West of Hotazel (Mukulu)
	South32 SA Coal Holdings Middelburg Colliery
	Paling Manganese Mine
	Western Bushveld Joint Venture Project (Maseve Platinum Mine
	Komati coal stockvard
	Dorstfontein Mine Western Expansion Project
Mixed Use Land/Housing	Holy Land Development / Tweefontein
Developments	Ennerdale Extension 2
Developments	Gauteng Rapid Land Release Programme: Four Sites: Hekpoort / Bryanston /
	Lenasia / Rietfontein (Ennerdale)
	Wildealskloof Mixed Use Development
	Salvokop, Tshwane CBD
	Rabie Ridge Ext 7
	Vosloorus Extension 9 High Density Housing Project
	Mapochsgronde Residential Development
	Cullinan Estate Development
	Vlakfontein Residential Development
	Township development/eco-estate on the farm Grants Valley
Bulk Infrastructure and	Cato Ridge Ferrous Smelter
Supply	Integrated Public Transport Network for the Mangaung Metropolitan
	Municipality
	Olifantsfontein Landfill
	K43 Road Construction
	Mangaung Bus Depot for the Integrated Public Transport Network (IPTN)

SECTOR	PROJECT EXPERIENCE
	Greenwich Landfill Site
	Mangaung Gariep Water Augmentation Project
	Tshwane Regional General Waste Disposal Facility (Multisand Landfill)
	K97 Road northbound of the N4
	Wemmershoek Wastewater Treatment Works (WWTW)
	Lefaragathle, Mogono, Rasimone, Chaneng outfall sewer and Chaneng sewer
	treatment plant
	Upgrading of railway stations and railway line for Metrorail in Mamelodi
	ACSA Remote Aprons Project
Electricity generation,	Umntu-Aries Phase 5 and 6 Strengthening Project
transmission and	Crowthorne-Lulamisa power line
distribution	Crowthorne Underground Cable
	Diepsloot East Servitude and substation
	Mitchells Plain-Firgrove-Stikland Transmission Line
	400 kV Transmission Power Line, Marathon Substation
	Ferrum to Garona Substation 400 kV transmission line
	Eskom Rhombus-Lethabong Powerline and Substation
	Aberdeen-Droerivier 400 kV Transmission Power Line
	Houhoek Substation Upgrade and Bacchus-Palmiet Loop-In and Loop-Out
	Arnot-Gumeni 400 kV Transmission Power Line
	Aggeneis-Oranjemond Transmission Line project
	Ariadne-Venus Transmission Line
	Dominion Reefs Power Line project
	Kyalami Strengthening Project
	Apollo Lepini 400 kV Transmission Line Project
	Medupi (then referred to as Matimba B) coal-fired power station
	Poseidon-Grassridge No. 3 400 kV Transmission line and the extension of the
	Grassridge Substation
	Grassridge Substation (near Port Elizabeth) and the Coega Industrial
	Development Zone
	Matimba-Witkop No. 2 400 kV Transmission line
Stakeholder Engagement	Beeshoek Optimisation Project
	Mogale Ext 42, 43 And 44, Muldersdrift, Mogale
	Khumani Mine, Mokaning Expansion,
	Theta Hill Gold Mining Project
	Dwarsrivier Chrome Mine (Pty) Ltd.
	Project 10161 and Project 10167 (Gold Mining) by Stonewall (Pty) Ltd
	Upgrading of the Menlyn Road Network
	Gautrain Project, Gauteng
	Platinum Highway Project from the N1 (Gauteng) to the Botswana Border
	Heineken Brewery and associated industrial activities
Ecosystem Services Review	Ngonye Falls Hydro-Electric Power Plant Project, Zambia

12.2 DECLARATION OF INDEPENDENCE

In terms of the National Environmental Management Act (Act No. 107 of 1998) (NEMA), as amended in respect of the EIA Regulations of December 2014, and GNR 982 published on 4 December 2014, an independent consultant must be appointed to act on behalf of the client. In this regard Batho Earth submit that they have:

- The necessary required expertise to conduct a Social Impact Assessment, including the required knowledge and understanding of any guidelines or policies that are relevant to the proposed process;
- Undertaken all the work and associated studies in an objective and independent manner, even if the findings of these studies are not favourable to the project proponent;
- No vested financial interest in the proposed project or the outcome thereof, apart from remuneration for the work undertaken under the auspices of the above-mentioned regulations;
- No vested interest, including any conflicts of interest, in either the proposed project or the studies conducted in respect of the proposed project, other than complying with the required regulations; and
- Disclosed any material factors that may have the potential to influence the competent authority's decision and/or objectivity in terms of any reports, plans or documents related to the proposed project as required by the regulations.