PROPOSED DEVELOPMENT OF FOXWOOD DAM & ASSOCIATED INFRASTRUCTURE

Socio-Economic Impact Assessment

Authority Reference No: 14/12/16/3/3/1/2/817

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Final

Prepared for: Department of Water and Sanitation

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Executive Summary

The Department of Water and Sanitation (DWS) is investigating the feasibility of developing a multi-purpose dam on the Koonap River outside of Adelaide in the Eastern Cape. The proposed site is known as the Foxwood Dam site.

Foxwood Dam could provide additional assurance of water supply to improve resilience of domestic water supply within the region. In addition, the project is being considered for implementation as a strategic initiative to mobilize the water resources in the area as a stimulus for socio-economic development in this rural, economically depressed region. This initiative would support the objectives of the National Development Plan and is consistent with the National Water Resource Strategy 2.

This document serves as the final Socio-Economic Impact Assessment for the proposed development of Foxwood Dam and its associated infrastructure.

The project area is situated in Ward 4 of the Eastern Cape, in the Amatole District Municipality and Nxuba Local Municipality. The town of Adelaide and the Bezuidenhoutville Township are located to the south-east of the dam.

Information to inform the study was sought through desktop analysis, telephonic communication with the landowners and through a site visits.

The study area has a small population of 24 246 with slightly more females than males. Only eight percent of the population over age 20 have completed high school. It follows that at a household level, over eighty percent of the households earn in the low income bracket. In terms of access to services, Nxuba Municipality has a high level of access to basic services in the study area.

The project infrastructure is mostly located on privately-owned properties that are primarily used for agricultural practices. The project will alter the land use and result in a loss of arable land. As agricultural land is used to generate an income, farmers will need to be compensated for the loss of land.

DWS is encouraged to maximise on opportunities that the dam may present to generate income. Overall, it is estimated that the irrigation opportunities downstream could generate approximately 1 934 direct sustainable jobs in the local municipality and stimulate up R 503 million of GDP contribution (Arup (Pty) Ltd, 2014).

The major impacts of the dam include:

1. Impact on the Economy;
2. Relocation impacts on dwellings and private and public infrastructure;

3. Increased tourism opportunities
4. Impact on job creation and skills development;
5. Impact on SMME's; and
6. Construction impacts.

The following recommendations are made

1. The EMPr must have an access policy which all contractors and sub-contractors are to adhere to'
2. Deviation of R344 should be executed with a safety and security plan which includes safety of livestock;
3. Telephone line relocation to be done swiftly and with notice to affected users;
4. Alignment of powerline alignment deviation B should not be considered as a suitable alternative;
5. Reconsider alignment of Telkom line around the farm infrastructure;
6. Relocation plan must have a clear communication strategy; and
7. DWS to investigate granting landowners water rights.

The motivation of the project is based on the proposed Government Irrigation Scheme. The findings of this report support the scheme given the long term economic stimulus of the program.

Overall the dam it is anticipated that the dam will have create a significant stimulus to the local economy. The dam will support the agricultural practices in the area with the potential to create sustainable business and employment opportunities.

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List of Abbreviations

AIDS	Acquired Immunodeficiency Syndrome
CRR	Comments and Response Report
DEA	Department of Environmental Affairs
DEAT	Department of Environmental Affairs and Tourism
DM	District Municipality
EIA	Environmental Impact Assessment
GGP	Gross Geographic Product
GIS	Geographical Information System
GVA	Gross Value Added
HIV	Human Immunodeficiency Virus
I&AP	Interested and Affected Party
IDP	Integrated Development Plan
KZN	KwaZulu-Natal
LM	Local Municipality
NEMA	National Environmental Management Act (Act No. 107 of 1998)
NWA	National Water Act (Act No. 36 of 1988)
PAJA	Promotion of Administrative Justice Act (Act No. 3 of 2000)
RMP	Resource Management Plan
SD	Smithfield Dam
SDF	Spatial Development Framework
SEIA	Socio-Economic Impact Assessment
SIA	Social Impact Assessment
uMWP-1	uMkhomazi Water Project Phase 1

1 INTRODUCTION

The Department of Water and Sanitation (DWS) is investigating the feasibility of developing a multi-purpose dam on the Koonap River outside of Adelaide in the Eastern Cape. The proposed site is known as the Foxwood Dam.

Foxwood Dam will provide additional assurance of water supply to improve resilience of domestic water supply within the region. In addition, the project is being considered for implementation as a strategic initiative to mobilize the water resources in the area as a stimulus for socio-economic development in this rural, economically depressed region. This initiative would support the objectives of the National Development Plan and is consistent with the National Water Resource Strategy 2.

Nemai Consulting was appointed as the independent Environmental Assessment Practitioner to undertake the Environmental Impact Assessment (EIA) for the proposed development of Foxwood Dam and its associated infrastructure. This Socio-Economic Impact Assessment (SEIA) serves as a specialist study to the EIA.

1.1 Terms of Reference

- Determine the specific local socio-economic, land utilisation and acquisition implications of the project.
- Collect baseline data on the current socio-economic environment.
- Assess socio-economic impacts (positive and negative) of the project, and quantify the economic impacts.
- Undertake a thorough review of the following with the purpose of identifying landowner issues:
  - Minutes of public meetings and individual meetings; and
  - Comments and Response Report.
- Suggest suitable mitigation measures to address the identified impacts.
- Make recommendations on preferred options from a socio-economic perspective.
- Undertake additional consultation with affected individuals and communities, as deemed necessary.

1.2 Structure of the report

The remainder of the report is structured as follows:

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

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

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

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

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

Section 7: *Impact Assessment* – An impact assessment with proposed mitigation measure and recommendations.

Section 8: *Conclusion* – Final remarks and management guidelines for a way forward.

2 LEGAL FRAMEWORK

Legislated Acts, Policy, Plans and Strategy provide an important framework and governance of the SEIA. This section provides a summary of the important Acts, Policy, Plans and Strategy which were accounted for in this study.

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

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

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

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

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

2.2 National Environmental Management (Act 107 of 1998)

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

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

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

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

2.3 National Water Act (Act 36 of 1998)

The principles of the National Water Act (NWA) recognize that sustainability and equity are central guiding principles in the protection, use, development, conservation, management and control of South Africa's water resources.

These guiding principles also recognize the basic human needs of current and future generations and the need to promote social and economic development through the use of water. In this regard the purpose of the NWA is to ensure that South Africa's water resources are protected, used, developed, conserved, managed and controlled in ways that take into account factors that are central to the assessment of social issues, including (Barbour, 2007):

- Meeting basic needs of current and future generations;
- Promoting equitable access to water;
- Redressing the results of past racial and gender discrimination;
- Promoting the efficient, sustainable and beneficial use of water in the public interest;
- Facilitating, social and economic development; and,
- Providing for the growing demand for water.

2.4 Promotion of Administrative Justice Act (Act 3 of 2000)

The right to administrative action stated in the Bill of Rights has been given effect via the Promotion of Administrative Justice Act (PAJA). The provisions of the PAJA apply to all decisions of all organs of state exercising public power or performing a public function in terms of any legislation that adversely affects the rights of any person (Babour, 2007).

PAJA also prescribes the procedure that must be followed by an organ of state when it takes decisions. If an organ of state implements a decision that impacts on an individual or community without granting them an opportunity to comment, the ultimate decision will be unlawful and therefore may be set aside. The Act also imposes a duty on organs of state to explain and justify the manner in which they have reached their decisions and, in the case of social issues, how these issues were considered in the decision-making process (Babour, 2007).

2.5 Development Facilitation Act (Act 67 of 1995)

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

- Promoting the integration of the social, economic, institutional and physical aspects of land development;
- Promoting integrated land development in rural and urban areas in support of each other;
- Promoting the availability of residential and employment opportunities in close proximity to or integrated with each other;
- Optimising the use of existing resources including such resources relating to agriculture, land, minerals, bulk infrastructure, roads, transportation and social facilities;
- Promoting a diverse combination of land uses, also at the level of individual erven or subdivisions of land;

- Discouraging the phenomenon of "urban sprawl" in urban areas and contributing to the development of more compact towns and cities;
- Contributing to the correction of the historically distorted spatial patterns of settlement in the Republic and to the optimum use of existing infrastructure in excess of current needs;
- Encouraging environmentally sustainable land development practices and processes;
- Promoting land development which is within the fiscal, institutional and administrative means of the Republic;
- Promoting the establishment of viable communities; and,
- Promoting sustained protection of the environment.

2.6 Restitution of Land Rights Act 22 Of 1994

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

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

2.7 National Development Plan (2011)

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

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

- Housing, water, electricity and sanitation;
- Safe and reliable public transport;
- Quality education and skills development;
- Safety and security;
- Quality health care;
- Social protection;
- Employment;
- Recreation and leisure;
- Clean environment; and

- Adequate nutrition.

2.8 National Water Resources Strategy (June 2013)

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

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

2.9 Integrated Development Plan

The Municipal Systems Act 32 of 2000 requires municipalities to adopt and review their Integrated Development Plans, and throughout this processes must consult and involve the public.

- Amotole DM adopted in 2012 its 5 year strategic plan that will guide its development from 2012-2017 which is reviewed annually. Version 3 in 2014 (2014/15 IDP) was used for this report
- Nxuba LM has a 2015/2016 IDP for review.

2.10 International Organisation for Standardization, ISO 14001:2004

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

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

3 PROJECT DESCRIPTION

The Department of Water and Sanitation (DWS) is investigating the feasibility of developing a multi-purpose dam on the Koonap River outside of Adelaide in the Eastern Cape. The proposed site is known as the Foxwood Dam site.

Adelaide (and surrounding towns) have suffered water shortages in the past. Investigations into the potential development of the water resource within the Koonap River Valley date back to the 1960's. In the 1990's Foxwood Dam was re-considered to augment domestic supplies as well as for some development of commercial irrigation.

The Nxuba Local Municipality (LM) raised the issue of water shortages at the 2009 Eastern Cape Water Indaba. In response, DWS proposed a comprehensive Feasibility Study for Foxwood Dam alongside other options, which included:

- Improvement of water-use efficiency (Water Conservation and Demand Management);
- Enlargement of the off-channel storage scheme;
- Exploration and exploitation of groundwater resources; and
- Enlargement of the Fish River to Adelaide pipeline.

Foxwood Dam could provide additional assurance of water supply to improve resilience of domestic water supply within the region. In addition, the project is being considered for implementation as a strategic initiative to mobilize the water resources in the area as a stimulus for socio-economic development in this rural, economically depressed region. This initiative would support the objectives of the National Development Plan (NDP) and is consistent with the National Water Resource Strategy 2.

3.1 Irrigation Scheme

The Department of Water and Sanitation has identified a Government Irrigation Scheme on naturally occurring irrigable soils along the Koonap River downstream of the Foxwood Dam site. The scheme will use the human resource potential in the Amatole District Municipality (DM) to stimulate socio-economic development.

According the Foxwood Dam Scoping Report, a strategic intention of the project is to mobilize the water resources in the area for irrigation development downstream of the proposed Foxwood Dam.

The scheme involves the purchase of 13 000 ha of land of which 1 250 ha is irrigable land. The identified land is located on portions of privately owned farms. The land will be used for the production of high value tree crops, namely peaches, lemons and macadamias. The scheme will be run by new irrigation farmers under the guidance of current commercial farmers

in the area. Refer to **Figure 2** for a map on the irrigable soils downstream of the proposed Foxwood Dam.

Overall, it is estimated that the development could generate approximately 1 934 direct sustainable jobs in the local municipality and stimulate up R 503 million of GDP contribution (Arup (Pty) Ltd, 2014).

The water released down the Koonap River from the Foxwood Dam is to be abstracted at appropriate points along the river to serve the various blocks of new irrigation. No bulk water distribution infrastructure would be required and the objective of always providing the Ecological Reserve in the river would be satisfied.

The agricultural model relies on a partnership between existing commercial farmers and new emerging farmers who historically were unable to access commercial opportunities in agriculture.

In order to initiate and successfully develop the envisaged Government Irrigation Scheme it will be necessary for an Implementing Agent of the Government to, in a carefully planned and managed way, acquire land from private ownership, plan and develop the Irrigation Scheme on this land with the long term in view, and allocate this land in viable units to candidate new irrigation farmers.

The Government Irrigation Scheme is one of the key drivers of the Foxwood Dam project.

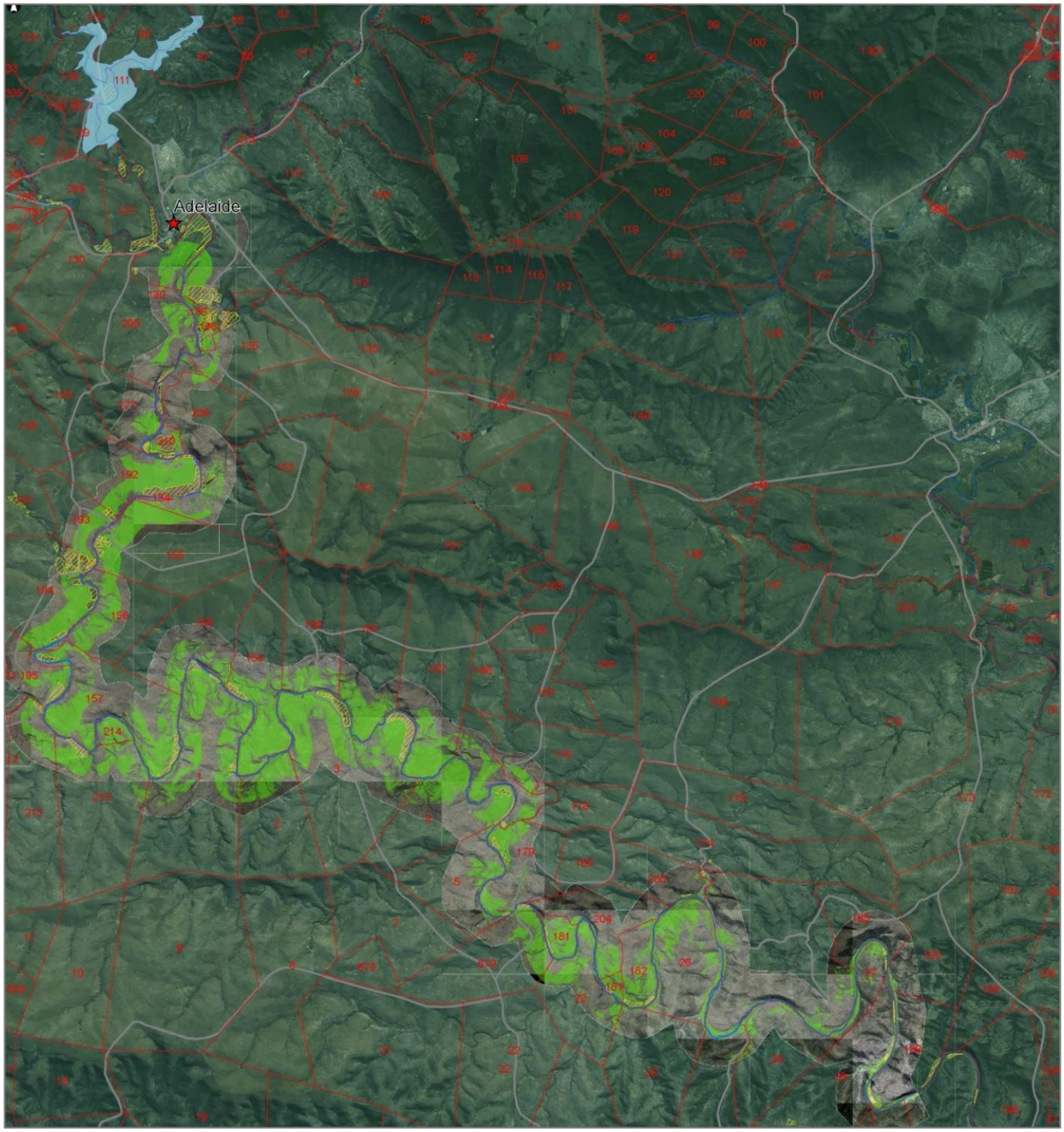

Figure 1: Irrigable soils along the Koonap River downstream of the proposed Foxwood Dam site

3.2 Project Location

The project area is situated in central part of the Eastern Cape, in the Amatole District Municipality and Nxuba Local Municipality. From a southern direction the proposed dam wall site (coordinates 32˚40'30"S, 26˚16'0"E) is accessed via the R344 (off the R63). The town of Adelaide and the Bezuidenhoutville Township are located to the south-east of the dam. **Figure 2** is a locality map of the area.

The project infrastructure is mostly located on privately-owned properties that are primarily used for agricultural practices, except for the land in the south-eastern part of the project footprint which is owned by the municipality.

According the Amatole DM, development nodes are categorised as Primary Urban Nodes, Administrative Nodes, Secondary Urban Nodes and Urban Service Centres. The Adelaide Town is classified as an Urban Service Centre and is the only development node in Nxuba Municipality (Nxuba LM, 2014).

Urban Service Centre are towns that provide a higher order level of services to their surrounding hinterland areas. It is also recognized that these towns exhibit trends of population influx and require investment in order to accommodate these pressures (Nxuba LM, 2014).

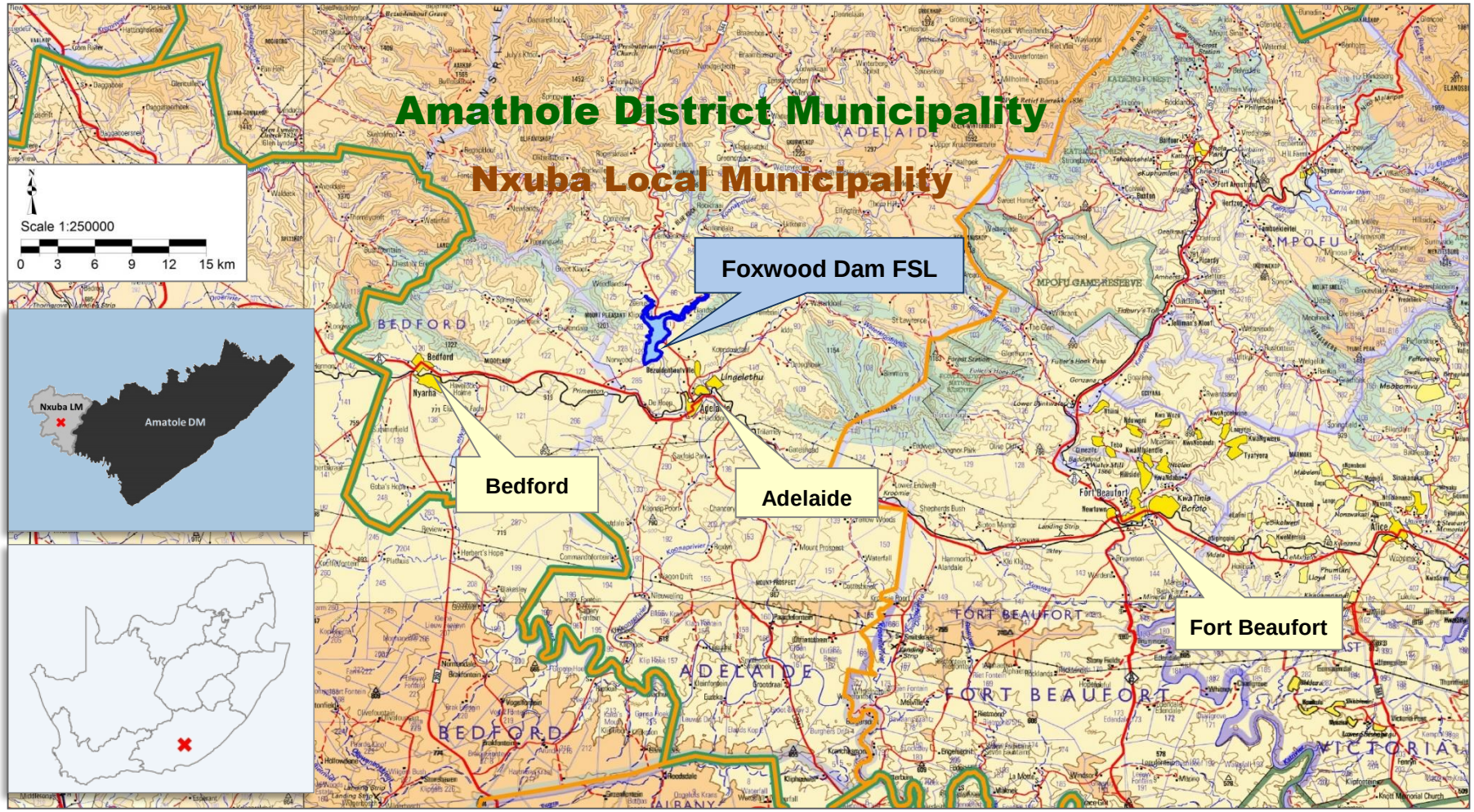

Figure 2: Regional Map (Note not all components are shown)

3.3 Project Components, Associated Infrastructure and Alternatives

The project consists of the components listed in the **Table 1** and mapped in **Figure 3** below. Alternatives are the different ways in which the project can be executed to ultimately achieve its objectives. The alternatives to the project components are also listed below.

Table 1: List of project Components and Alternatives

Project Components	Associated Infrastructure	Alternatives
Major storage dam (Foxwood Dam)	1. Dam wall 2. Embankment 3. Dam outlet works (including dam intake tower, tunnel and outlet valve house) 4. Access roads (construction and operation) 5. Quarry and earthfill borrow areas 6. Electrical supply 7. Construction camp (temporary) 8. Operator's offices and accommodation (permanent)	Dam Type Dam Capacity
Bulk water supply pipeline	1. Pump station 2. Pipeline and associated structures (chambers, Cathodic Protection measures, AC mitigation measures, pipeline markers)	
Gauging Weir	1. Weir and associated instrumentation 2. Access roads (construction and operation) 3. Electrical supply 4. Satellite construction camp	Gauging Weir Option 1 Gauging Weir Option 2
Relocation of Infrastructure	1. Relocate water supply canal 2. Relocate R344 3. Relocate MR00639 4. Relocate Telkom telephone line 5. Relocate Eskom power line	Power Line Deviation Alignment A Power Line Deviation Alignment B

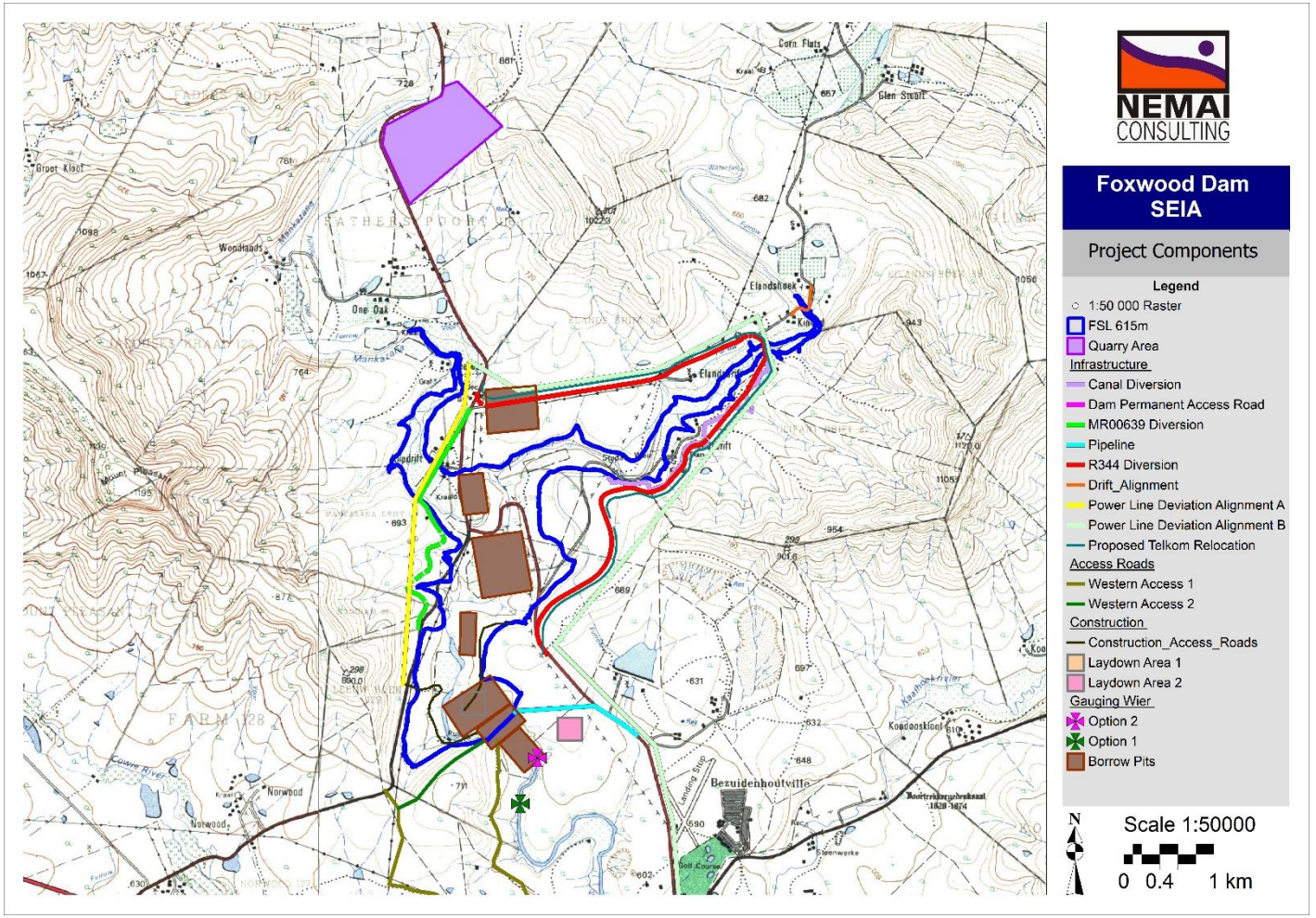

Figure 3: Project Components

3.4 Land Acquisition and Relocation

Land is required for constructing the Foxwood Project. Section 64 of the National Water Act (Act No. 36 of 1998) enables the Minister of Water Affairs, or a Water Management Institution authorised by the Minister of Water Affairs in writing, to expropriate any property for any purposes contemplated by this Act if the purchase is for public purposes or in public interest. Servitudes with specific purposes can also be registered (Nemai Consulting, 2015).

The following approach is recommended for this project:

- Land inside Foxwood Dam's purchase line as well as land required for appurtenant works must be acquired in accordance with statutory requirements;
- A servitude is required for the maintenance and the right to provide water for the raw water pipeline; and
- Land required for housing and other infrastructure required for the operation of the scheme also needs to be acquired.

The areas to be acquired, as well as the methodology for calculating these areas, are discussed in the sub-sections to follow.

The preliminary purchase line for Foxwood Dam is shown in **Figure 3** below. In addition to the Foxwood purchase line, land will be acquired for the flow gauging weirs. The purchase line for the gauging weirs is based on the backwater level for the design flood of the weir, plus a 15 m buffer zone.

There are 15 farm portions and who will be affected by the land acquisition.

The following servitudes are required (Nemai Consulting, 2015):

- Bulk Water Pipeline from the dam to the connecting point on the existing water supply pipeline is 15 m.
- The proposed width of the servitudes for the access and deviation of roads is 20 m.
- The proposed servitude for the realignment of the water supply canal through a new pipeline is 15 m.

DWS does not allow permanent structures within the flood line. Thus in addition to the land acquisition, structures within flood line will need to be relocated.

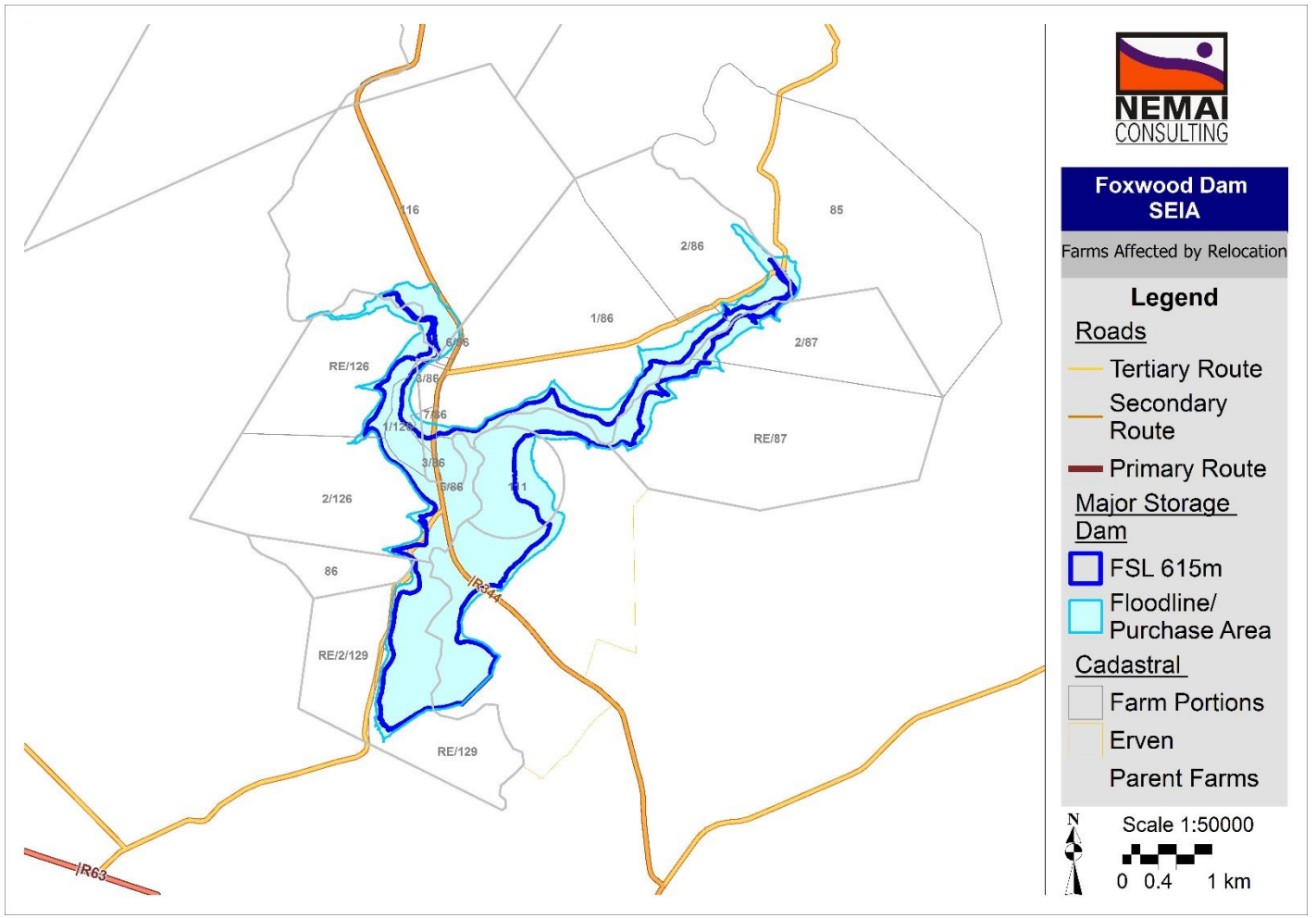

Figure 4: Farms that will be affected by the land acquisition

4 METHODOLOGY

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

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

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

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

4.1 Sourcing of Information and Data Analysis

The socio-economic baseline level is based on both primary and secondary data. Primary data was collected directly from community members. Secondary data was accessed through South African Databases, available reports and articles, internet searches and are referenced in the text and in the reference section of this report.

The profile of the baseline conditions includes determining the current status quo of the community, including information on a number of social and economic issues such as Demographic factors; Socio-economic factors such as income and land tenure; and Statutory and Regulatory Environment.

4.1.1 Social Survey

Techniques for public involvement include the use of Focus Groups, Interviews, Hearings, Meetings, Workshops, distribution of Information Brochures and Pamphlets, Informal Small Group Meetings and Polls (Centre for Good Governance, 2006).

Primary data was collected during a field trip of two days in 06 and 07 October 2015 to the proposed Foxwood Dam Area during which a household survey was conducted. The following chosen techniques for public involvement were used in this SEIA and in the field trip included:

1. **Interviews:** Individual interviews were conducted to the households that are need to be relocated. The interviews provided good insight into the social and economic conditions, land use and individual requirements for relocation;
2. **Site visit:** Site visits were conducted to all private land owners. The aim of the site visit and walkabout included:
    a. Understand the attitude of the landowners to the proposed Foxwood Dam and Associated Infrastructure;
    b. Understand the compensation requirements per landowner;
    c. Determine the land use within the purchase line;
    d. Understand the loss of income per landowner;
    e. Determine the impact on employment, sense of place, land use etc.;
    f. Determine the impact on agricultural processes within the purchase line;
    g. Determine the impact of the road deviation and other infrastructure;
    h. Identification of all structures that would require relocation in order to assess the relocation impact per landowners; and
    i. Photograph and log all structures within the purchase line.

4.1.2 Secondary Data

An assessment of the scoping phase provided an understanding of the project details, community concerns, location and possible impacts.

The required information will be collected using different sources Statistics South Africa Census data; Quantec Research EasyData; through the review of municipal, district and private sector reports.

The Final Scoping Report for the Foxwood Dam and Associated Infrastructure provided the context for this report. The report assisted in provided the need and desirability of the project, the land use and information on the alternatives that required assessment. The Comments and Response Report which forms part of the Scoping Report highlighted the concerns from the community. The report was compiled using information from public meetings and correspondence.

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

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

Quantec Research (Pty) Ltd is a South African based consultancy which focuses on the marketing, distribution and support of economic and financial data, country intelligence and quantitative analytical software. Quantec Research maintains and distributes a comprehensive set of data collections covering macro and regional socio-economic, industry and international trade data. Data such as gross value added and the unemployment rate were sourced from Quantec Research.

4.1.3 Geographic Information System

A Geographic Information System (GIS) was used to conduct a thorough analysed of the area. The use of GIS brings together the demographic and economic data into graphic form enables a thorough and more accurate analysis.

4.2 Impact Assessment

Impact assessments allows for an estimate of the significance of the identified social and economic impacts to those who will be affected. In addition, the response of the affected parties to such impacts also needs to be clarified (Centre for Good Governance, 2006). All impacts will be analysed with regard to their nature, extent, magnitude, duration, probability and significance (Barbour, 2007). Section 8 lists the definitions that apply to the impact assessment.

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

4.3 Assumptions and Limitations

- It is assumed that information obtained during the interviews provide an honest account of the community and community relationship to the dam. It must be noted, however, that meetings are not statistically representative.
- It must be assumed that all the interview reports are based on reflections provided by those present and may or may not necessarily be a reflection of future conditions.
- The study was done with the information available to the specialist at the time of executing the study, within the available time frames and budget. The sources consulted are not exhaustive, and additional information which might strengthen arguments, contradict information in this report and/or identify additional information might exist. However, the specialist did endeavour to take an evidence-based approach in the compilation of this report and did not intentionally exclude information relevant to the assessment.
- The need for the project is rooted in the potential to develop a Government Irrigation Scheme within the Koonap River valley downstream of the proposed Foxwood Dam, which needs to be taken forward by an appropriate Implementing Agent such as the EC Rural Development Agency (ECRDA). Although this scheme is excluded from the EIA, the Technical Feasibility Study (including associated engagements that took place with the relevant government departments and stakeholders) provided the necessary footing for this venture to be pursued further.
- The co-ordinates reflect the point at which the photograph was taken, and not the point of the actual infrastructure. Although comprehensive, the logging of structures does not replace the need for an asset study to be undertaken during negotiations with landowners.

5 SITUATIONAL ANALYSIS

The following section provides a detailed description of the social and economic environment. In this section, demographics such as population and gender, education, and utilities are discussed. An economic overview follows with information on employment and industry is also outlined.

There is a geographical impact related to the physical infrastructure. A vast majority of the impacts that are likely to occur from the proposed project will be geographically bound. The closer the proximity to the bulk infrastructure, the higher the impact will be. In order to assess this geographical impact, the Statistics South Africa 2011 Municipal Ward boundaries has been used to analyse data.

The Ward boundaries relating the proposed bulk supply system are shown in the **Figure 5** below. Only one Ward in Nxuba LM, Ward 4, is directly impacted by the project. The project will have a direct impact on a number of private properties during various stages of the project life cycle.

The following excerpt is from the Nxuba LM IDP Review 2014/2015:

> *The Nxuba Local Municipality is characterized by poor socio economic conditions. The low economic growth rate coupled with low income leads to low affordability level. On average the level of services compare relatively well with that of the district.*

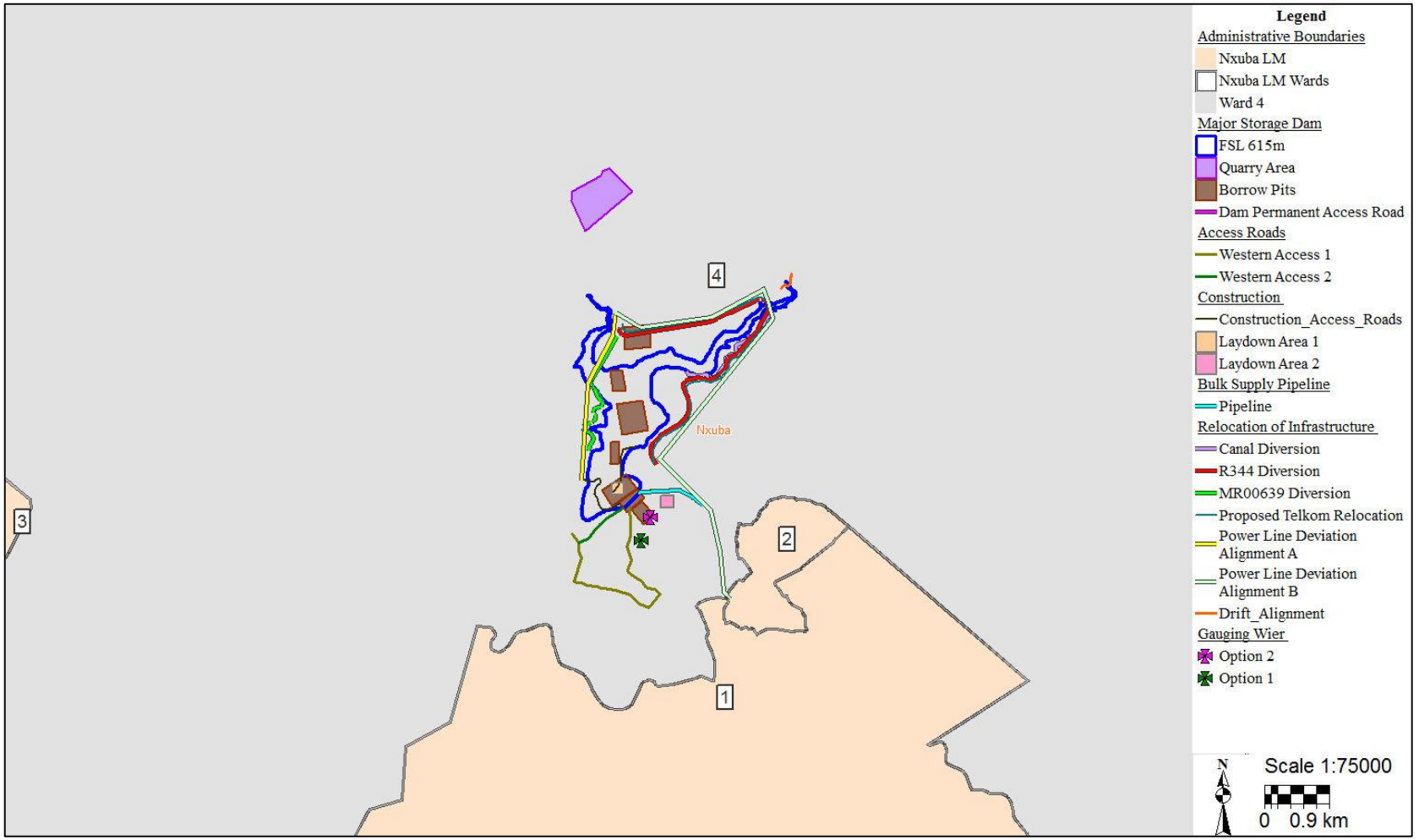

Figure 5: Ward Boundaries

5.1 Population, Age and Gender

The total population in Nxuba LM is 24 264 people. The male population in the municipality is slightly less than the female population across all Wards which is reflective of the general South African population.

Table 2: Population per Ward (Statistics South Africa, 2013)

Gender	Ward 1	Ward 2	Ward 3	Ward 4	Nxuba LM
Male	2 517	2 087	1 616	5 458	**11 677**
Female	2 849	2 184	1 770	5 785	**12 587**
Total	5 366	4 271	3 386	11 242	**24 264**
Total (%)	22%	18%	14%	46%	**100%**

Ward 4 has a total population of 11 242 people which accounts for forty-six percent of the Nxuba LM. The female population accounts for fifty-one percent. Ward 4 is also the largest Ward spatially as can be seen in **Figure 6**.

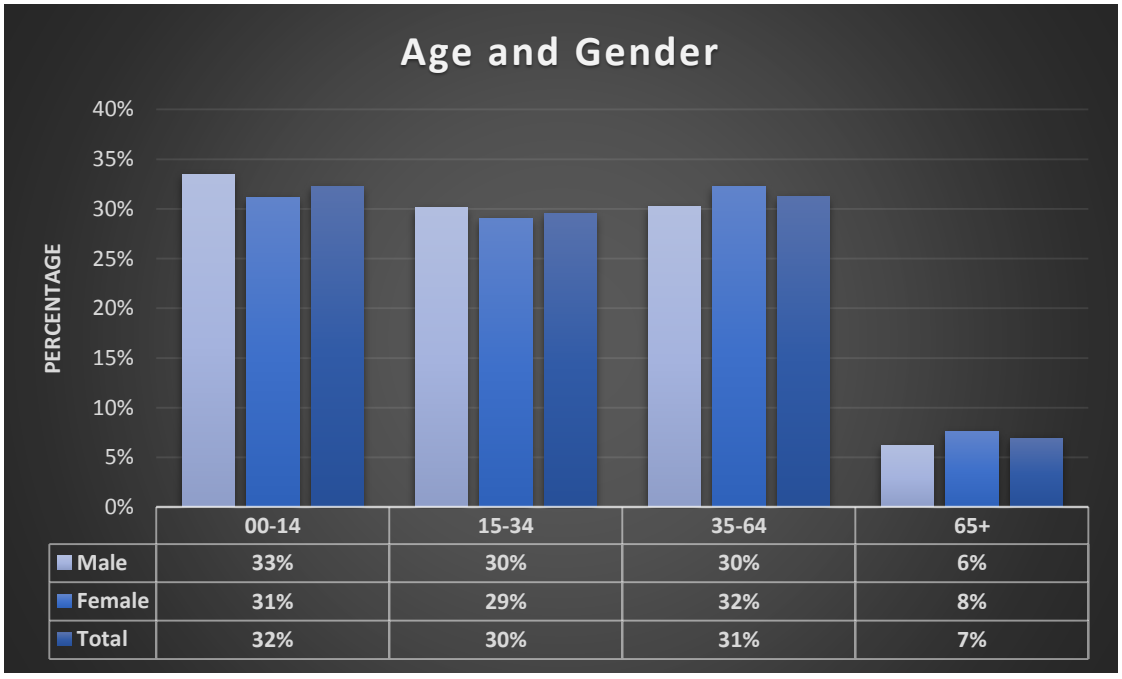

Figure 6: Age and Gender Profile for Ward 4 (Statistics South Africa, 2013)

The population data by gender is evenly spread across age groups. The working age population is classified as those ages 15 – 64. Sixty-one percent of the population in the study area are of the working age population. The population statistics are reflective of a family based established community.

5.2 Education

Education levels are assessed in order to understand the potential grade or level of employment as well as livelihood of the community. Furthermore, it indicates the functional literacy and skill level of a community. The **Figure 7** below shows the highest level of education reached by persons over age 20 in the Wards in 2011.

Approximately a third of the population in almost all the Wards have no education or have not completed primary education and are considered to be functionally illiterate. Functional illiteracy is defined as a person who has received skills to read and write that are inadequate to manage daily living and employment tasks that require reading skills beyond a basic level. Usually persons who have a low level of education, up to primary education, are classified as functionally illiterate.

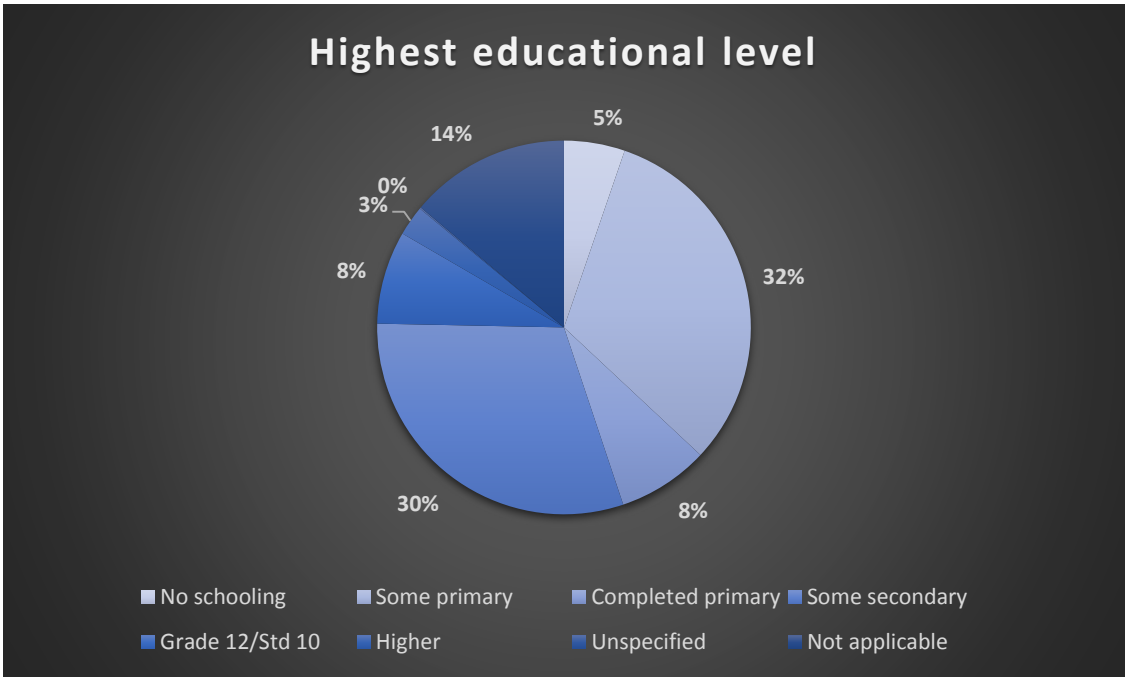

Figure 7: Highest Educational Level by Person Age 20+ in 2011 (Statistics South Africa, 2013)

Five percent of the population over age 20 has not been to school. Only eight percent of the population over age 20 have completed secondary school while thirty percent reached some level of secondary school.

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

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

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

Furthermore, the study shows that the change of employment increases as the years of education increase. **Figure 8** below is a graph taken from the Altbeker and Storme study that shows the labour force participation (LFP), employment and unemployment rates by years of education in 2007 (Evelien & Altbeker, 2013).

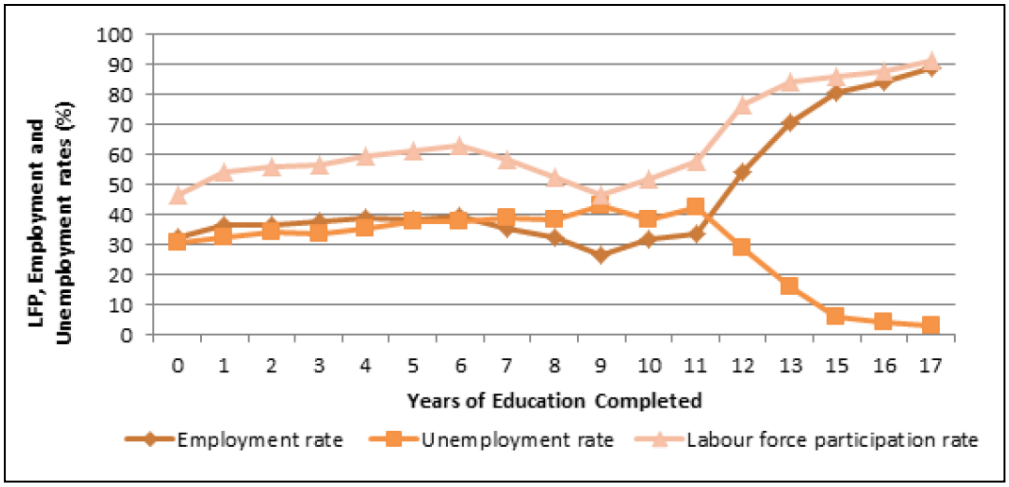

Figure 8: Labour force participation, employment and unemployment rates by years of education (2007) (Evelien & Altbeker, 2013)

Figure 8 demonstrates that only thirty-three percent of those who had less than secondary education (eleven years or fewer) had jobs. This rose by twenty percent on completion of secondary school. With one extra year of education after secondary school, employment increased to seventy-one percent. Those with higher education again enjoyed ten percent rise in employment while post-graduate degree holder's employment was the highest at ninety-six percent (Evelien & Altbeker, 2013).

The Altbeker and Storme study, in conjunction with the data shown above, reveal that education levels in the study area are so low that the communities in these two wards are structurally geared towards unemployment and thus poverty. The community is economically dependent on the twenty-one percent of the population who have completed high school. However, eighteen percent of the population have not proceeded to higher education and are highly unlikely to earn an income in the middle or high income bracket, resulting in a perpetuating cycle of low education and low income levels.

The intervention of an external entity is required to improve current education levels. A generation of youth with some form of higher education is required to break the poverty cycle in this area.

5.3 Dwelling Type and Tenure Status

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

Figure 9 shows the type of dwelling per Ward by formal, informal, traditional and other. According to the Statistics South Africa household classification, the following definitions apply to formal and informal housing:

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

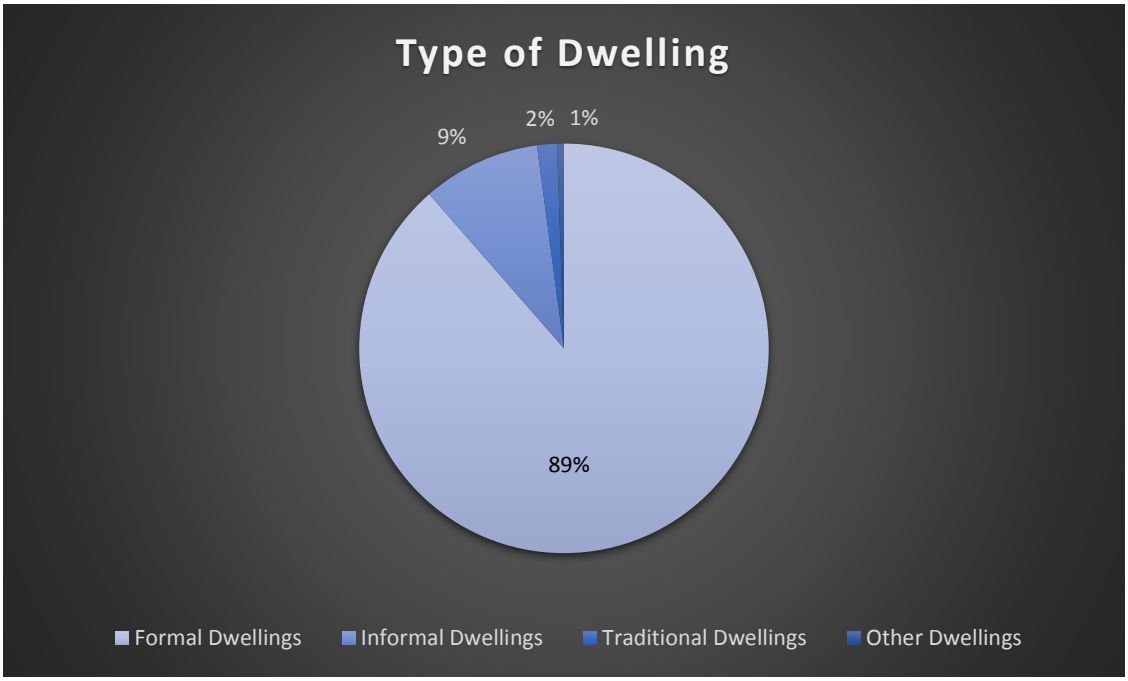

Figure 9: Type of Dwelling (Statistics South Africa, 2013)

Eighty-nine percent of households are formal dwellings and nine percent are informal dwellings. Majority of the houses affected within the purchase line are formal farm houses.

The **Figure 10** below present the tenure status of households in Ward 4 in 2011. Housing tenure describes the legal status under which people have the right to occupy their

accommodation. Tenure status provides insight into the income level of an area as well as the permanence of the occupiers.

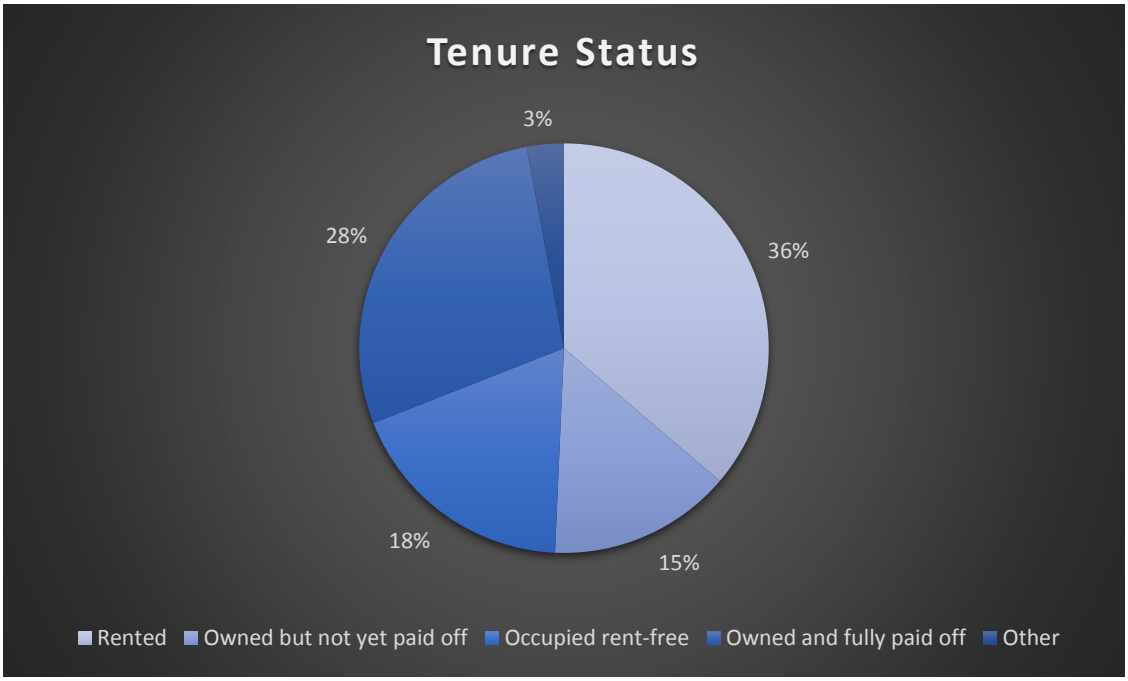

Figure 10: Tenure Statues in Ward 4 (Statistics South Africa, 2013)

The percentage of households own and have fully paid off the dwellings they inhabit is twenty-eight percent with fifteen percent owned but not yet fully paid off. Thirty-six percent of households are rented with eighteen percent occupied rent free.

Forty-three percent of households own the dwellings they occupy. The population and age data indicate a family structure in the community, while section 5.4 indicates low income levels. It can be concluded that there is a permanence in the tenure status of the households.

Overall household tenure in the study area can be improved in terms of income as more than fifty-one percent of households pay for occupation.

5.4 Annual Household Income

Annual household income is important to assess as it provides information on the poverty level of the community. Unskilled communities tend to generate low incomes to the household, which contributes to poverty.

Figure 11 below shows the annual household income levels in 2011 for the study area.

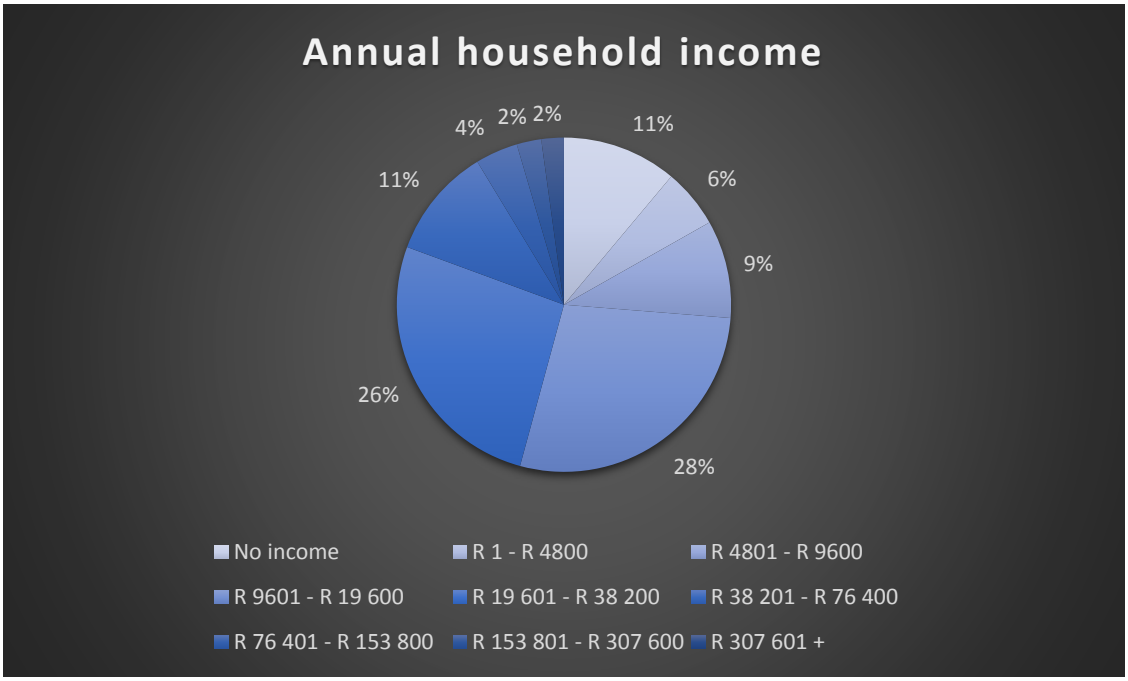

Figure 11: Annual Household Income (Statistics South Africa, 2013)

Eleven percent of households in Ward 4 have no income while eighty percent of households earn between R1 and R 76 400 per annum. R 76 400 per annum is the equivalent of R6 366 per month. Thus the population of Ward 4 in Nxuba LM can be characterised as low income earning households. This is supported in the IDP which states that there are high levels of poverty in the LM and a high dependency on social assistance in the form of grants which include the following:

- Old age pension
- Disability grant
- Child support grant
- Care dependency grant

The reliance on social grants and low income levels indicates that the population's social vulnerability and low resistance to economic shocks. Small changes in the local economic system may have larger impacts on the social conditions of people residing in the Ward.

5.5 Access to Piped Water

Understanding the water supply provides insight into the municipal level of service of a community as well on the standard of living.

Figure 12 below shows the level of access to piped water services in each Ward in 2011.

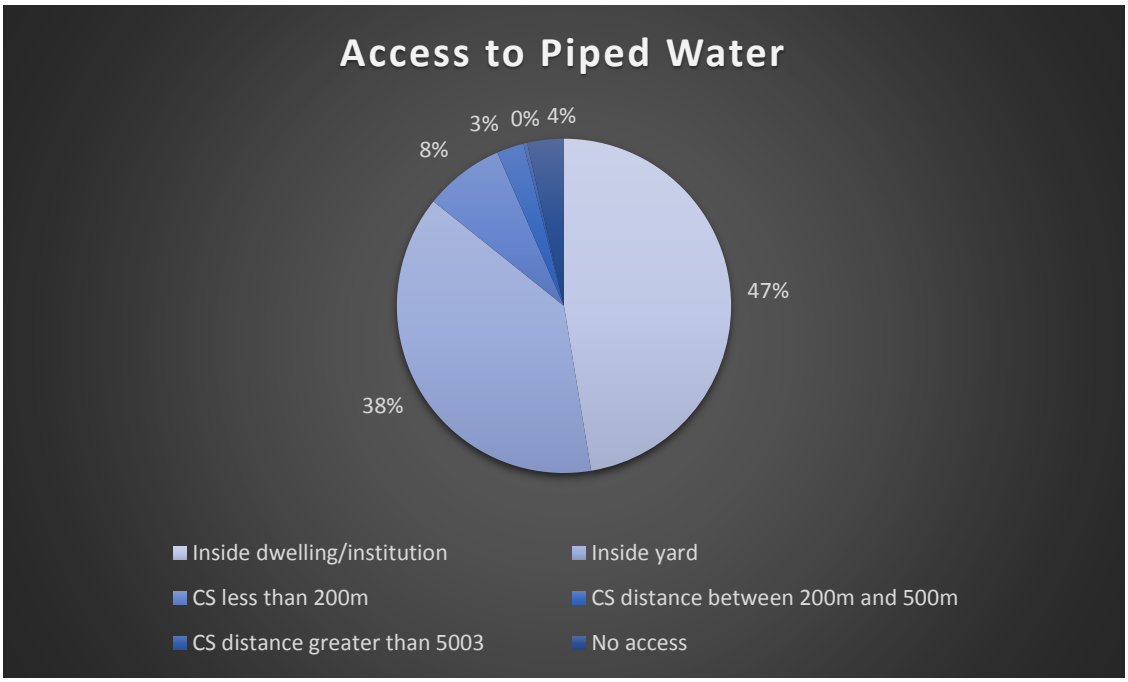

Figure 12: Access to Piped Water (Statistics South Africa, 2013)

Forty-seven percent of households in Ward 4 access piped water inside a dwelling and thirty-eight percent have piped water inside the yard. A further eight percent of households in Ward 4 access water through a community stand less than 200m from the household. Thus ninety-three percent of households in the study area access to water in line with the basic level of service.

Given that the majority of households in Ward 4 are formal dwellings, it makes sense that the majority of households that have access to basic levels of water services.

Access to piped water is important to understand the level of health and standard of living in an area. In each of the wards, while household have access to piped water within the basic level of service, there is a need for improvement of water services in the study area as four percent households have no access to water services.

5.6 Access to Sanitation

Access to sanitation services is also an indicator of the standard of living amongst the population in the sub-places. **Figure 13** shows the household access to toilet facilities in 2011 per Ward.

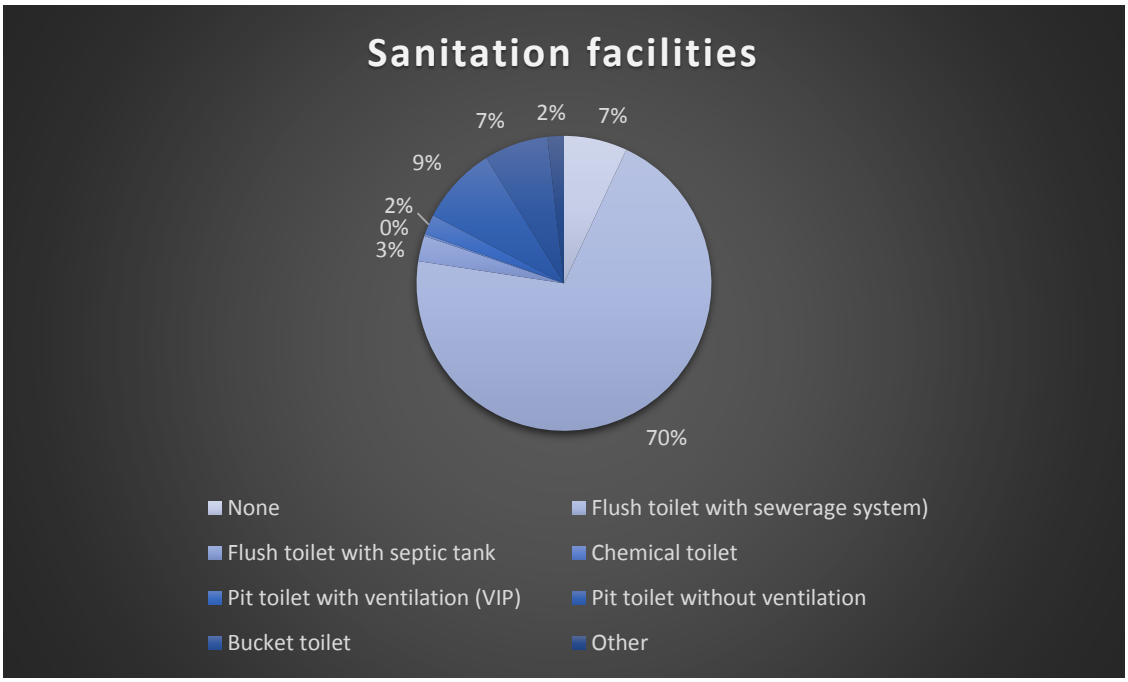

Figure 13: Access to Sanitation Services (Statistics South Africa, 2013)

Seventy percent of households in Ward 4 have access to flush toilets with a sewerage system in Ward 4. Three percent of household have flush toilet with a septic tank and two percent make use of VIP toilets. Thus seventy-five percent of households access sanitation services in line with the basic level of service.

Nine percent of households use a pit toilet without ventilation while seven percent are recorded to use the bucket toilet. There is a need to improve the level of access to sanitation services in the study area as they fall below the basic level of service that municipality's should target.

5.7 Access to Health Care

There are six health care facilities in close proximity to the project area as shown in **Figure 14** below. These are listed below:

1. Adelaide EMS Station;
2. Adelaide Gateway Clinic;
3. Adelaide Hospital;
4. Adelaide Mobile 1;
5. Bezuidenhoutville Clinic; and
6. Nomakhwezi Makhenyane Clinic (in Lingelethu, part of Adelaide).

HIV and Aids and Tuberculosis (TB) is a significant contributing factor to the demographic changes taking place in Nxuba. The Amathole DM IDP predicts that a high drop in the rate of births from a current average of 3.2 to 1.5 births per woman in the year 2020 (Nxuba LM, 2014).

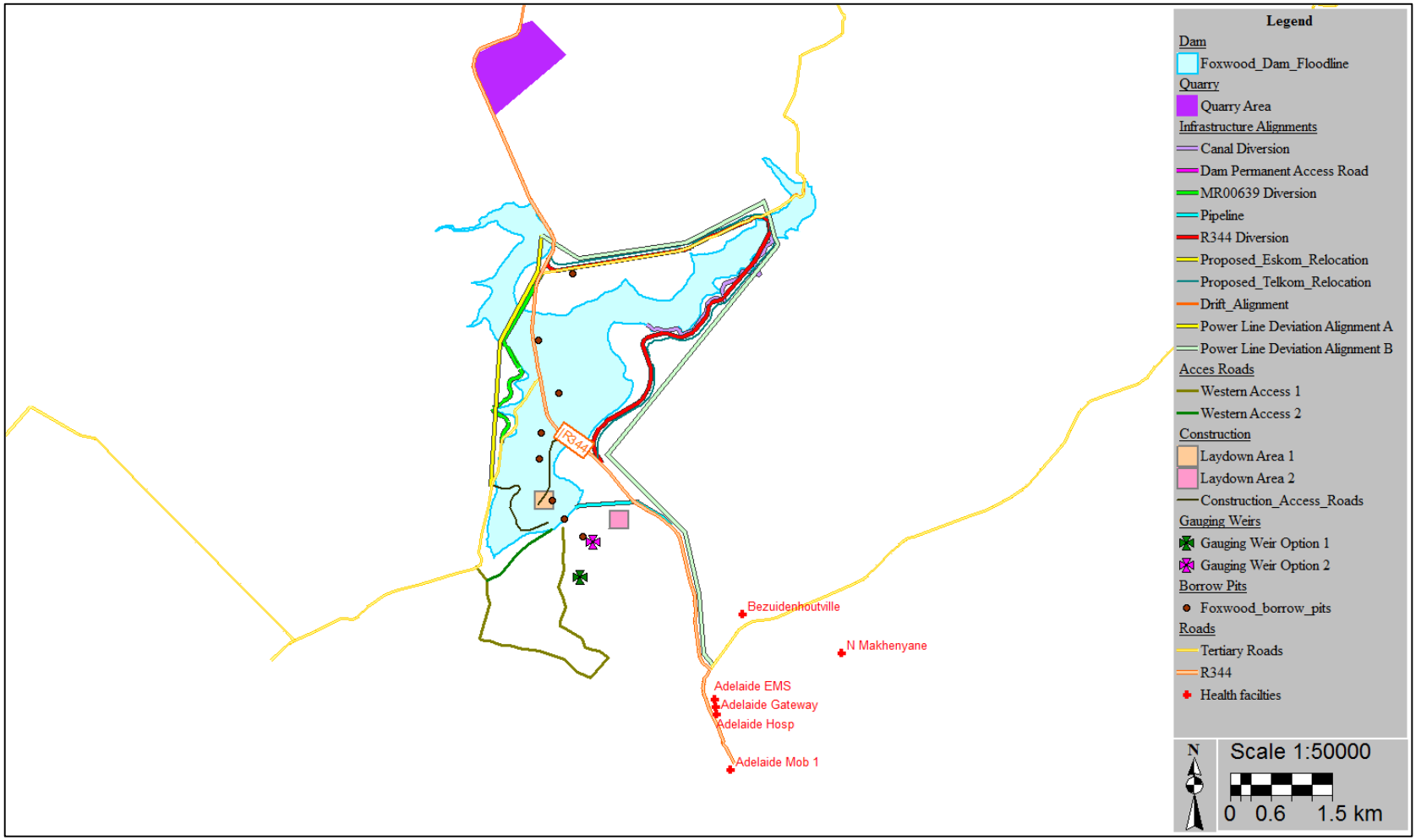

Figure 14: Health Care Facilities

5.8 Employment

Figure 15 provides the employment status for Ward 4 in Nxuba LM for the work aged population of 15 – 64 years.

The official unemployment definition or strict definition of unemployment is as follows:

- The person did not work during the seven days prior to the survey interview, and does not have any job attachment.
- The person wants to work and is available to start work within 2 weeks.
- The person has taken active steps to look for work or to start own business in the 4 weeks prior to the interview (Quantec Research Ltd Pty, 2013).

Discouraged workers are defined as:

- The person did not work during the seven days prior to the survey interview, and does not have any job attachment.
- The person wants to work and is available to start work within 2 weeks (Quantec Research Ltd Pty, 2013)

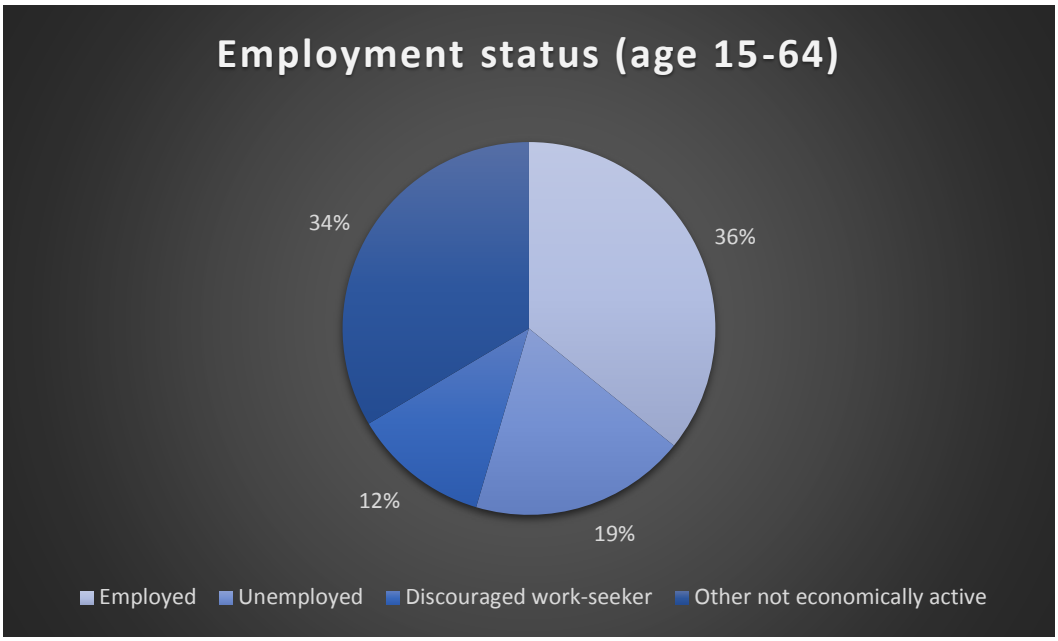

Figure 15: Employment Status (Statistics South Africa, 2013)

Thirty-six percent of the working age population are employed. This means that nearly two thirds of the working age population in the ward do not earn any income, half of which are not economically active.

Twelve percent of the population are classified at discouraged worker-seekers meaning that there are people who want to work but have given up looking.

Figure 11 shows that nearly seventy percent of households earn in the low income bracket while **Figure 7** shows that a third of the population have not completed primary school. It is then concluded that of the third-six percent of people employed in Ward 4, majority of these people occupy low skilled jobs.

5.9 Economy

Gross Value Added (GVA) is defined as the total value of all the goods produced in a specific area during a specific period.

GVA allows for the determination the overall welfare of the population. While it is not a comprehensive measure and provides no indication of the distribution of welfare, it is still important an important indicator.

The GVA was taken from Quantec Research Easy Data. Quantec Research defines the major sectors into Primary Sector, which is Extractive, Secondary Sector, made up of manufacturing and the Tertiary Sector, which comprises of services.

The **Table 3** below shows the 2013 GVA for Amatole DM and Nxuba LM in percentages and R millions. The figures below are based on 2005 constant prices.

Table 3: 2013 GVA for Amatole DM and Nxuba LM at 2005 constant prices in R millions (Quantec, 2012)

Industry	Amotole DM	Nxuba LM
Primary sector	1%	7%
Agriculture, forestry and fishing	1%	7%
Mining and quarrying	0%	0%
Secondary sector	17%	20%
Manufacturing	13%	17%
Electricity, gas and water	1%	1%
Construction	2%	2%
Tertiary sector	82%	73%
Wholesale and retail trade, catering and accommodation	14%	14%
Transport, storage and communication	9%	7%
Finance, insurance, real estate and business services	22%	13%
Community, social and personal services	11%	13%
General government	25%	26%
Total	100%	100%
Total in Rand (millions)	R 41 517	R 494

The total size of Amotole DM is R 41 517 million and Nxuba LM is R 494 million. In both Amatole DM and in Nxuba LM, the tertiary sector is the largest contributing sector to GVA with General Government being the largest contributing industry.

In Nxuba LM, general government and Community, social and personal services contribute twenty-six percent and thirteen percent to overall GVA. This indicates a reliance on the

government sector of the provision of services for economic stimulus and employment in the municipality.

Agriculture, which is the predominant land use in the study area contributes seven percent to the municipality's GVA.

As part of the Feasibility Study for the Foxwood Dam, an Economic Impact Assessment was conducted. The study quantified the economic implications of the Foxwood Dam based on a four year construction period and a further six years for the dam to reach its maximum expected yield totalling a study period of ten years.

The construction of the dam is budgeted to cost R 1.464 million. Based on the capital input, the study anticipates the following (Arup (Pty) Ltd, 2014):

- The Gross Domestic Product (GDP) impact of the dam will is R 1.570 million.
- 85% of the GDP impact will be spent within the Eastern Cape Province,
- 60% of the total or R 934 million should be spent within the Nxuba LM;
- 4 368 direct, indirect and induced construction employment opportunities;
- 80% of the employment opportunities will be created within the Eastern Cape Province of which 68% could come from Nxuba LM; and
- The majority of the employment opportunities will be mid-level or administrative and semi-skilled.

The impacts from the operation of the dam are anticipated as follows (Arup (Pty) Ltd, 2014):

- R 0.607 per cubic meter tariff for irrigation water;
- Initial GDP impact of R 5.14 million;
- The full GDP impact is 117% of revenue or R 16.55 million in year ten where R 8.31 million is direct impact;
- 19 employment opportunities of which 6 are direct employment opportunities;
- Direct employment opportunities may not be local, but the indirect and induced jobs would in all likelihood be within the municipal area.

The anticipated GDP of the construction phase in Nxuba LM is estimated at R 934 million which is nearly double the 2013 GVA of Nxuba LM as shown in **Table 3**. The impact of the construction phase, the short term injection of funds will significantly stimulate the Nxuba LM economy. During the operational phase, the impact is significantly less but still significant to have a positive impact on the economy.

The Economic Impact Assessment, at feasibility stage assess the economic benefits which are realized from the Government Irrigation Scheme (Arup (Pty) Ltd, 2014). Although the scheme falls outside of the scope of work, the motivation for the dam is closely linked to the scheme. For completeness, a summary of the economic benefits of the Foxwood Dam project

in conjunction with Government Irrigation scheme is listed below as per the Economic Impact Assessment:

- Combined GDP impact of R 520 million added in year 10 of the development,
- 2 892 employment opportunities created in the construction phase;
- 1 940 sustainable direct employment opportunities and 741 indirect and induced employment.
- Emerging and BEE farmers will be established and empowered with financial benefits and skills transfer,
- Food security in South Africa is enhanced,
- The economic return on the capital costs justify the project,
- The municipality will earn additional rates and charges from the project,
- The national fiscus will receive additional taxation which will ultimately justify the capital expenditure of the project – R 29 m in year 10
- The potential exists for the further beneficiation of the agricultural product, and
- Potential exists for agricultural product export promotion

The ultimate economic benefits of the combined project, the Foxwood Dam and the irrigated agriculture are in favour of the project being implemented based on the prime objectives of socioeconomic upliftment.

5.10 Land Use

The study area is located in a rural area within the Eastern Cape Province. The predominant land is predominantly natural with pockets of cultivated land along the Koonap River and Mankazana River (Nemai Consulting, 2015).

The cultivated land belongs to private landowners. The inundated land includes natural and cultivated land with public and private infrastructure that will be lost or relocated.

Figure 16 is a Google Earth Image that outlines the context for this section. It references the numbers which refer to the following:

1. **Figure 17** Google Earth Image of the northern section of the proposed study area;
2. **Figure 18** Google Earth Image of the central section of the proposed study area; and
3. **Figure 19** Google Earth Image of the southern section of the proposed study area.

Figure 17: The land use in this area is predominantly vacant unused land that is in its natural state.

There are current agricultural activities that take place along the river banks. Predominantly citrus farming and lucerne farming take place on the east section along the Koonap River and grazing on the western section along the Mankanzana River. The private infrastructure on the land is all related to farming activity. There are several residential houses and farming infrastructure located close to the river on the eastern end.

North east of the dam, farming activity continues until the terrain changes to more mountainous in nature and is more difficult to use for agriculture.

Figure 18: East of the Koonap River, on Farm Olifants Drift 87 the land is used predominantly citrus farming, lucerne farming as well as grazing. There are some accommodation facilities (rondavels) use by largely international clients who hunt game in the area, although these are not well maintained. It is unclear how often the facilities are used. Water infrastructure, storage facilities and other infrastructure related to farming activity are found closer to the rivers.

The municipal owned land is vacant and uncultivated.

West of the Koonap River, on farm Elands Drift 86 the land use is largely in its natural state. There is some agricultural activity that takes place. The area is largely undisturbed and in its natural state. On Olifants Drift 87 some game farming takes place and the terrain is more mountainous. The Mankazana River has allowed for some agricultural activity on the farm close to the river banks. Although the land is not used for any agricultural activity other than grazing at present. The infrastructure in this section include residential houses, recreational facilities and farming infrastructure.

The Blackhill Club is a sports club that has built a club house and tennis courts. These are indicated on the map and are situated close to the R344.

The Presbyterian Church School lies south of the Blackhill Club outside of the purchase line. It will be unaffected and access will be maintained.

The Smaldeel Conservancy entrance is situated near the intersection of the R344 and MR00639.

The land outside further away from the river is dry with no irrigation beds. There is some farming activity but the farm is not used to capacity. The landowners of the farm live in the residential houses situated north of the Presbyterian Church School while there is foreman who live closer to the river south of the Presbyterian Church School.

Figure 19: The land outside of the purchase line is dry and largely undisturbed with some commercial farming taking place along the river banks on private land. There are a number of rural roads traverse through the area.

A historical gauging weir is located on the Koonap River and located on the map.

The town of Bezuidenhoutville is situated south east of the dam. Bezuidenhoutville is a small formal town just north of Adelaide.

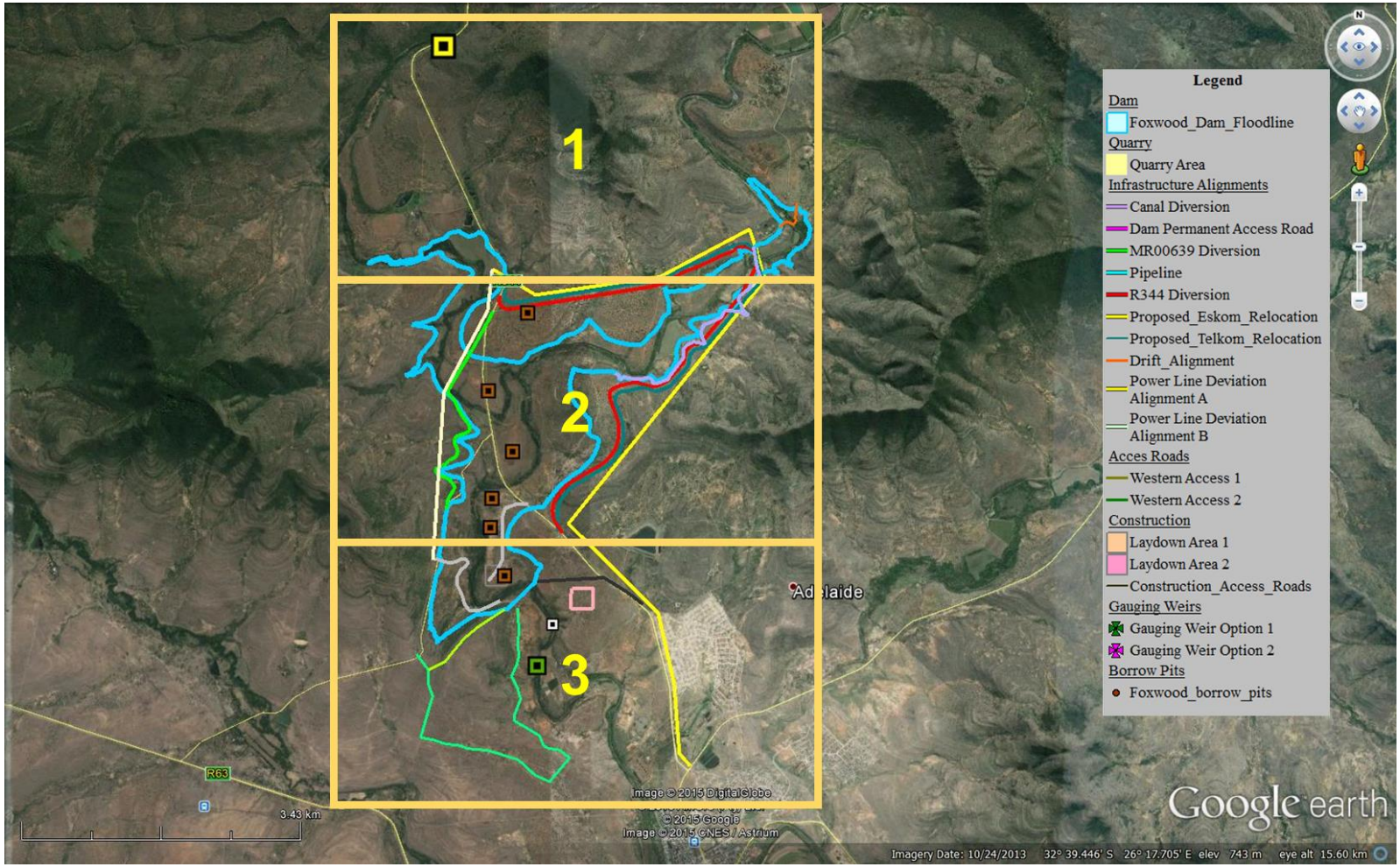

Figure 16: Google Earth image of the land use within the purchase line and reference to maps below

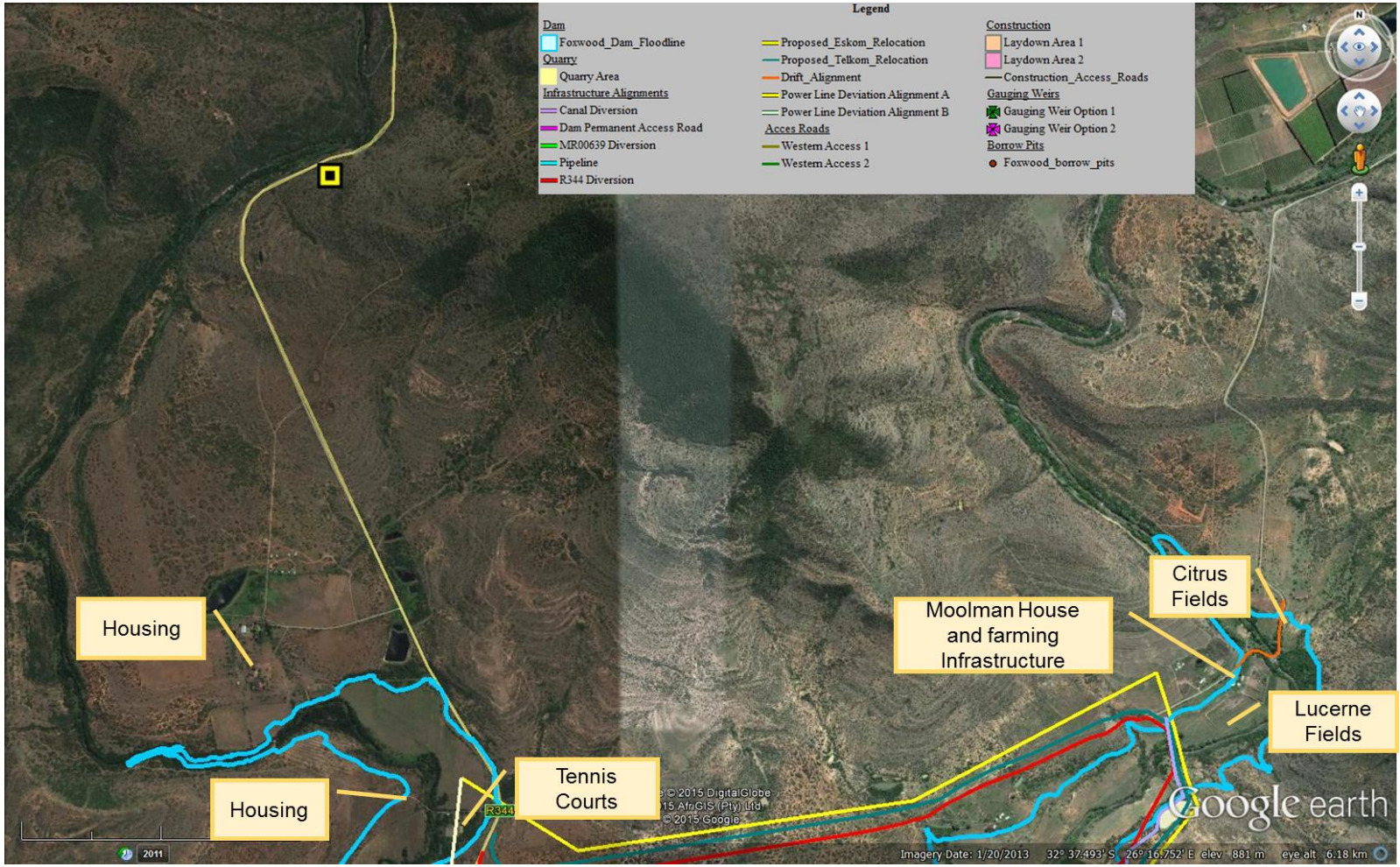

Figure 17: Google Earth image of the northern section of the proposed study area

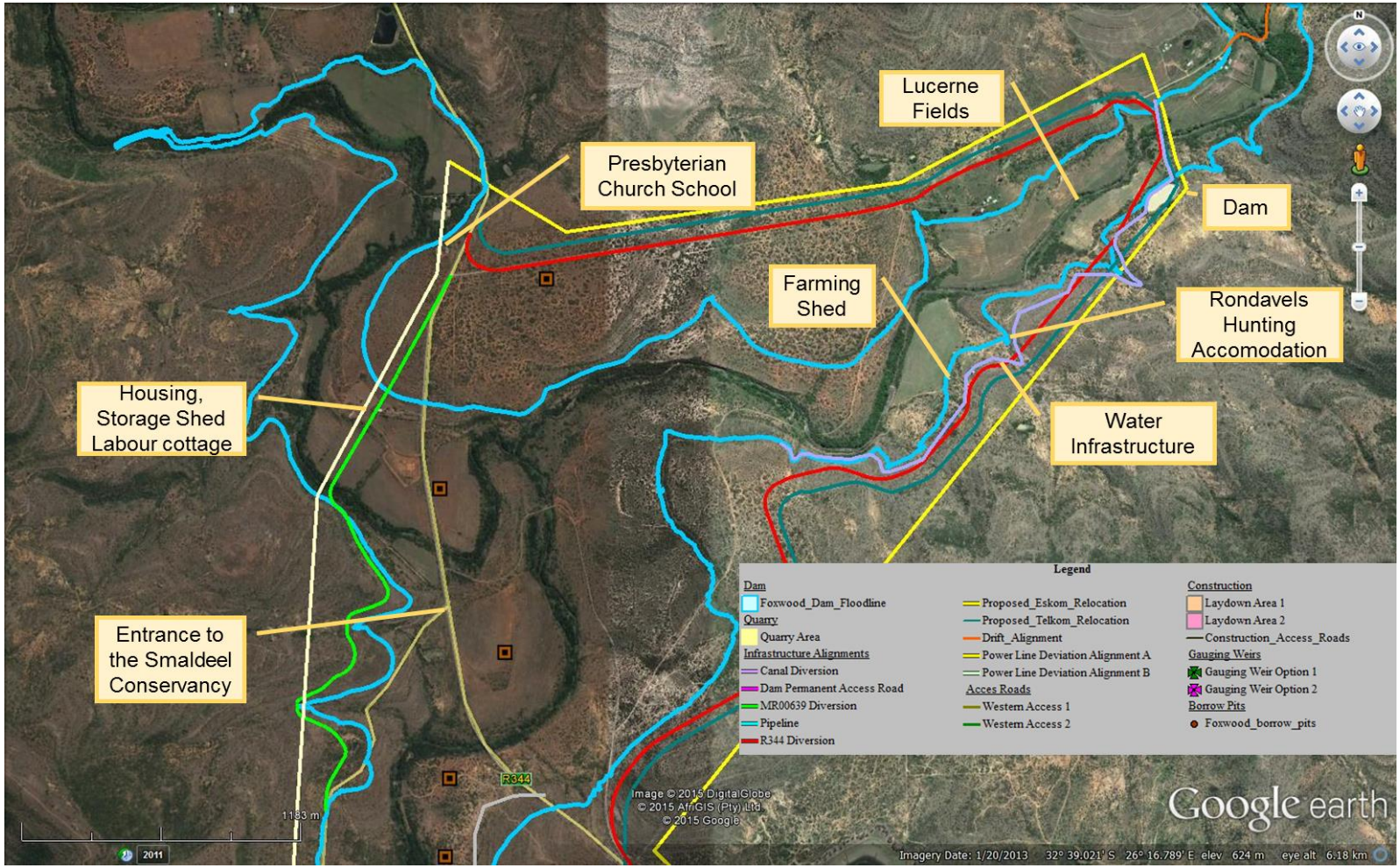

Figure 18: Google Earth image of the central section of the proposed study

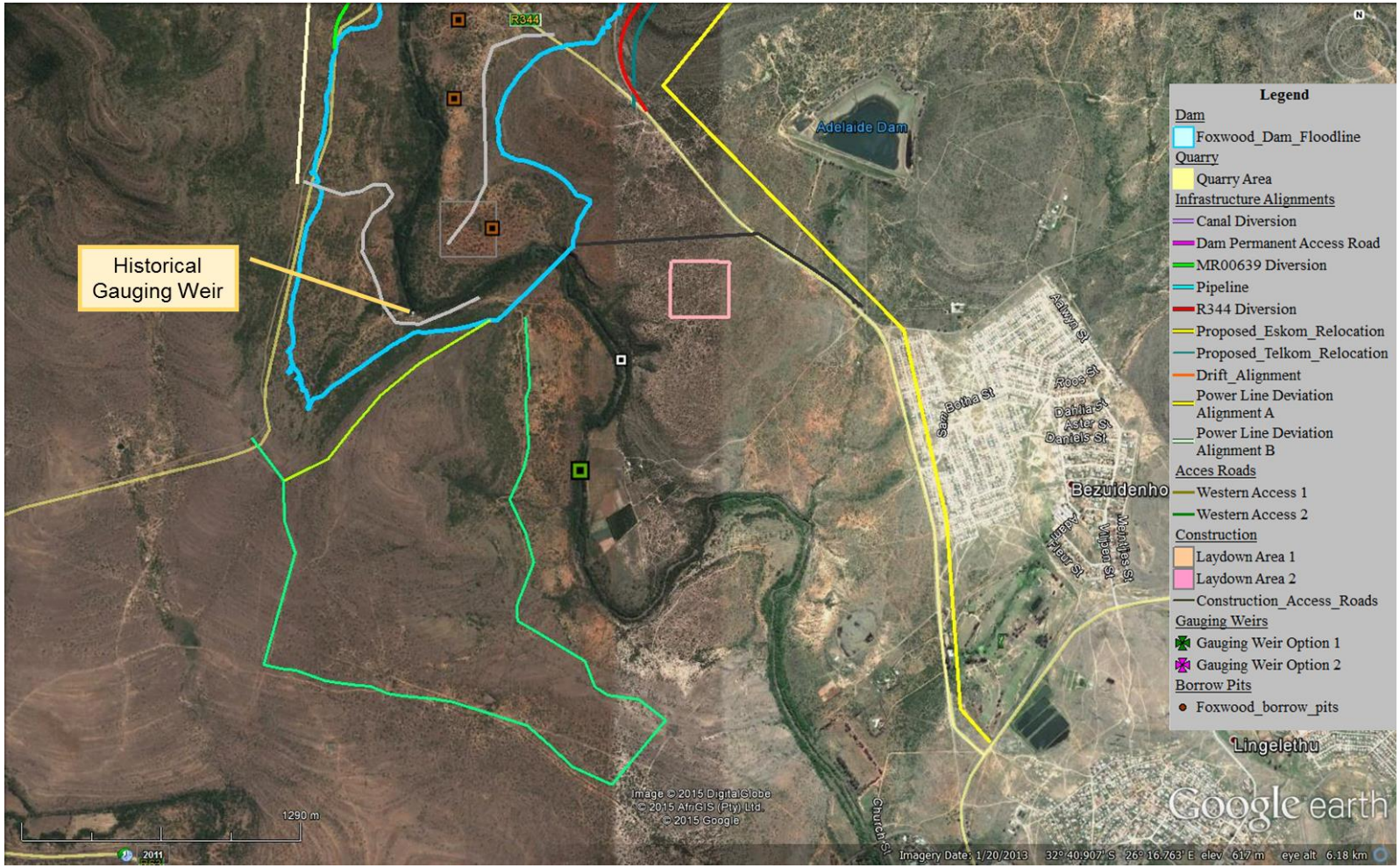

Figure 19: Google Earth image of the southern section of the proposed study

5.11 Stakeholder Engagement

There are six landowners whose properties will inundated by the Foxwood dam. Some of properties have structures erected on the land, which will require relocation.

On 06th and 07th October 2015, the SEIA team conducted a site visit to the Foxwood Dam site to meet with all the landowners except the Nxuba LM. The SEIA team met with each of the directly affected landowners and conducted a site visit on the property within the boundary of the purchase line. The aim of the site visit and walkabout was to within the full supply line included:

- Understand the attitude of the landowners to the proposed Foxwood Dam and Associated Infrastructure;
- Understand the compensation requirements per landowner;
- Determine the land use within the purchase line;
- Understand the loss of income per landowner;
- Determine the impact on employment, sense of place, land use etc.;
- Determine the impact on agricultural processes within the purchase line;
- Determine the impact of the road deviation and other infrastructure;
- Identification of all structures that would require relocation in order to assess the relocation impact per landowners; and
- Photograph and log all structures within the purchase line.

All the landowners were all aware of the project and the ongoing EIA. An explanation on the need and procedure to expropriate land and remove structures within the purchase line is provided to all.

The findings of each visit are recorded below. In order to contextualise the discussion, **Figure 20** below shows the location of each farm owner. **Figure 21** shows all structures photographed on site. Refer to Annexure A for the photographs and co-ordinates of each structure. It must be noted that the co-ordinates reflect the point at which the photograph was taken, and not the point of the actual infrastructure.

For effective analysis of each landowner, themes were identified for each discussion. Identified themes were used for a free discussion to take place during stakeholder meetings. **Table 4** below shows the general themes for discussion. Below each theme possible discussion points were listed to guide the discussion as needed.

Table 4: Identified themes for discussion

Resources					
How do you earn a living	Agriculture	Business	Services	Schools	Health
State of Knowledge on the project and DWS					
What is the project	How does it work	DWS	Communication		
Attitude towards the proposed activities					
Concerns	Positives	Negatives	Attitude		

It must be emphasised, that this table was not used to direct questions to the participants; rather it was used to guide the discussion and collect as much information as possible. This theme based approach was adopted in reporting the outcomes of the site visit.

In order to gain a complete overview of each of the landowners concerns, information from the Scoping Phase Comments and Response Report (CRR) have been incorporated into this section. The outcomes of the meetings and other correspondence has been incorporated in the CRR. Public meetings were held in March 2015 and July 2015. During this period, there has also been electronic and telephonic communication between the professional team and stakeholders.

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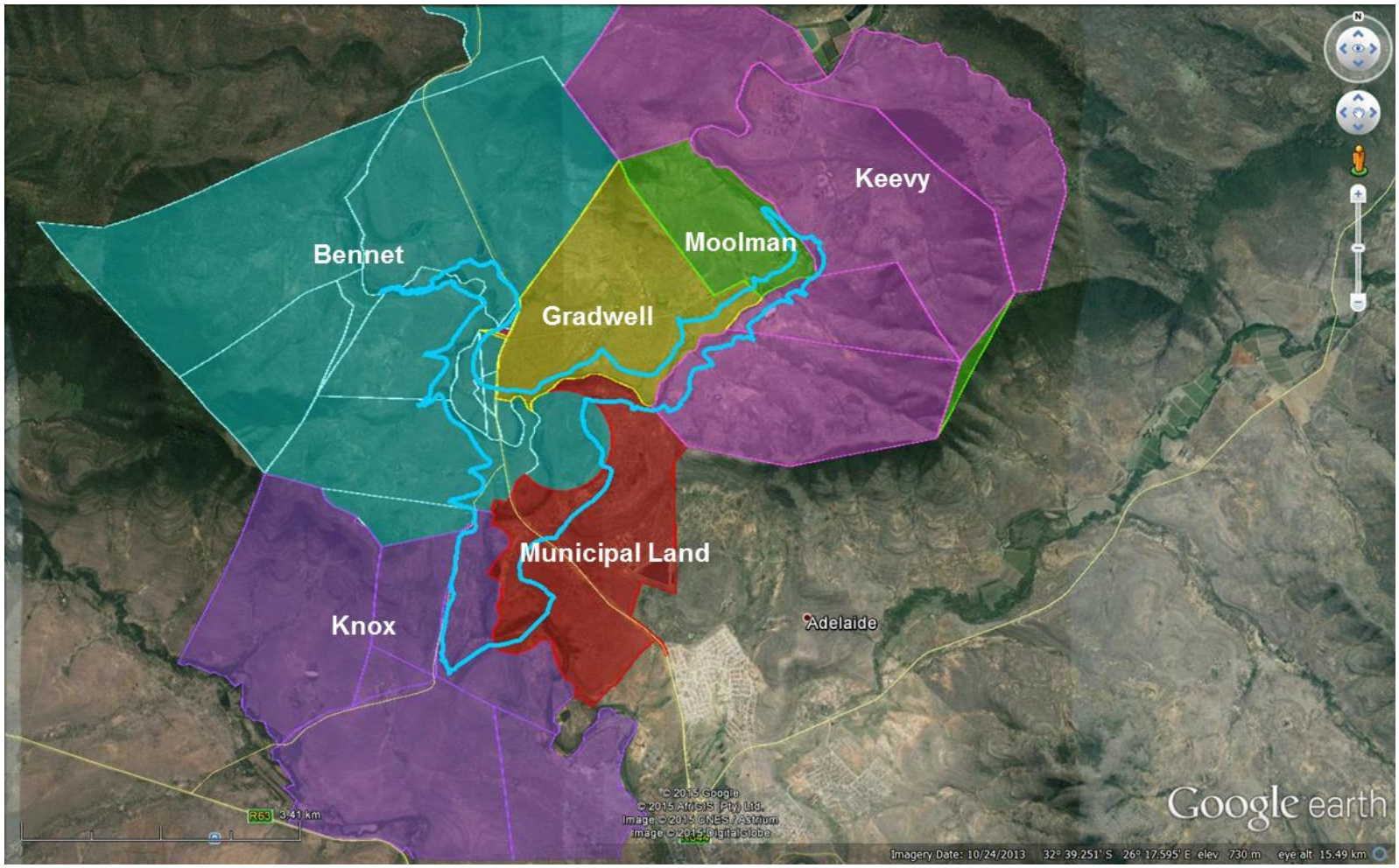


Figure 20: Landowners

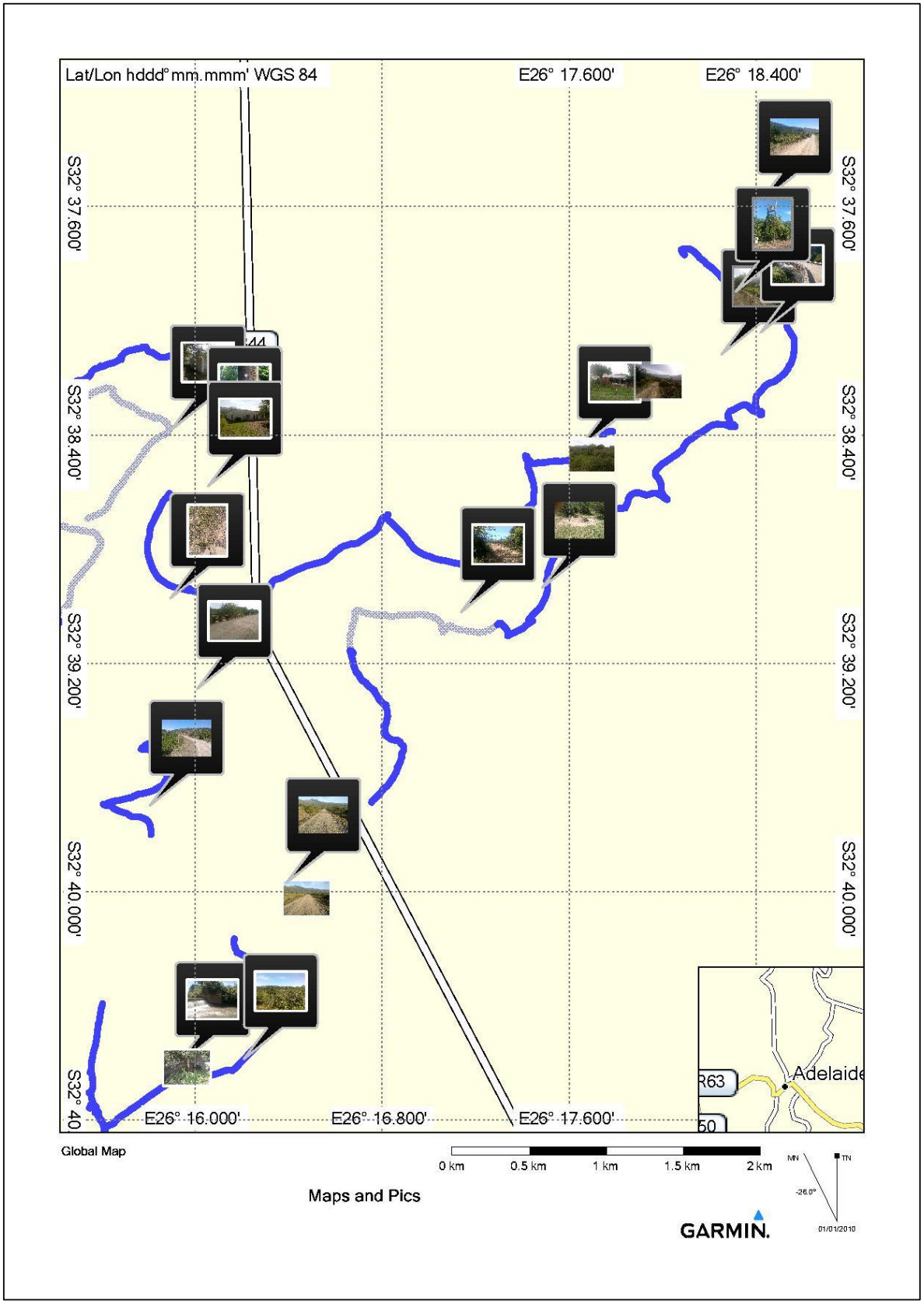


Figure 21: Structures identified in Site Visit

5.11.1 A: Moolman Farm

Resources: The Moolman is situated along the gravel road DR02491. It has a rural and ecological sense of place.

Mr Moolman's residential house lies within the purchase line. In addition to the house, there will be a loss of lucerne and citrus fields. These cannot be replaced without purchasing new land for production.

Mr Moolman currently employs three people on the farm any does not anticipate and changes brought about from the Foxwood dam.

The structures within the purchase line include:

1. Housing Complex
    a. Fencing'
    b. Storage Sheds;
    c. Loading Bay;
    d. Concrete reservoir;
    e. Electrical Supply
2. Agricultural Fields
    a. 2 citrus fields. One field is used for the production of navel oranges and one is in good condition prepared for planting.
    b. 14 ha avocado fields above the purchase line.
    c. Ploughed fields used for lucerne production;
    d. Established irrigation
    e. Electrical power near the Koonap River;
    f. Grazing camp
3. Infrastructure
    a. Public Rural Road. This road will be inundated;
    b. Eskom power lines; and
    c. Telkom telephone Lines.

State of Knowledge: The landowner has a mixed attitude towards the proposed Foxwood Dam. The dam will benefit the agricultural practices on the farm as there will be a secured supply of water. The landowner would like mobile pumps and additional piping as a mitigation measure for the when the dam water levels are low.

Attitude: Mr Moolman understands the benefits of the project but also laments the loss of his house and productive farm area. Mr Moolman would like fair compensation for the relocation of the property and loss of arable land.

5.11.2 B: Keevy Farm

Resources: The Keevy Farm is situated on the north eastern side of the Foxwood Dam, adjacent to the municipal owned land. The landowner, Mr Keevy purchased the 3 000 ha farm in 1999.

Agricultural activities on the farm include:

1. Citrus farming: Naartjies, Oranges and Mandarin. The farm makes use of micro jet irrigation. There is a pump house from the Koonap River to the citrus;
2. Lucerne Production: The farm activities include citrus farming and lucerne production. 24 hectares of lucerne production take place within the purchase line;
3. Livestock: The lucerne is produced to feed the cattle, goats and sheep on the property; and
4. Accommodation: There are three rondavel's within the purchase line. Two are used for accommodation of six people and the third rondavel for ablution facilities. The accommodation is set up to be used by hunters.

State of Knowledge: Mr Keevy was aware of the project and the implications on his farm.

Attitude: Mr Keevy expressed support for the project and is positive about the economic impacts of the dam on the local economy. Mr Keevy had was unsure whether the benefits of the project will be realised.

Mr Keevy expressed concern regarding the deviation of the R344 on this property. The deviation of the R344 will cross the farm along the Koonap River then traverse the property along the proposed dam. Mr Keevy stated the area will have will impact him in the following way:

1. The deviation of the road will split the citrus fields in two. Splitting the fields is uneconomical and will create access problems for farm;
2. There will be increased visibility and access to his property to the public;
3. The road will create safety and security problems for the farm;
4. Livestock will be at risk when crossing the R344;
5. While fencing can mitigate against security issues the infrastructure will completely take away from the sense of isolation which will serve as a deterrent to the accommodation facilities;
6. The road will have an impact on the sense of place as it will disturb the private and serene nature of the area;
7. The farm will be exposed to traffic.

Mr Keevy stated that the road deviations are will have an impact on a lot of the farmers in the area. Access on rural roads which are used as short cuts by farmers may be affected. Other

farmers do not have internal roads which will make the movement of stock difficult. Mr Keevy would like fair compensation for the loss of land, income and structures.

Mr Keevy employs seventy causal labourers during the harvesting season for seven months of the year. For the remaining five months, fifteen to twenty people are employed on the farm. The loss of land for lucerne production and for citrus production will have a negative impact on employment if the production is not replaced. Mr Keevy estimates that his farm will lose ten percent of its workers if he does not expand to replace lost production.

There is a possibility that the citrus farming can expand closer to the water. For the farms agricultural activities, the dam will secure water supply. Secured water supply will allow him to increase the agricultural activities on his land. Should the farming activity expand as a result of the dam, the impact on employment can be mitigated.

5.11.3 C: Bennet Farm

Resources: The Bennet Farm is located on north western portion of the proposed dam. Both the R344 and the MR00639 traverse through his property.

The land is used for grazing of cattle located further west of the property. Plans to develop the property have been placed on hold owing to the prospect of the Foxwood Dam.

The cattle drink from the river and from a reservoir on the farm located close to the main house.

The land is located along the Koonap River and Mankazana Rivers and is fertile. Agricultural infrastructure occurs along the river banks within the purchase line. A weir is located on the river which feeds from the river to the farm dams. Water for household use is also abstracted from the houses.

State of Knowledge: Mr Bennet, the landowner, was supportive of the dam and economic stimulus the dam will have on the local economy. He was uncertain if the dam will bring about employment benefits to the community.

Attitude: Mr Bennet seeks fair compensation for the affected structures on his farm.

The dam will materially impact the farms carrying capacity and therefore there will be an income loss to Mr Bennet. There will be no impact on employment of their six staff. The dam will add to the sense of place.

5.11.4 D: Knox Farm

Resources: The Knox farm is situated on the south west of the proposed Foxwood Dam. Of the farms who are directly affected by the dam. The farm is 2 700 ha in size

The land use within the purchase line is used for grazing for cattle, goats and sheep

Given the Foxwood dam, the dam will secure water supply allowing for permanent irrigation infrastructure. In addition the dam will allow for lucerne production for feed.

The only structure on the Knox farm that will be affected by the proposed project is a historical weir. While the weir has historical and ecological value, the secured water supply would be adequate replacement for the loss of the weir.

From the CRR, Ms Knox stated the following about the weir.

> "There is an existing, very beautiful historical old stone weir across this river. It was built in 1901 and has amazingly survived countless floods intact. Are there any plants to relocate this or salvage the dressed stone? The furrows leading from it were damaged in the last big flood we had but we are in the process of repairing them. Will there be compensation for this structure?"

State of Knowledge: The Knox family stated that overall the project will have positive economic impacts. In relation to the impact on the Knox farm, she raised concern about how the irrigation aspect of the scheme will progress and what impact the dam will have on the farms existing water rights.

Should the project negatively impact the farms water rights, the farm will not be able to replace the farming activity that will be lost by the dam. This will have a negative impact on the farms income, profit margins and number of people employed. Should the farmers obtain water rights, the agricultural potential will increase which will have a positive impact on employment and profit.

Attitude: The construction of the proposed dam will see the Knox farm loss twenty percent of their dam. They seek fair compensation for the loss of property. In addition they would like to have access to the dam and water rights to the dam for agricultural use. Ms Knox stated that she would like access to the dam which should not be fenced off.

5.11.5 E: Gradwell Farm

Resources: There are no structure, pumps, boreholes or other farming infrastructure located in purchase line.

State of Knowledge: The Gradwell family are familiar with the project. They feel the community will benefit from the project and it will uplift Adelaide town.

Attitude: Mr Gradwell would like fair compensation for the impact on their property. The land is used for grazing. The farm currently employs one person whose employment will not be impacted by the project.

5.11.6 F: Presbyterian Church School

A Presbyterian Church School is situated between the Bennet and Gradwell farm. The Schools is accessed from the R344. The school lies just outside the purchase line and access to the school will be maintained from the R344.

Although intended to be a farm school, the farming population is an aging community and the school is used by the learners in Adelaide and Bezuidenhoutville towns. According to farmers the school is popular in the area due to the higher standard of education it provides. During the site visit, the SEIA team notices that learners from Bezuidenhoutville were walking to the school

The Principal aware of the impact on learners walking to school and stated that some learners do travel in a van subsidised by the school. The school have been applying for transport subsidies to the Department of Education with no outcome. The Principal stated that the school will make provision to transport leaners to school once the road deviation takes place and therefore is not concerned about the deviation.

The Department of Education is in the process of closing all farm schools. The Principal stated that the school will most likely be moved to the town. Therefore the impact of the road will only be short term.

No other social or economic impacts were identified by the Principal who stated that the school is in support of the construction of the Foxwood Dam.

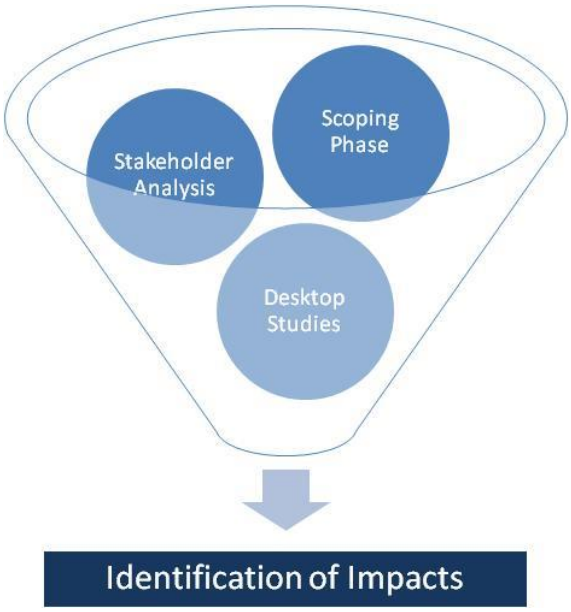
5.11.7 Municipal land

Although the study team did not meet with municipal representatives, some structures have been recorded on their land that will be inundated. Refer to Annexure A.

6 IDENTIFICATION OF ACTIVITIES, ASPECTS AND IMPACTS

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

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



The second aspect to the identification of impacts was a desktop study. Data on the community such as population statistics; health; education; and services were analysed using Census 2011 data. The economic environment of the community was also analysed. A desktop study is important to understand the social and economic conditions of the area. It also allows one to identify the challenges faced by the community. Not only does the desktop study facilitate site visits; it also directs the discussion during interviews.

Finally stakeholder engagements were arranged. Meeting stakeholders enable the collection of comparative data from a variety of stakeholders. These meetings also provided insights into the shared and different perspectives of specific sectors and groups within the community.

Using this methodology, aspects were identified from the activities that proposed. These aspects have triggered impacts which will be discussed in Section 7. In order to contextualise the impacts, the activity and aspects have been outlined and discussed below.

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

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

6.1 Identification of Activities

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

The listed activities identified for the project are listed in below as taken from the Scoping Report.

- Foxwood Dam on the Koonap River.
- Inundation at Full Supply Level (FSL) (615 masl) = 463 ha.
- Inundation of a large tract of land, where portions have been / are currently used for agriculture;
- Access roads to the various sites (construction and operational phases).
- Upgrade of existing bridge(s) along access road(s)
- Clearance of large areas associated with the construction footprint.
- Quarry and borrow areas to be created to obtain construction material.
- Relocation of existing gravity canal with proposed pipeline - 600 mm and 3,5 km length
- Relocation of roads, including R344 and MR00639 that will be inundated.
- Various infrastructure within watercourse(s) / within 32m from watercourse(s), including:
  - Dam;
  - Gauging weir;
  - Access roads;
  - Relocated infrastructure (roads with bridges, power line, telephone line, water supply canal); and
  - Pump station and pipeline.

6.2 Identification of Aspects

The ISO 14001-2004 definition of aspects is “Elements of an organisation’s activities or products or services that can interact with the environment”.

There are two types of aspects namely;

- Direct Environmental Aspect: Activities over which a company can be expected to have an influence and control; and
- Indirect Environmental Aspect: Actual or Potential activities over which the organisation can be expected to have an influence, but no control (International Organization for Standardization, 2011).

6.2.1 Physical Infrastructure

The physical infrastructure of this project will result in a number of social and economic implications of the local and regional communities.

The land use of the area will be altered resulting in potential for new economic activity while losing arable land. In an area where commercial agricultural activities take place the implications of a loss of arable land has significant economic and social implications.

The Foxwood Dam will create temporary employment during construction and permanent employment during its operation. The employment will bring about skills development opportunities which impact positively on the economy.

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

While the physical infrastructure is a direct aspect of the project, the infrastructure presents a number of economic and social opportunities that may be induced. These opportunities include the establishment of recreational facilities as well as assistance to downstream farmers.

6.2.2 Repurposing of land

Currently the land use in the area includes agricultural and residential use. Regardless of the alternatives is chosen, the land use of the area will be altered.

The area that will be inundated by water will result in a loss of agriculture and residential areas. People living in the dam basin, commercial agriculture and historically and culturally important infrastructure like graves will need to relocate to alternative areas.

The laying of pipes, relocation of transmission lines, roads, pipelines and associated infrastructure can cause daily disturbance to the farmers and community during the construction and operational phases.

New opportunities to increase the tourism industry exist as a result of the dam. This may cause future development and alter the land use to support the current and potential tourism activities in the area.

6.2.3 Acquisition of Land

The construction of the dam and the relocation of state owned infrastructure will require the establishment of new servitude agreements as well as the expropriation of land.

DWS will need to expropriate the entire purchase boundary of the proposed Foxwood Dam. This land will be required by DWS to enforce controlled use of the land within the flood lines.

There are a number of structures that will require relocation and resettlement within the Foxwood Dam purchase area.

Relocation does not necessarily bring about a negative effect on livelihood and communities. In the case of the relocation of households, a host community will not be identified as the structures will be relocated within private farms.

In order to achieve a smooth relocation process there should be consistent communication with affected individuals. The relocating and resettling should be conducted in a manner that ensures those that are resettled are not left in worse conditions than before relocation. There should be the same or improved access to services, employment and income generation opportunities present. There should be no loss of security or sense of place in resettlement process.

The relocation of infrastructure will produce a varied impacts on the social and economic environment. The relocation of the powerlines, pipelines and canal will produce construction related impacts the relocation of roads has more significant long-term implications. .

The relocation of roads affects access, transport costs, income and the sense of place. Farmers who use the roads for personal travel and for the movement of livestock, the relocation in a rural setting will have a significant impact on daily activity. For the landowners situated west of the Foxwood Dam, access to main roads will be longer in distance whilst others farmers will have shorter travel distances.

The road deviations create a significant divide in farming operations which are not easily mitigated against. The deviation of the road and construction of access roads, will also provide access to farms where privacy is valued. The sense of place, safety and security of people and livestock need to be considered.

Servitudes are required for the (Nemai Consulting, 2015):

- Bulk Water Pipeline from the dam to the connecting point on the existing water supply pipeline is 15 m.
- The proposed width of the servitudes for the access and deviation of roads is 20 m.
- The proposed servitude for the realignment of the water supply canal through a new pipeline is 15 m.

The servitude agreements from the relocation of infrastructure may dictate conditions that are unfavourable to the landowner and has a negative impact on the land value. Future sale of the land may be more difficult. The servitude will also affect current agricultural operations. The servitude may temporarily impact on income during the construction phase and while maintenance occurs.

The negotiations with the landowners for the registration of the servitudes or acquisition of land will be undertaken by DWS, which will include the appointment of an independent body to value the land. This process, which does not form part of the EIA, will adhere to all statutory requirements.

Land will be expropriated and landownership and land use rights will be transferred to the Department of Water and Sanitation. While DWS has some degree of control over the changes over this aspect, there is an indirect aspect to the change in current land use. DWS will have no control over any alterations of land use by neighbouring landowners.

The expropriation of land and purchase of servitudes is a direct aspect of the project and DWS has full access and control over the land.

6.2.4 Sense of Place

Sense of place is a concept that is difficult to quantify. The concept is primarily used to describe the emotions experienced or the association made with a geographical location. Although it appears to be a subjective concept, an exploration of various definitions can begin to narrow the concept sufficiently for analysis.

Taun (1977) believed that a space or geographic location can gradually move from being otherwise undifferentiated from other spaces into a unique location through the build-up of emotion associated with that place. In this process the place begins to be assigned emotional value.

With this background two definitions are offered for sense of place, those of Stokes, Watson, and Mastran, (1997) and of Ryden (1993). Stokes et al believe sense of place is.

“Those things that add up to a feeling that a community is a special place, distinct from anywhere else”

Whilst Ryden is of the view that sense of place results from:

"... gradually and unconsciously … inhabiting a landscape over time, becoming familiar with its physical properties, accruing history within its confines."

From these definitions is it clear that sense of place covers the aspects of a place that has emotional meaning to the inhabitants. These may range from the physical environment, the climate, the layout of the streets, location of the commercial centres, a particular lifestyle, the friends and neighbours that develop over time and a sense of shared history. This shared history would develop through informal folklore and personal narrative, not through official histories. In this respect the defining of a sense of place is best left to a long term resident who is intimate with the history and culture associated with the place in question.

Owing to the nature of the above definitions, which rely on an emotional and human response to a geographic area, it is likely that the sense of place will differ according to experiences of the place. As people have different experiences of the place, so will the sense of place differ. This variation in response to a place adds a further level of complexity to an already difficult concept.

From the above discussion, a definition of the sense of place to be used for the purposes of the study can be derived. At the outset it should be stated that the concept should be defined according to the dominant socio-cultural group inhabiting the geographic area. In the case of study area; the study area has a mix of income groups as the farmers are middle income and the low income communities who works there. The sense of place in these areas can be said to have the following components:

- The location of the surrounding communities;
- The physical environment; including the natural environment;
- The layout of the streets; locations; and infrastructure in relation to the residential areas;
- The socio-economic characteristics of the inhabitants;
- The degree of social inter-relationships in the community. It is assumed that these relationships deepen over time and thus many long-term residents would be an indicator of a deep rooted sense of place;
- The sense of instability in the various facets of the study area;

All of the components discussed with the stakeholders together will form the sense of place for the majority of the inhabitants. Below follows a description of the sense of place for the study area.

The site area is dominated by commercial farming activity. These farms are aesthetically pleasing and have a high reliance on the Koonap River and Mankazana River. The community are long term residents with a shared history of the area. There is an aging population. There are community links to the sports club and school.

The area is isolated and rural in nature. It is characterised by high levels of poverty and low education levels. Unemployment is high and there are limited economic opportunities available given the rural environment.

Mitigation measures and monitoring of sense of place on its own is difficult. The impact on Sense of Place is derived from a large number of variables. In this context, the mitigation measures for sense of place take place through education; employment and other forms.

6.3 Identification of Impacts

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

6.3.1 Impact on the Economy

The proposed dam will have negative implications on the directly affected land within the purchase line. The agricultural activities, which are concentrated along the Koonap River and Mankanzana River will be inundated. This will result in a loss arable land and future income for the farmers utilising the dam.

DWS must ensure that where the project inundates arable land, the remaining viability of agricultural activities on the farm is assessed per landowner.

The proposed project cause a decline in property values as servitude areas will need to purchase. Servitudes can be restrictive on land owners as no structures can be built on the servitude region, thus there will be a potential loss of income owing to use of the land being denied. It is anticipated that despite the servitude on the property, the Foxwood Dam will increase the property values. The increase in value will arise from the dam itself as well as new opportunities that arise from the dam.

Farmers have expressed interest in expanding agricultural activities owing to expanded water rights. If agricultural water rights can be provided to the farmers adjacent to the dam, the dam will improve income and employment opportunities for the local economy.

The proposed dam creates new opportunities for new agricultural schemes downstream of the proposed Foxwood Dam. It is envisaged that Foxwood Dam project will stimulate the implementation of new Government Irrigation Scheme for emerging farmers. Given the irrigable land available downstream, it is anticipated that the scheme can create sustainable work opportunities, eradicate poverty and reduce inequalities. The agricultural development model that builds a partnership between existing commercial farmers and new emerging farmers is envisaged. Should this scheme be realised, the scheme would make significant impact on rural development and agrarian reform. Such new irrigation development would make full and effective use of the water that could be made available from the Foxwood Dam (Nemai Consulting, 2015).

The Nxuba LM Integrated Development Plan which promotes agricultural activities within the municipality and specifically those agricultural activities that redress past social imbalances and benefits the poor.

The community is poor, with low education and income levels. This project has the opportunity to stimulate the economy, particularly in the construction phase as the economic stimulus into the economy is nearly double the size of Nxuba LM's economy. In addition, over 2 000 short term employment opportunities are created as well as 19 employment opportunities during the operation of the dam.

6.3.2 Inundation of Land, Buildings

A legal process of negotiation and compensation will most likely apply. It is still important that effective communication strategies are used when dealing with the relocation.

A comprehensive asset register of all dwelling and infrastructure per farm must be recorded prior to the construction phase to ensure that fair compensation for the loss of all assets are provided to the farm owners.

6.3.3 Impact on Infrastructure

Roads and Access: The R344 is connects Adelaide in the south to the town of Tarkastad in the north. The deviation of the R344 will follow the DR02491. The DR02491 traverses through the properties connecting the Moolman, Gradwell and Keevy Farms to the R344. The road has a small drift to cross the Koonap River which is located in the purchase line. The drift will be raised to allow for crossing of the Foxwood Dam.

The proposed deviation of the R344 will split the current cultivated land from the currently uncultivated land on the Keevy Farm. This deviation cuts the size of arable land down that will not be inundated.

The Gradwell, Moolman and Keevy farms will see the R344 deviation traverse through their land will have their farms exposed to the public. This will alter the valued privacy of their farms and have a significant impact on their sense of place. Daily experiences will include passing traffic, vulnerability of their livestock to theft and road accidents, increased poaching of game on the farm and general disturbance.

The R344 deviation will increase the travel distance to the Presbyterian Church School. Learners were spotted walking from the towns to the school, which is approximately 5.5 km from Bezuidenhoutville and approximately 8 km from Adelaide. The R344 is the most direct route for motorised or non-motorised transport from the towns to the school. The deviation of the R344 will increase the travel route by approximately 8 km and will remain the most direct route to the school from the towns. The increase in walking distance will double the walking time required to and from school for each learner. Support should be provided directly to the learners or to the school to ensure minimal impact on the learners.

The MR00639 provides a short cut between Adelaide and Bedford to the R344 to get to Tarkastad. The Bennet and Knox farms will lose access to their properties if the R344 is deviated. Access to move their livestock will also be lost. Transport costs for these farmer will increase as the travel distances increase. The MR00639 deviation is proposed to mitigate against the loss of access. According to the Traffic Impact Assessment, the recorded traffic counts on the MR00639 are low and largely insignificant to the overall traffic usage in in the area. The TIA states that despite the increased distance and costs of travel there is no need to deviate the MR00639.

While the Knox farm will still have access to all infrastructure. The Knox farm will lose access to the farm from the northern side if the MR00639 deviation does not go ahead.

One of the labour cottages (green house) on the Bennet Farm will lose all vehicular access as the Mankanzana River blocks off access to the main dwellings and roads. All other recorded dwellings and infrastructure where access is required is situated within the purchase line and will be inundated. The Bennet farm currently has access to the farm from the north and south pointes. Due to the lack of internal farm roads the southern points of the farm below the Mankanzana River will be completed cut off if the MR00639 deviation does not take place.

It is recommended that during the compensation negotiations, the landowners are compensated for the loss of access.

Telephone lines: The relocation of the Telkom line follows R344 alignment passing through the Citrus and lucerne lands. The telephone lines will cause restrictions to land use and will disturb agricultural practices.

It is recommended that the landowners whose properties are affected by the telephone lines are asked if the Telkom line should be deviated around the farm dam and farm buildings to limit the visual impact.

In addition there will be an impact on communication that will arise from the relocation of the telephone line. The primary means of communication between the communities is by telephone line. Given the remote rural nature of the area, mobile network connections are unreliable and not always accessible.

During the deviation of the telephone line the farmers communication will be shut down which will affect both their social environment and business operations.

The deviation of the telephone line must be done in a manner that will have minimal impact to the community. The existing line should only be cut off once the new infrastructure is in place to reduce the impact on the community. The community should be notified of the duration and time where the service will be down. Where possible, this should not exceed one day.

Powerlines: The deviation of the powerline will have implications on the communities as there will be a disruption in power supply over the period of the deviation. A loss of power will have an impact on farming operations, businesses, the school and residential use.

The deviation of the power line must be done in a manner that will have minimal impact to the community. The existing line should only be cut off once the new infrastructure is in place to reduce the impact on the community. The community should be notified of the duration and time where the service will be down. Where possible, this should not exceed one day.

Power Line Deviation A traverses through largely vacant land and portions of the powerline will pass over the proposed dam and along the Bennet and Knox farm. The deviation will cause restrictions to land use and will disturb agricultural practices based on the servitude agreement.

Power Line Deviation B in contrast will require a larger servitude area. The proposed alignment passes through grazing fields, citrus and lucerne lands on the Keevy, Moolman and Gradwell Farms. It then traverses through the Bezuidenhoutville town passing through houses. This route will have considerable impact on the affected houses during the construction of the powerlines. The required servitude will reduce the property value and restrict land use on each of the houses and farms. It is recommended that the proposed power line alignment B is re-evaluated to cross the R344 at the edge of Bezuidenhoutville onto vacant land.

Canal diversion: The canal deviation will traverse the Keevy farm and municipal owned land. The deviation will cause restrictions to land use and will disturb agricultural practices based on the servitude agreement.

Access roads: The access roads are all situated on the Knox farm. Western access route 1 is a short route that is on land used for grazing. The route is situated close the dam boundary.

Western access route 2 is a long route that largely follows current internal farm roads. There are portions that traverse through vacant land which will cause an impact on the size of the fields.

Both routes may have an impact on future income and agricultural activities. Servitudes will be required for both routes which will guarantee DWS employees access to the farm. Safety measures such as the use of locked access gates must be negotiated with the Knox farm to ensure the safety of the people and livestock on the farm.

Pipeline: The pipeline is situated on municipal owned land that is currently vacant. No servitude is required.

6.3.4 Tourism

The Foxwood Dam has the potential to create possible tourism opportunities. The dam can attract people to the area which can increase the economic activity in the region and increase welfare. Depending on the type of tourism activity, there can be a number of sustainable jobs

that will be created through the sector. The tourism sector is also a sector that can be extremely inclusive of the community and that can contribute directly to community empowerment.

It is recommended that potential tourism activities are identified during the development of the Resource Management Plan for the Foxwood Dam.

6.3.5 Construction Impacts

The Construction Phase of the Foxwood Dam and associated infrastructure will commence once the environmental and other approvals are authorised. The construction activity will impact the social environment both positively and negatively. Given the quiet pristine nature of the project area, construction activity is likely to cause a number of social nuisances as well as economic implications on the communities and farming activities.

6.3.5.1 SMME Development

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

Should these opportunities be realised the impact will be quite significant. Since these are local SMMEs, the profits generated will stay in the area raising the economic activity and increasing welfare. There is also potential for skills upgrade and further employment. In South Africa, most employment is generated through small and medium business. Given the size of the proposed project, should contracts between with local SMMEs occur, it is likely that there will be an increase in employment by SMMEs for the duration of the contracts. Furthermore, through the increase in employment by SMMEs, more skills are developed thus the community is more employable and better off.

SMME opportunities should be provided to everyone on an equal basis. Where possible, DWS should support and encourage the development of SMMEs and local or regional suppliers. Where possible, procurement should come from local or regional business so that the profits stay in the area, increasing economic activity.

6.3.5.2 Job Creation and Skills Development

It is anticipated that there will be a positive impact on job creation during the construction phase. The construction itself will generate significant temporary employment as workers will be required. Potential secondary employment impacts can result as small business employs more persons to sell goods to labourers during the construction phase.

During the operational phase, there will a number of direct jobs that will be created resulting in a positive impact. One of the most important indirect impacts of the dam is the increase in employment.

Employment is a sensitive issue and this project has the potential to positively impact upon the skills levels during the construction phase. However, low levels of education stunt the employment of local job seekers. Education affects the employability of an individual.

Education levels also indicate the level of skill one may have and the degree to which one can be skilled. In a study area where only eight percent of the population over age 20 have matriculated, it is not likely that many people are skilled and highly skilled.

Attempts to break the poverty cycle of the area require more than secondary school education. Higher education or further skills training is required. Thus it is important that the community under-go's skills development. For the communities in the study area, acquiring skills and benefiting from the returns on education are unattainable without an intervention from public and private institutions. Thus it is strongly recommended that skills development programs are initiated by DWS.

Local employment should be encouraged to reduce the unemployment rate in the area. Furthermore, the local community will be able to benefit from a project that directly affects them.

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

Given the concerns by stakeholders that the CLO process is disruptive and inefficient to the project, DWS should manage the employment process in an alternative manner. However it must be ensure that the new method of employment does not disturb the implementation of the project or conflict with the law.

A project such as this can significantly alter the skill and education levels within the community given the level of economic stimulus injected in the area. The Government Irrigation Scheme and tourism opportunities have the potential to sustain the impact education and skills. It is critical that Nxuba LM explore and secure investment in both the Government Irrigation Scheme and tourism opportunities.

6.3.5.3 Induced Migration

In a country facing high unemployment, there is a tendency for migration to areas of job opportunity. The migration is largely male dominated as people search of jobs and better living standards. Migration causes an imbalance in host community as there is a rise in the working male population compared to females of a working age.

Migration in the area caused by persons coming into the area seeking employment in the project

There is an expected increase in the number of people that will enter the area as a result of the project. This increase in workers is expected to be limited to the construction phase of the proposed project. This will most likely be an increase in male job seekers who will settle in the area, causing a number of impacts.

Migration can affect the host community in a number of ward. Firstly, more people are competing for the same jobs. This creates tension between the migrant community and the host community.

Not all job seekers entering the area will be employed, leaving a new population of idle workers in the area. Idleness and frustration of not finding work can result in a large number of social ills included crime; alcohol abuse and disturbance to the local community and community structure.

To mitigate the low numbers of available male workers, the proposed project should try increase the local workforce through employing women. This would lead to increases in the number of women working, which is low in the area. Also this will affect the gender power distribution, providing women with more bargaining power in the households due to the reliance on their income.

The population in the study area is characterised by low education and skills level as shown in Section 5.2 where forty-five percent of the population over 20 years of age are considered functionally illiterate. This decreases the employability of the population in the study area. Thus it will be necessary to rely on imported labour to fill the employment gap. Due the need of imported labour, there is expected to be influx of workers in the study area.

6.3.5.4 Impact on Road Conditions

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

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

Care should be taken to ensure that construction vehicles do not disturb sensitive crops. The EMPr must have a traffic plan to ensure vehicles avoid these areas.

6.3.5.5 Safety

There a safety concerns related to the construction activity. Farmers have expressed a number of security concerns including increased access to the farms, livestock theft, poaching and crime.

DWS prior to construction must agree with farmers on appropriate access points to ensure the safety of the businesses, livestock and residents. A security policy must be drafted and strictly

enforced by the contractors. Given the remote location of the project, access to policing and security services are largely inaccessible in the area. As good practice and mitigation against security risks, DWS should provide some level of security and emergency response services for the duration of the construction measure.

Dam safety will also need to be considered to ensure that people do not drown or access the dam infrastructure. It is important to have an effective communication strategy to prevent the loss of lives and property.

It is critical that the EMPr mitigate against these security concerns.

6.3.5.6 Dust, noise and disturbance

The construction activity will open the communities and farmers to dust, noise, visual and other disturbance that would not normally occur in the area. This disturbance has a number of social implications on the surrounding communities.

Drilling; blasting and construction activities will create noise pollution which may affect schools, churches and private residents. Noise pollution can be disturbing and inconvenient to the community. Adequate warning of potential noise pollution through blasting should be communicated to the affected communities.

Given the scale of the construction activity, there will be a large number of trucks and other construction vehicles that will traverse through the area on a continuous basis. Given that the roads are likely to be gravel and not tarred, farmers have raised concerns over the implications of the dust on sensitive crops.

6.3.5.7 Impacts on Culture

The social survey recorded graves and historical infrastructure that is to be inundated. The legal and cultural processes as dictated by the Heritage Impact Assessment must apply.

6.3.5.8 Impact on Health

An influx of workers is often characterised by higher health risks and social issues, particularly if the influx is male dominated. These include a higher disease burden and rise in HIV/AIDS rates, pressures on food and water security.

In terms of social insecurity, the increase in the local population may require an increase in policing. There should also be awareness and education campaigns on health and social risks such as HIV/AIDs and crime prevention. These programs should aim to gather support from the traditional authorities and local government to ensure that social problems that could arise can be resolved as early as possible.

The livelihood of workers into the area should be monitored. Hostels areas should be avoided and were possible, there should be provision made for families of employed workers during the construction phase.

Dust from trucks may impact those with lung problems such as asthma. The gravel on the R344 road will provide access to the project site will be a significant dust contributor as heavy duty construction trucks make use of the road. It is recommended that the road is tarred to mitigate against the dust levels.

The health and safety of workers must be ensured. During the construction phase, Health and Safety regulations must be adhered to. During the operational phase, workers must be provided with appropriate Personal Protection Equipment to avoid contact with toxic waste.

7 IMPACT ASSESSMENT

The following definitions apply:

Nature	The project could have a positive, negative or neutral impact on the environment.
Extent	**Local** – extend to the site and its immediate surroundings. **Regional** – impact on the region but within the province. **National** – impact on an interprovincial scale. **International** – impact outside of South Africa.
Magnitude	Degree to which impact may cause irreplaceable loss of resources: **Low** – natural and social functions and processes are not affected or minimally affected. **Medium** – affected environment is notably altered; natural and social functions and processes continue albeit in a modified way. **High** – natural or social functions or processes could be substantially affected or altered to the extent that they could temporarily or permanently cease.
Duration	**Short term** – 0-5 years. **Medium term** – 5-11 years. **Long term** – impact ceases after the operational life cycle of the activity either because of natural processes or by human intervention. **Permanent** – mitigation either by natural process or by human intervention will not occur in such a way or in such a time span that the impact can be considered transient.
Probability	**Almost certain** – the event is expected to occur in most circumstances. **Likely** – the event will probably occur in most circumstances. **Moderate** – the event should occur at some time. **Unlikely** – the event could occur at some time. **Rare/Remote** – the event may occur only in exceptional circumstances.
Significance	Provides an overall impression of an impact's importance, and the degree to which it can be mitigated. The range for significance ratings is as follows- **0** – Impact will not affect the environment. No mitigation necessary. **1** – No impact after mitigation. **2** – Residual impact after mitigation. **3** – Impact cannot be mitigated.
Mitigation	Information on the impacts together with literature from social science journals, case studies and field work will be used to provide mitigation recommendations to ensure that any negative impacts are decreased and positive benefits are enhanced.
Monitoring	Monitoring usually involves developing and implementing a monitoring programme to identify deviations from the proposed action and to manage any negative impacts. The recommended mitigation measures will also include monitoring measures.

7.1 Impact on the Economy

Environmental Feature	Impact on the Economy
Relevant Alternatives & Activities	Inundation of agricultural land. Construction of Foxwood Dam
Project life-cycle	Pre-Construction phase, Construction Phase, Operational Phase
Potential Impact	Proposed Management Objectives / Mitigation Measures
Loss of income from agricultural activities on land that is to be inundated or required servitude areas.	• All negotiations and payments relating to the compensation of affected landowners should be conducted and concluded before construction begins. • Those landowners who will be required to sell their property to DWS must be compensated for any business that is operating on the premises. • Landowners should be compensated to the full value of their immovable assets and any loss of income. • Negotiations should take place between the landowner and DWS for any compensation of potential income denied as a result of the servitude agreements.
Exploitation of Agricultural opportunities owing to the Foxwood Dam	• The opportunities for the dam to create real social-economic benefits to the surrounding community must be exploited by DWS as the implementing agent of the Foxwood Dam project and entity which has identified Government Irrigation Scheme must explore the Irrigation Scheme in more detail. • In addition to DWS, Nxuba LM must approach various provincial and national departments in an attempt to identify and exploit these opportunities. • Nxuba LM must be proactive in ensuring that the beneficiaries of opportunities identified in the area are from the local communities. This will ensure that the profits of the scheme are spend in the municipality and benefit the local economy. • While DWS is not entitled to assist these landowners directly affect by the Foxwood Dam, the expansion of agricultural operations in the area will be of benefit to the local community. DWS should try to assist interested farmers in obtaining water rights for agricultural use. • The RMP must look at the provision of water rights to farmers whose properties are adjacent to the dam.

	Nature	Extent	Magnitude	Duration	Probability	Significance
Before Mitigation	Positive	Local	Low	Short Term	Likely	1
After Mitigation	Positive	Regional	High	Permanent	Likely	3

7.2 Inundation of Land, Buildings

Environmental Feature	Inundation of Land, Buildings
Relevant Alternatives & Activities	Relocation of land and buildings Construction activity Negotiations with land owners
Project life-cycle	Pre-Construction Phase
Potential Impact	Proposed Management Objectives / Mitigation Measures
Compensation for Land, Buildings and Infrastructure that will be inundated or fall on servitude areas	• Compensation has been provided for in the project budget and must be paid to land owners based on an independent evaluation of the property. • All negotiations and payments relating to compensating affected landowners should be conducted and concluded before construction begins. • Those landowners who will be required to sell their property to DWS must be compensated for any business that is operating on the premises. • Negotiations should take place between the landowner and DWS for any compensation of potential income denied as a result of the servitude agreements. • DWS should conduct a property valuation of all properties. The valuation should be done by an estate agent and be based on the market value. • A second valuation should be conducted if any landowner feel the property value has decreased as a result of the project. The results should be compared to the first valuation. Compensation should take place if there is a drop in value that was not cause by damage or changes from the land owner. Second evaluations should be conducted prior to the construction phase at the cost of the landowner. • In order to accurately compensate the households, an asset survey will be required. It is recommended that a Quantity Surveyor is appointed to conduct a full asset survey of each farm which is to be signed off by the landowner. • Following the asset survey an entitlement framework should be conducted which will highlight per asset what the compensation will be as well as what the design of the household be in detail.

	Nature	Extent	Magnitude	Duration	Probability	Significance
Before Mitigation	Negative	Local	Medium	Long Term	Almost Certain	3
After Mitigation	Negative	Local	Low	Short Term	Almost Certain	1

7.3 Impact on Infrastructure

Environmental Feature	Impact on Infrastructure
Relevant Alternatives & Activities	Relocation of infrastructure Construction activity
Project life-cycle	Pre-Construction Phase
Potential Impact	Proposed Management Objectives / Mitigation Measures
Deviation of the R344: Impact on farmers	• Given the vulnerability of farms, a long term Safety and Security plan must be enforced by Nxuba LM to ensure safety and security of the farmers and livestock. • The Gradwell, Keevy and Moolman farms must be compensated for the impact that increased access will have to current operations. • The Knox and Bennet farms must be compensated for the loss of access to their farms. • Compensation can be in the form of monetary value or by improving farm access. • Mitigation as per the Traffic Impact Assessment must apply.
Deviation of the R344: Impact on learners	• The impact of the dam on leaners who walk to the Presbyterian Church School must be mitigated. DWS should liaise with the Department of Education and Nxuba LM to fund a shuttle service to and from the school. • During the construction phase a shuttle service to and from Adelaide and Bezuidenhoutville and the Presbyterian Church School must be provided to ensure learner safety while travelling to the school.
Deviation of the MR00639	• Farmers must be compensated for the loss of access to their farms. Compensation can be in the form of monetary value or by improving farm access. • Mitigation as per the Traffic Impact Assessment must apply.
Impact on Power Supply	• The deviation of the power line must be done in a manner that will have minimal impact to the community. • The existing line should only be cut off once the new infrastructure is in place to reduce the impact on the community. The community should be notified of the duration and time where the service will be down. • All power lines affected by the project must be reinstated to ensure that no farm or households is left unconnected • Where possible, this should not exceed one day.
Impact on Communication	• The deviation of the telephone line must be done in a manner that will have minimal impact to the community. • The existing line should only be cut off once the new infrastructure is in place to reduce the impact on the community. The community should be notified of the duration and time where the service will be down. • All telephone lines affected by the project must be reinstated to ensure that no farm or households is left unconnected • Where possible, this should not exceed one day.
Access	• Internal access routes expose the farmers to safety and security risks. • Farms may choose to negotiated mitigation measures such as access gates to mitigate against the loss the livestock, damage to property and safety.

Environmental Feature	Impact on Infrastructure
Relevant Alternatives & Activities	Relocation of infrastructure Construction activity
Project life-cycle	Pre-Construction Phase
Potential Impact	Proposed Management Objectives / Mitigation Measures
	• The EMPr must enforce strict access control measures.

	Nature	Extent	Magnitude	Duration	Probability	Significance
Before Mitigation	Negative	Local	Medium	Short Term	Almost Certain	3
After Mitigation	Negative	Local	Low	Short Term	Almost Certain	2

7.4 Tourism

Environmental Feature	Tourism
Relevant Alternatives & Activities	Operation of the Dam and opportunities presented.
Project life-cycle	Operational Phase
Potential Impact	Proposed Management Objectives / Mitigation Measures
Tourism Opportunities	• DWS must implement a Resource Management Plan (RMP). The RMP should identify opportunities for tourism activities within the dam basin • The RMP must be focused on empowerment and local economic opportunities for the surrounding communities.
Local Economic Development	• Communication of the outcomes of the RMP to the local community in the local language to allow them the opportunity to benefit from the dam. • Where possible DWS should ensure that the local communities are involved in all dam operations where profits can be generated.
Impact to landowners adjacent to the dam	• The RMP must consider the use of the dam by landowner for farming and for tourism opportunities.

	Nature	Extent	Magnitude	Duration	Probability	Significance
Before Mitigation	Positive	Local	Low	Short Term	Likely	1
After Mitigation	Positive	Regional	High	Permanent	Likely	3

7.5 Construction Impacts

Environmental Feature	Construction Impacts
Relevant Alternatives & Activities	All components
Project life-cycle	Construction Phase
Potential Impact	**Proposed Management Objectives / Mitigation Measures**
Skills transfer	• DWS must develop a skills development program for the duration of the construction activity. • Beneficiaries of educational programs should be residents who live close to the project area. • The selection process should be transparent. • In order to increase the size of local employment, women should also be employed in the construction of the dam.
Increased employment	• Preferential treatment to local job seekers before employing labour from outside. • One hundred percent of unskilled employment during the construction phase should come from local labourers who live in the study area. • In order to increase the size of local employment, women should also be employed in the construction of the dam. • The selection process should be transparent. • Where possible, labour intensive methods should be used for the construction the proposed dam. • In order to increase the size of local employment, women should also be employed in the construction of the dam.
Indirect employment	• Employment through spaza shops; eateries and other business will result as workers need to be fed.
Impact on SMMEs	• Construction and other materials to be sourced from local suppliers to boost the regional economic and drive the creation of more sustainable jobs. • SMME opportunities should be provided to everyone on an equal basis. Where possible, DWS should support and encourage the development of SMMEs and local or regional suppliers. • Where possible, procurement should come from local and regional business so that the profits stay in the area, increasing economic activity. • DWS should make use of existing council structures to identify beneficiaries of the program.
Impact on Traffic	• Ensure that the necessary signage and traffic measures are implemented for safe and convenient access to the site. • Measures must also be put in place to ensure that these roads and any access points do not get built up with mud or sand. • Construction machinery drivers are to travel at appropriate speeds and have flashing lights attached to the roofs of the vehicles. • Applicable speed limits as set on regional roads must be observed at all times. • The number of vehicles present on site must be limited to the minimum.

Environmental Feature	Construction Impacts
Relevant Alternatives & Activities	All components
Project life-cycle	Construction Phase
Potential Impact	Proposed Management Objectives / Mitigation Measures
Impact of Road Conditions on sensitive crops	• Where sensitive crops will be affected by vehicles, a feasibility assessment must be done to see if the roads can be tarred to prevent loss of crops. • The contractor must maintain the roads on an on-going basis to ensure that there is minimal dust from construction vehicles.
Impact on Access	• Access to the farmer's private land during construction must be controlled. An access control plan should be developed and must form part of the EMPr. Landowners must be afforded the opportunity to comment on the plan. Contractors and sub-contractors must be forced to comply with the plan.
Increase in Dust	• Dust and disturbance can be mitigated through the use of appropriate dust suppression mechanisms. • Where sensitive crops are affected by dust, DWS should conduct a feasibility study to tar the roads. • Mitigation measures management should be adhered to according the relevant specialist studies.
Influx of workers	• DWS must make a public announcement that imported labour will not take place on the project. • Contractors and sub-contractors must have strict conditions that prevent the importing of semi and unskilled labour without prior justification and approval • Family style accommodation should be provided where possible • Employment of females and youth is encouraged to ensure the empowerment of the most vulnerable to unemployment and poverty.
Safety and security	• Erect signage and fences to deter theft. • RMP must explore safety mechanisms such as the UPN system to ensure the safety of dam users. • Access to the dam should be controlled but still remain accessible to the public. • Access to dam infrastructure must be strictly controlled with closed off access points. • Signage must be made use of to alert people to potential dangers in the usage of the dam. • EMPr must have a safety plan to ensure the protection of humans and livestock. Farmers must be provided an opportunity to proposed mitigation measures.
Impact on Cultural Beliefs	• Graves to be relocated in accordance to the Heritage Impact Assessment. • Communication of the dam needs to take into account cultural beliefs which need to be treated sensitively and with respect.

	Nature	Extent	Magnitude	Duration	Probability	Significance
Before Mitigation	Negative	Local	Medium	Short Term	Almost Certain	3
After Mitigation	Negative	Local	Low	Short Term	Almost Certain	2

7.6 Comparison of alternatives

The alternatives are compared in order of preference where 1 (most preferred) to 4 (least preferred].

Table 5: Comparison of Options – Major Storage Dam

Components	Alternatives	Order of preference	Motivation	Fatal Flaws / Significant residual impacts after mitigation
Major Storage Dam - Dam type	1. Earthfill	4	Significantly increases the footprint of the project	N/A
	2. Rockfill	4		N/A
	3. Concrete Gravity	1	No increase in the project footprint.	N/A
	4. Composite Gravity Spillway and Earthfill	1		N/A

Table 6: Comparison of Options – Gauging Weir

Components	Alternatives	Order of preference	Motivation	Fatal Flaws / Significant residual impacts after mitigation
Gauging Weir	Option 1	2	Access to the weir may disturb the farmer and agricultural activities. On the other hand access to the weir will be easier due to the farmer's access roads.	This option is not a fatal flaw. An agreement must be made with the property owner for access to his land and the weir.
	Option 2	1	Further away from private agricultural activates. The site is on municipal owned land.	N/A.

Table 7: Comparison of Options –Power Line Deviation

Components	Alternatives	Order of preference	Motivation	Fatal Flaws / Significant residual impacts after mitigation
Power Line Deviation	Alignment A	1	This route requires a shorter servitude and has less impact on private property. Agricultural activities may be affected.	N/A
	Alignment B	2	Significant construction impacts on local community at Bezuidenhoutville. The line will require a larger servitude area.	Relocation of the powerline through the Bezuidenhoutville Town is considered a fatal flaw. An alternative option to move the powerline along the R344 should be considered if the power line deviation alignment A is not feasible.

Table 8: Comparison of Options – Laydown Area

Components	Alternatives	Order of preference	Motivation	Fatal Flaws / Significant residual impacts after mitigation
Laydown Area	Option 1	1	Area is within the FSL boundary and therefore no construction impacts with take place.	N/A
	Option 2	2	This options expands the area which will be affected by the construction activity and will increase the impact on the environment.	N/A

8 CONCLUSION

DWS is encouraged to maximise on opportunities that the dam may present to generate income. Overall, it is estimated that the irrigation opportunities downstream could generate approximately 1 934 direct sustainable jobs in the local municipality and stimulate up R 503 million of GDP contribution (Arup (Pty) Ltd, 2014).

The major impacts of the dam include:

1. Impact on the Economy;
2. Relocation impacts on dwellings and private and public infrastructure;
3. Increased tourism opportunities
4. Impact on job creation and skills development;
5. Impact on SMME's; and
6. Construction impacts.

The following recommendations are made

1. The EMPr must have an access policy which all contractors and sub-contractors are to adhere to'
2. Deviation of R344 should be executed with a safety and security plan which includes safety of livestock;
3. Telephone line relocation to be done swiftly and with notice to affected users;
4. Alignment of powerline alignment deviation B should not be considered as a suitable alternative;
5. Reconsider alignment of Telkom line around the farm infrastructure;
6. Relocation plan must have a clear communication strategy; and
7. DWS to investigate granting landowners water rights.

The motivation of the project is based on the proposed Government Irrigation Scheme. The findings of this report support the scheme given the long term economic stimulus of the program.

Overall the dam it is anticipated that the dam will have create a significant stimulus to the local economy. The dam will support the agricultural practices in the area with the potential to create sustainable business and employment opportunities.

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Annexure A

Register of Structures

Annexure A

Register of Structures

The main structures located on each farm, close or within the purchase line include are recorded in the tables below. Where the properties are located within the purchase line, the co-ordinates have been shaded in red.

1 A: MOOLMAN FARM

Ref	Structure	Co-ordinates	Picture
A1	Housing Complex Fencing, Storage Shed, Concreted Reservoir	S32° 38.117' E26° 18.326'	
A2	Reservoir	S32° 38.031' E26° 18.358'	
A3	Water Pump	S32° 38.012' E26° 18.394'	

Ref	Structure	Co-ordinates	Picture
	Extraction Point	S32° 38.010' E26° 18.396'	
	Power Supply	S32° 38.013' E26° 18.394'	
A4	Shed	S32° 38.041' E26° 18.355'	
A5	Loading Bay	S32° 38.096' E26° 18.333'	

Ref	Structure	Co-ordinates	Picture
A6	Storage Shed	S32° 38.108' E26° 18.332'	
A7	Sheds in House Garden	S32° 38.130' E26° 18.283'	
A8	View of House	S32° 38.134' E26° 18.342'	
A9	Irrigation in Citrus Field	S32° 38.143' E26° 18.363'	

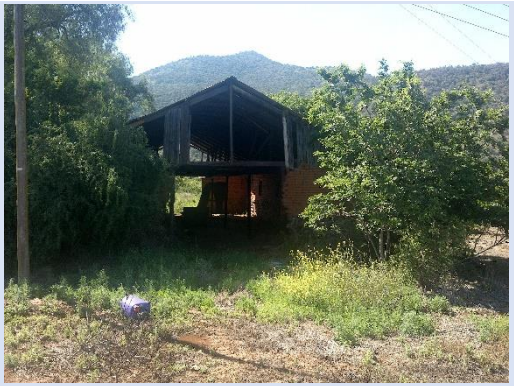
Ref	Structure	Co-ordinates	Picture
A10	Irrigation	S32° 38.142' E26° 18.305'	
A11	Citrus Plantation	S32° 38.162' E26° 18.290'	
A12	Ploughed Fields	S32° 38.166' E26° 18.461'	

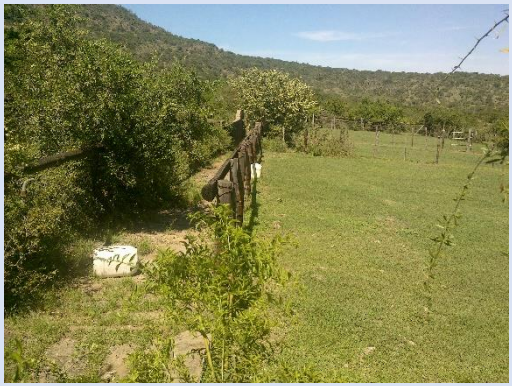
2 B: KEEVY FARM

Ref	Structure	Co-ordinates	Picture
B1	Citrus Farming	S32° 37.879' E26° 18.338'	
B2	Pumped Irrigation to the Citrus Plantation	S32° 37.899' E26° 18.308'	
	River Abstraction	S32° 37.902' E26° 18.308'	

Ref	Structure	Co-ordinates	Picture
	River Abstraction	S32° 37.902' E26° 18.306'	
B3	Rondavels Two are used for accommodation of six people and the third rondavel are ablution facilities	S32° 38.823' E26° 17.525'	
	Rondavels Two are used for accommodation of six people and the third rondavel are ablution facilities	S32° 38.823' E26° 17.525'	
B4	Lucerne Production	S32° 38.846' E26° 17.424'	

Ref	Structure	Co-ordinates	Picture
B5	Foreman Cottage	S32° 38.862' E26° 17.582'	
B6	Dipping Tank	S32° 38.935' E26° 17.485'	
B7	Watering Pond	S32° 38.830' E26° 17.523'	
B8	River Extraction for Lucerne Lands	S32° 38.825' E26° 17.395'	

Ref	Structure	Co-ordinates	Picture
	River Abstraction (not in use)	S32° 38.890' E26° 17.372'	
B9	Farm Dwelling	S32° 37.850' E26° 18.387'	
B10	Shed	S32° 37.904' E26° 18.422'	
B11	Farm Road Access to Left Back of Keevy Farm	S32° 37.961' E26° 18.458'	

Ref	Structure	Co-ordinates	Picture
B12	Kraal Area	S32° 38.934' E26° 17.484'	
	Kraal Area	S32° 38.931' E26° 17.473'	
B13	Cattle Crash	S32° 38.930' E26° 17.472'	
B14	Lucerne Lands	S32° 38.911' E26° 17.480'	

Ref	Structure	Co-ordinates	Picture
B15	Shed	S32° 38.886' E26° 17.507'	
B16	Foreman Cottage	S32° 38.862' E26° 17.582'	
	Latrine for Cottage	S32° 38.367' E26° 18.257'	
B17	Dam where Foreman Cottage is located	S32° 38.473' E26° 18.114'	

Ref	Structure	Co-ordinates	Picture
B18	Foreman Cottage	S32° 38.401' E26° 18.209'	
	Rear of Foreman Cottage (B24)	S32° 38.399' E26° 18.236'	
B19	Entrance to farm	S32° 39.020' E26° 17.139'	
B20	Irrigation Canal	S32° 38.478' E26° 17.400'	

3 C: BENNET FARM

Ref	Structure	Co-ordinates	Picture
C1	Smaldeel Conservancy Boom Gate.	S32° 39.429' E26° 16.036'	
C2	Labour Cottage	S32° 38.957' E26° 15.862'	
C3	Labourers Cottage	S32° 39.056' E26° 15.874'	

Ref	Structure	Co-ordinates	Picture
C4	Red House Garage Storage Shed	S32° 38.974' E26° 15.848'	
C5	Milking Parlour	S32° 38.963' E26° 15.824'	
C6	Greenhouse	S32° 38.371' E26° 15.897'	
		S32° 38.371' E26° 15.897'	

Ref	Structure	Co-ordinates	Picture
C7	Graves within the purchase line	S32° 38.450' E26° 15.828'	
C8	Foreman House near Blockhill Club The house has no power and water is pumped from the river to eh house. The house makes use of septic tanks. Occupied by 2 adults and 3 children.	S32° 38.436' E26° 16.002'	
C9	Blackhill Club Clubhouse 3 Concrete Tennis Courts 1 Clay Tennis Court The tennis courts are leased the Blackhill Club for a small rental. The infrastructure is owned by the club.	S32° 38.469' E26° 16.012'	

4 D: KNOX FARM

Ref	Structure	Co-ordinates	Picture
D1	Gauging weir	S32° 40.614' E26° 15.916'	
D2	Canals at Gauging Weir	S32° 40.616' E26° 15.965'	

5 E: GRADWELL FARM

Ref	Structure	Co-ordinates	Picture
E1	Gradwell House	S32° 38.489' E26° 17.623'	
	Rear View of E2	S32° 38.484' E26° 17.608'	

6 F: PRESBYTERIAN CHURCH SCHOOL

Ref	Structure	Co-ordinates	Picture
F1	Presbyterian Church School	S32° 38.561' E26° 16.055'	
F2	Presbyterian Church School Playground	S32° 38.564' E26° 16.061'	

7 G: MUNICIPAL LAND

Ref	Structure	Co-ordinates	Picture
G1	River Abstraction used by Keevy who has controlled access to these facilities.	S32° 39.045' E26° 17.098'	
		S32° 39.038' E26° 17.109'	
		S32° 39.045' E26° 17.106'	

Ref	Structure	Co-ordinates	Picture
G2	Pipeline Route	S32° 39.043' E26° 17.100'	

8 H: PUBLIC INFRASTRUCTURE

Note although much of the infrastructure is linear, only specific points were recorded in relation to the purchase line. It is understood that all public linear infrastructure in the study area is well recorded by the engineering team.

Ref	Structure	Co-ordinates	Picture
H1	Power Supply to House	S32° 38.097' E26° 18.309'	
H2	Telephone Line	S32° 38.088' E26° 18.308'	
H3	Telephone Line	S32° 38.087' E26° 18.308'	

Ref	Structure	Co-ordinates	Picture
H4	Power Supply for Water Extraction	S32° 38.165' E26° 18.461'	
H5	Road crossing and Telephone lines	S32° 38.629' E26° 16.068'	
H6	Powerline Pole no.	S32° 38.631' E26° 17.636'	

Ref	Structure	Co-ordinates	Picture
H7	Power Supply	S32° 37.898' E26° 18.312'	
	Pole no. for Power Supply	S32° 37.897' E26° 18.307'	
H8	Power Supply for River Extraction and Rondavels on Keevy Farm	S32° 38.825' E26° 17.400'	

Ref	Structure	Co-ordinates	Picture
H9	Telephone line	S32° 38.826' E26° 17.391'	
H10	R344 Bridge	S32° 39.292' E26° 16.007'