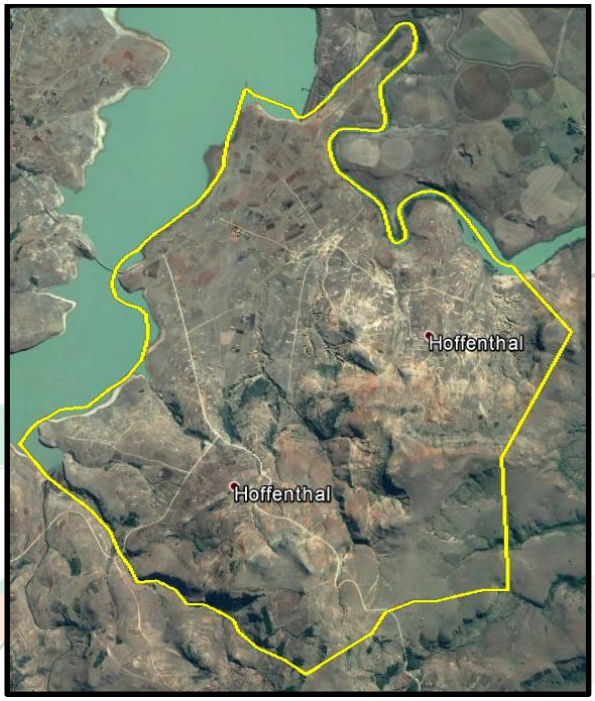
ENVIRONMENTAL ASSESSMENT REPORT FOR THE PROPOSED HOFFENTAL B RURAL HOUSING DEVELOPMENT



MAY 2017

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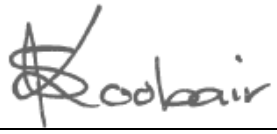

May 2017

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1 INTRODUCTION

1.1 PROJECT BACKGROUND

The Okhahlamba Local Municipality has, through its IDP process, and extensive consultation with respective beneficiary communities residing within the municipalities identified the need to provide low cost rural subsidised housing throughout its entire area of jurisdiction. This process was initiated as a means to address the municipalities predominantly traditional/informal housing profile, and in doing so improve the living conditions and quality of life of its rural communities. The provision and implementation of the rural subsidised housing projects will occur in accordance with the terms of the Rural Housing Subsidy Scheme (as described in Chapter 11 of the National Housing Code). The proposed Hoffental B Rural Subsidised Housing Project is aimed at providing suitable housing to beneficiaries residing on a portion of Ward 4 of the Okhahlamba Local Municipality and includes land falling under the rule of the Amangwane Tribal Authority.

All rural subsidised housing projects require that an Environmental Assessment be conducted, as part of the initial rural housing application. This document provides an Environmental Assessment of the project area as part of the approval phase of the proposed rural housing project. The report is based on a combination of available desktop data sources and the findings of a recent site inspection conducted across the project area. This assessment provides a summarized overview of key socio-economic, infrastructural and environmental aspects that will have to be considered in the implementation of the proposed subsidized housing project.

While the exact nature of the housing project in terms of the application of the subsidies and the location of individual beneficiaries within the study area have not yet been specified, it is known that the proposed Rural Subsidised Housing project will result in the construction of approximately 750 new top structures within the project area, and will therefore service approximately 750 beneficiaries and their associated families. This document provides a preliminary overview of factors that are relevant to the broader study area, while taking into account the existing settlement pattern and distribution.

According to Chapter 11 of the National Housing Code, rural housing subsidies may be used for any purposes which, in the discretion of the Housing Board, amount to housing purposes. Without

limiting the discretion of any particular Housing Board, the following purposes may be regarded as housing purposes:

- The provision of sanitation facilities;
- The provision of roads and stormwater drains within the boundaries of any particular settlement;
- The provision of water;
- The construction or upgrading of dwellings;
- The purchase of building materials in order to enable a beneficiary himself or herself to construct or upgrade a dwelling.

1.2 SITE DESCRIPTION

The project area falls within the jurisdiction of the Okhahlamba Local Municipality, which is the largest of the three local municipalities making up the uThukela District Municipality of northern KwaZulu-Natal. The total population of the Okhahlamba Local Municipality, as recorded in the Census 2011 is estimated at 132 058 persons while the overall population of the Hoffental B Rural Housing project area is approximately 2 866 persons which resides in approximately 562 households within the project area.

The Hoffental B project area is approximately 2 601.91Ha in extent and is centrally located within the Okhahlamba Local Municipality. The project area consists of low to medium density rural settlements (scattered), with homesteads incorporating a mix of round and rectangular structures constructed of both traditional (mud brick, wattle and daub, thatch roof) and more modern or urban (cement blocks and corrugated iron roof) materials and techniques.

As indicated in Map 1.1 below, the Woodstock Dam forms the Western boundary and the Tugela River forms the Northern boundary. The southern section of the project is relatively steep but becomes flat towards the north. The project area is dissected by numerous drainage networks. Drainage is dictated by the Nxwaye and Nhlambamasoka rivers

Map 1.1: Project Area in relation to wards and municipalities

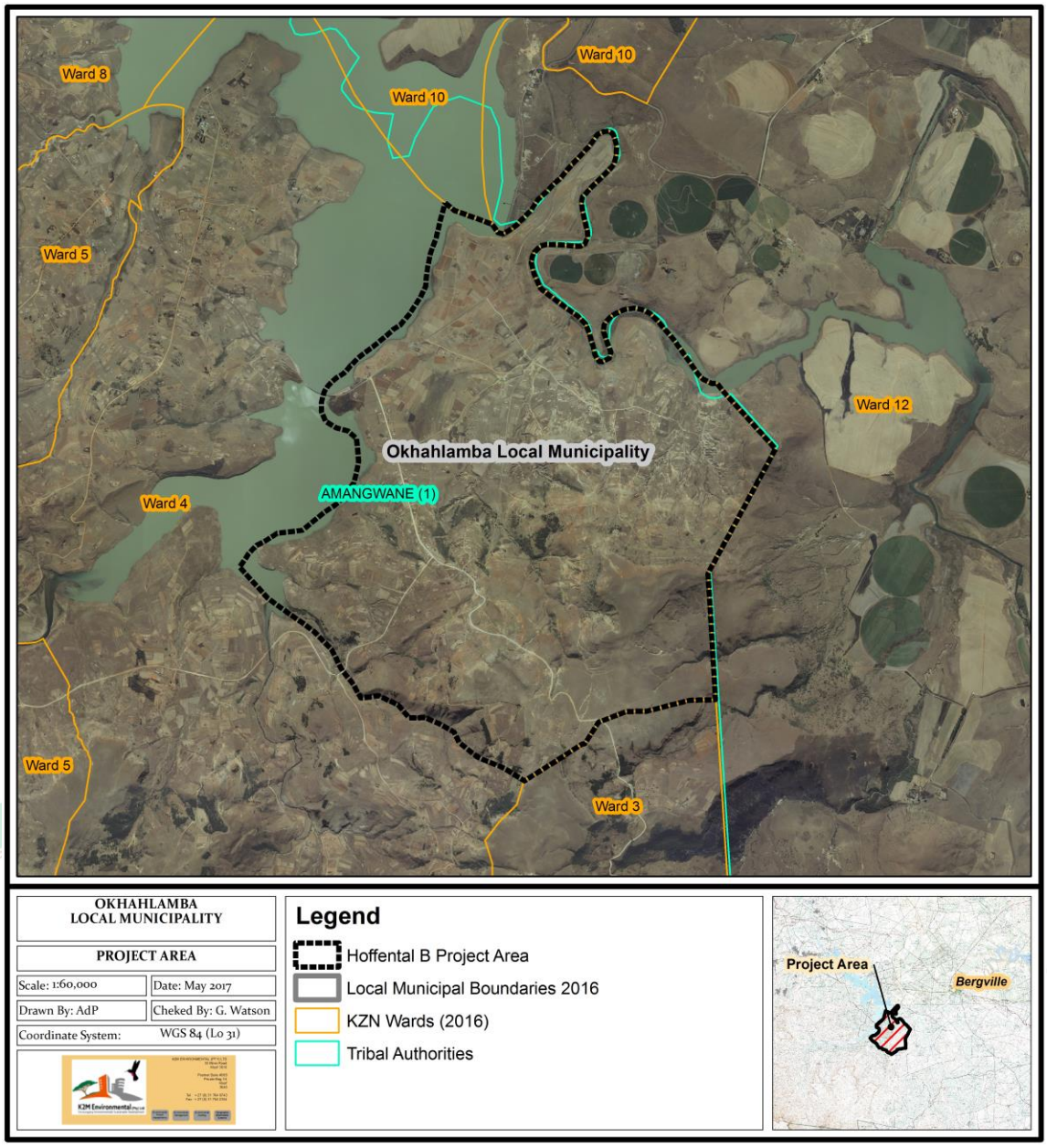


Photo 1.1: Overview of the Project Area

2 APPROACH AND METHODOLOGY

2.1 APPROACH

2.1.1 Applicable legislation

The National Environmental Management Act (No. 107 of 1998) provides for the control of certain listed activities which *"may have a detrimental effect on the environment."* In terms of the Environmental Impact Assessment (EIA) Regulations Listing Notice 1, Listing Notice 2 and Listing Notice 3 of 2014, such activities are prohibited until written authorisation is obtained from the Minister or his delegated authority. Activities listed in EIA Regulations Listing Notice 1 and Listing Notice 3 of 2014 will require a Basic Assessment to be conducted while activities listed EIA Regulations Listing Notice 2 of 2014 will require a thorough EIA process which includes a Scoping Report and an Environmental Impact Assessment Report.

The Department of Economic Development, Tourism and Environmental Affairs (DEDTEA) have in the past on similar projects indicated that it is their opinion that the development and construction of rural subsidised housing projects on Ingonyama Trust Land ***do not constitute a listed activity*** as identified in terms of Environmental Impact Assessment Regulations. This opinion was based on the fact that the Rural Housing Projects entail the construction of housing units within existing iMuzi's (Brown Field Development). Due to the fact that such projects do not constitute listed activities they therefore did not require environmental authorisation in terms of the National Environmental Management Act) (Act 107 of 1998) (NEMA), and as such no environmental authorisation was required from the Department of Economic Development, Tourism and Environmental Affairs for projects of this nature.

The Department of Human Settlement has requested that cognisance needs to be taken in terms of the establishment of sustainable human settlements. This encourages the densification of settlements to enable for the provision of other supporting infrastructure at a later stage such as water connections to individual stand level as well as improved road and sanitation infrastructure. It is however important to understand that as part of this project only housing units with a Ventilated Improved Pit Latrine (VIP) will be constructed within existing iMuzi's.

Should any Greenfield development occur as a result to this project, the extent of the cumulative area to be impacted must be limited to less than 1 hectare and should be restricted to degraded areas. Should the cumulative Greenfield Development footprint exceed 1 hectare, then an Environmental Authorisation will need to be applied for.

The purpose of this Environmental Assessment is thus to identify possible strategic environmental issues at the earliest possible stage in the planning process to:

- Ensure that environmental issues are addressed in a pro-active manner in the development of the housing process.

- Improve the assessment of strategic environmental impacts that might be caused by the envisaged developments, and

- Ensure that the concept of sustainability is integrated with developmental decision making.

This Environmental Assessment is prepared in terms of the Stage 1 application (reservation of beneficiaries) requirement of the Department of Human Settlement. This Report will be submitted to DEDTEA for official comment and to determine the way forward.

The overall approach towards this preliminary assessment is therefore based on the concept of sustainable development within the context of the official definition of sustainable development being: "*development that aims for equity within and between generations and adopts an approach where the economic, social and environmental aspects of development are considered in a holistic fashion"*.

2.2 METHODOLOGY

This Environmental Assessment thus provides a summarized overview of some of the key aspects relating to the social, economic, infrastructural, service and biophysical environments, which impact on, and are similarly impacted upon by the Hoffental B Rural Housing project area. The summarized overviews of various aspects contained within the Environmental Assessment have been based on a combination of existing available desktop information sources as well as the findings and observations derived from the recent on-site survey conducted of the project area.

Available desktop information sources include information derived from the 2011 South African Census, as well as the Integrated Development Plan 2015/2016; and various spatial GIS information. These information sources were initially made use of to establish the general status quo conditions of various social, economic, service and infrastructural demographics which impact on and are subsequently impacted upon by the project area and its local population. As a supplement to the information provided and discussed within the assessment report a number of accompanying thematic maps have also been included within the report, which provide a graphical representation of various biophysical factors at play within the project area.

The report has generally been structured as follows:

- **Section 3** deals with the **Socio-Economic Development component** of the project area**.** The social component addresses aspects such as age, gender, education and housing, while the economic component addresses aspects such as monthly household income, employment status, and a profile of the economic sectors within which the employed proportion of the project area population are involved in within the Hoffental B Rural Housing project area.

- **Section 4** deals with the **services and infrastructural component** of the project area. The services component therefore addresses residents' access to water, sanitation, electricity, telecommunication infrastructure and waste removal services, while the infrastructural component addresses the road network and stormwater management systems within the project area.

- **Section 5** deals with the **biophysical characteristics** of the project area, and therefore covers aspects such as land use, climate, land cover, topography and drainage, floodline

areas, CBAs, Protected areas, corridors, mineral deposits, archaeological, cultural and historical sites, and potential sources of pollution.

- **Section 6** provides a brief overview of the **current settlement pattern** of the Hoffental B Rural Housing project area, and discusses some of the impacts associated therewith.

- **Section 7** provides a **summary conclusion** of the findings of the Preliminary Environmental Assessment Report and the potential impact of the proposed development on the environment and local population, while also providing some recommendations with which to minimize or negate any negative impacts.

3 SOCIO-ECONOMIC COMPONENT

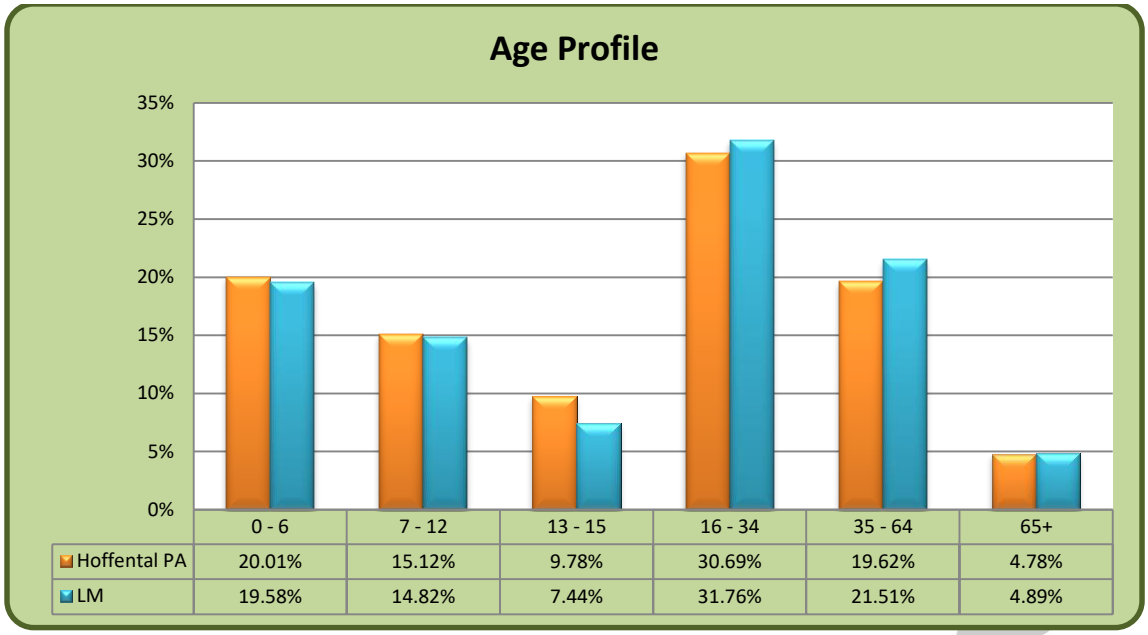
3.1 SOCIAL DEMOGRAPHIC CHARACTERISTICS

The figures illustrated below were prepared from the Census 2011data and present a socio-economic overview of the study area. The Hoffental B Rural Housing Project Area falls within the jurisdiction of the Okhahlamba Local Municipality. The figures of the study area are therefore presented together with the overall figures of the municipality to yield a comparative socio-economic overview of the study area. The total population of the study area is approximately 2 866 persons and the population of the municipality is estimated at 132 058 persons. The Hoffental Rural Subsidised Housing project area accounts for 2.16% of the total population of the Okhahlamba Local Municipality.

3.1.1 Age Profile

The age profile of the project area and of the Okhahlamba Local Municipality (LM) is depicted in Figure 3.1 below. It is evident from the graph that the majority of the population (44.90%) of the project area are younger than the age of 15 years. A total of 30.69% are between the ages of 16 and 34 years. 19.62% of the population fall in the age category of 35 – 64 years, while only 4.78% of the total population of the project area are older than the age of 65 years. The age distribution figures suggest that the population of the study area, consists mostly of young individuals who will become adults in the near future. The figures also indicate that 41.84% of the population within the Okhahlamba LM is younger than 15 years.

Figure 3.1: Age Profile



Source: Statistics SA, Census 2011

3.1.1.1 Implications for the Rural Subsidised Housing Project:

Age distribution patterns are of utmost importance when planning future developments and allocating rural subsidies as various subsidised facilities will be better enjoyed by individuals of certain ages now and in the future. Age distribution is also considered when determining the need for other supporting facilities necessary to ensure maximal yield of benefits of any given development, such as the proposed subsidised housing project. The age distribution structure of the population of the project area has various implication as far as subsidised rural housing is concerned, which must be considered during the planning (location) and implementation of the project, these include:

- Provision of sufficient and appropriate education facilities within close proximity to the housing development, and thereby ensuring that scholars do not travel unnecessary distances.
- Provision of economic and/ or employment opportunities within close proximity of the houses as a large number of young people will be entering the economically active age category over the next five to ten years and will thus be seeking appropriate employment opportunities.
- Provision of adequate social services and amenities as the young age profile increases the proportion of the population which are not yet economically active which results in a high dependency ratio which places increased pressure on social services, facilities, and

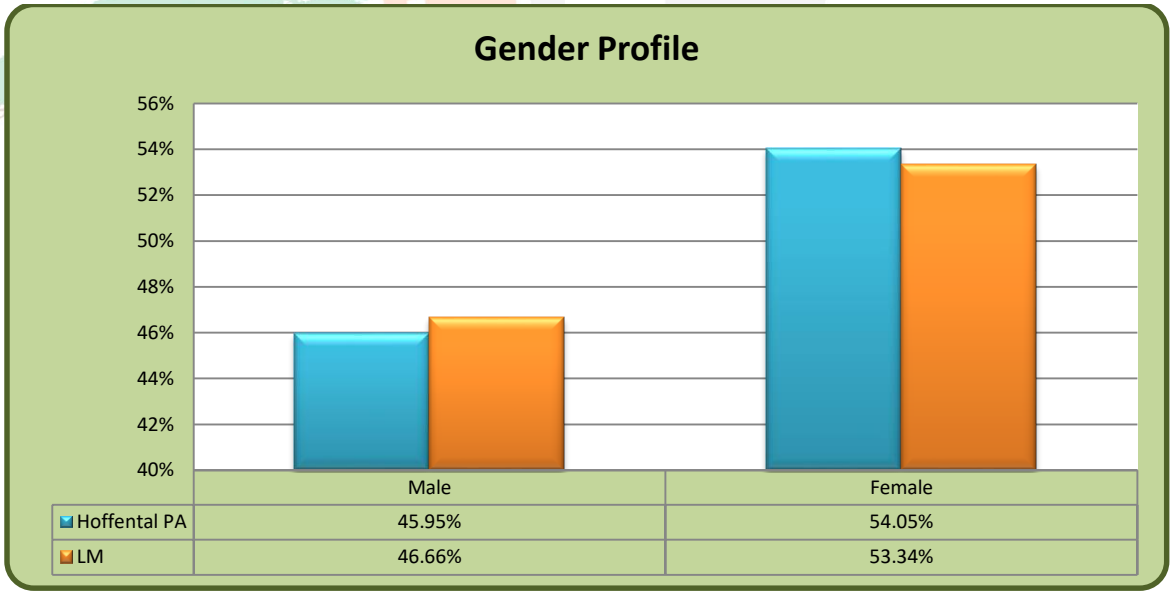
amenities. Provision of such services will not only benefit young individuals but rather the community at large.

The lack of such facilities and services within close proximity to the area will result in the individuals and families relocating to areas where such services are available and therefore leaving the subsidised houses which were meant to improve their quality of life, thereby limiting the success of the proposed housing project.

3.1.2 Gender Profile

According to the 2011 census information as much as 54.05% of the total population of the study area is female and 45.95% are male. Trends of a female dominant population are also evident for the overall Okhahlamba municipal area with 53.34% of the total population being female and 46.66% being male. Figure 3.2 below illustrates a female dominant population within the study area and the overall municipality.

Figure 3.2: Gender Profile



Source: Statistics SA, Census 2011

3.1.2.1 Implications for the Rural Subsidised Housing Project:

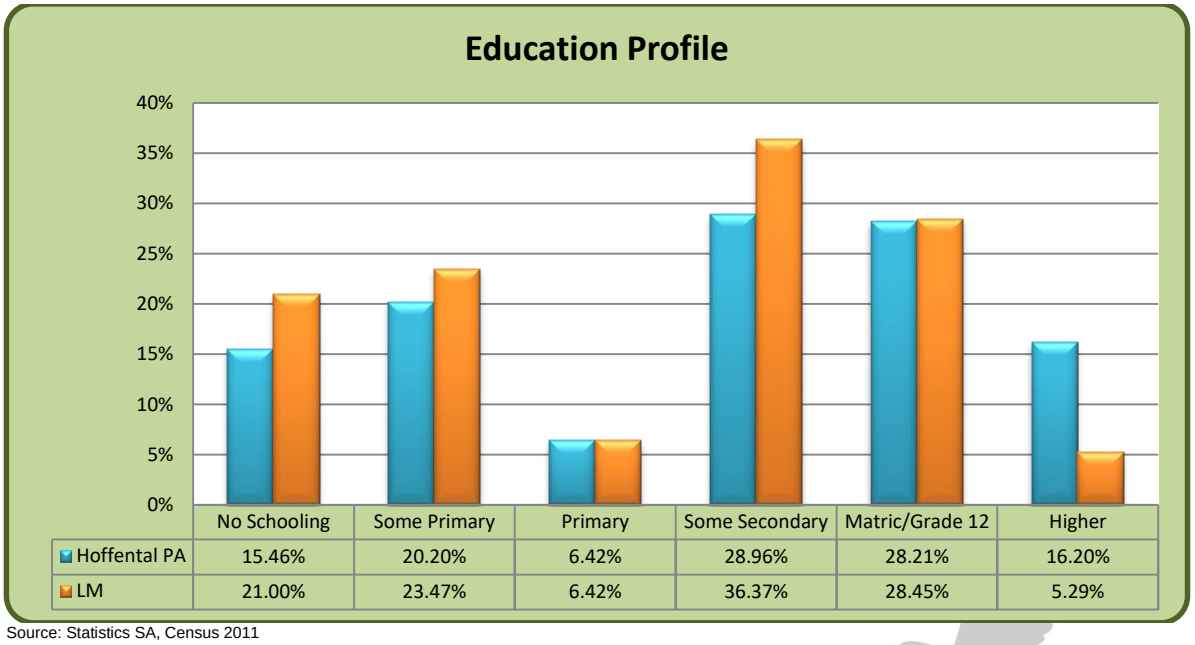
The implication of gender roles within the project area needs to be given due consideration with regards to the implementation of the envisaged rural subsidised housing project. Practices of

gender equality and empowerment are necessary to ensure that benefits derived from the implementation of the proposed development are distributed in such a way that is reflective of the population structure as a whole.

3.1.3 Education Profile

The 2011 education profile of the project area and the Okhahlamba LM is illustrated in Figure 3.3 below. These figures illustrate the education levels of individuals over the age of 20 years and therefore falling into the economically active categories of the population. According to the figures, approximately 15.46% of the population of the project area have not undergone any form of schooling. The figures also suggest that 20.20% of the population completed some form of primary school and 6.42% completed primary school (Grade 7). The figures indicate that 28.96% of the population completed some form of secondary school, 28.21% completed matric and 16.20% had the opportunity of furthering their education. The overall figures for Okhahlamba LM indicate that 36.37% of the population completed some secondary school and 21.00% have not undergone any form of schooling, whilst only 5.29% had the opportunity to further their education.

Figure 3.3: Levels of Education



Source: Statistics SA, Census 2011

3.1.3.1 Implications for the Rural Subsidised Housing Project:

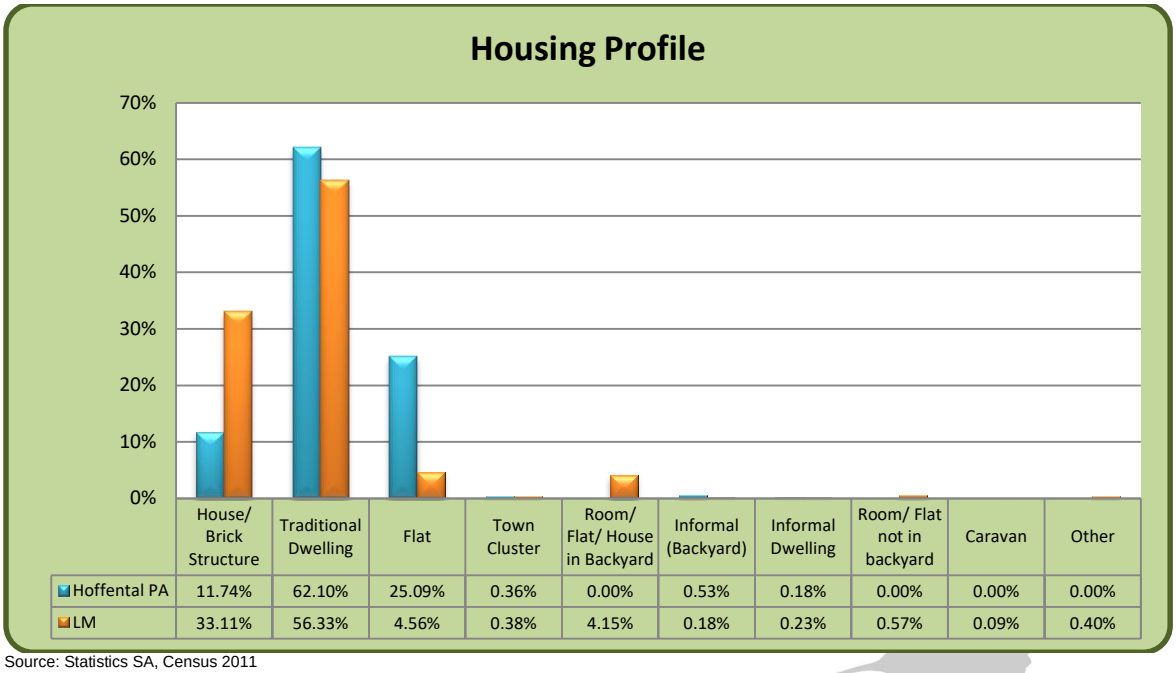
The level of illiteracy within the project area will need to be taken into consideration with regards to the implementation of the proposed project, to ensure that that portion of the population which are illiterate are assisted, included and involved in community participation practices, and are not discriminated against as a result. Technical aspects of the proposed housing project may have to be communicated as they need to be clearly understood by the beneficiary communities. Specific provisions will need to be made to include those members of the project area who may be illiterate in the development process, so as to avoid the possibility of exclusion of certain demographics. Facilities with which to cater to adult education could similarly constitute a viable option for future municipal developments of the area. In terms of overall project development and management it is important to ensure that all beneficiaries fully understand and grasp the implications and technical aspects relating to this housing initiative.

Photo 3.1: Schools

3.1.4 Housing Profile

As can be seen from Figure 3.4, the most predominant housing type in the project area is the "Traditional Dwelling" with 62.10% of houses falling into this category. The second predominant housing type is the "Flat" with 25.09% falling into this category. Traditional dwellings include mud houses, clay houses and huts made of animal manure. The figures indicate that within the Okhahlamba LM, approximately 56.33% of houses fall in the "Traditional dwelling" housing category and 33.11% fall within the "House/Brick Structure" category whilst only 4.56% fall within the "Flat" category.

Figure 3.4: **Housing Profile**



	House/ Brick Structure	Traditional Dwelling	Flat	Town Cluster	Room/ Flat/ House in Backyard	Informal (Backyard)	Informal Dwelling	Room/ Flat not in backyard	Caravan	Other
Hoffental PA	11.74%	62.10%	25.09%	0.36%	0.00%	0.53%	0.18%	0.00%	0.00%	0.00%
LM	33.11%	56.33%	4.56%	0.38%	4.15%	0.18%	0.23%	0.57%	0.09%	0.40%

Source: Statistics SA, Census 2011

3.1.4.1 Implications for the Rural Subsidised Housing Project:

According to the Housing Act, 1997, it is pertinent that all citizens and permanent residents of the Republic will, on a progressive basis, have access to:

- Permanent residential structures with secure tenure, ensuring internal and external privacy and providing adequate protection against the elements.

The National legislated (RDP) minimum norms and standards in respect of housing supply in South Africa is considered to be a brick top structure of 40 m2 (minimum), of which only 11.74% of households in the project area; and 33.11% of the households within Okhahlamba Local Municipality have access to housing services at this level. This national standard has been accepted by the Department of Housing as their minimum norms and standards for the rural housing instrument as far as subsidised housing provision is concerned.

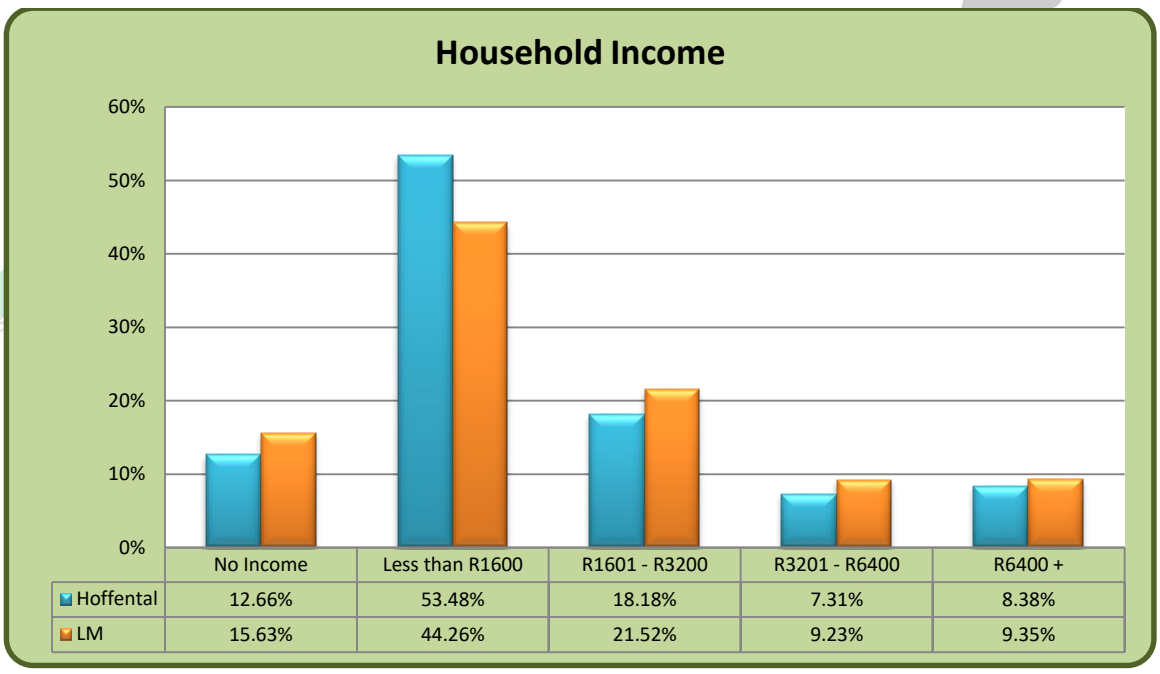
Due to the informal and traditional nature of 62.81%of houses situated within the project area, the need for the implementation of a rural subsidized housing project is evident. Such a factor should therefore support and favour the implementation of the subsidised rural housing project within the project area.

3.2 ECONOMIC DEMOGRAPHIC CHARACTERISTICS

3.2.1 Household Income and Affordability Profile

Figure 3.5 below illustrates a relatively low household income profile within the project area and the overall Okhahlamba Local Municipality. The 2011 Census data shows that 12.66% of the households within the project area have no form of income. As much as 53.48% of the total number of households within the study area indicated a collective monthly household income of R1600 and less, 18.18% fall within the income range of R1601 – R3200, only 7.31% earn between R3201 and R6400 while 8.38% of the total number of households indicate a collective monthly household income of more than R6400.

Figure 3.5: **Monthly Household Income**



	No Income	Less than R1600	R1601 - R3200	R3201 - R6400	R6400 +
Hoffental	12.66%	53.48%	18.18%	7.31%	8.38%
LM	15.63%	44.26%	21.52%	9.23%	9.35%

Source: Statistics SA, Census 2011

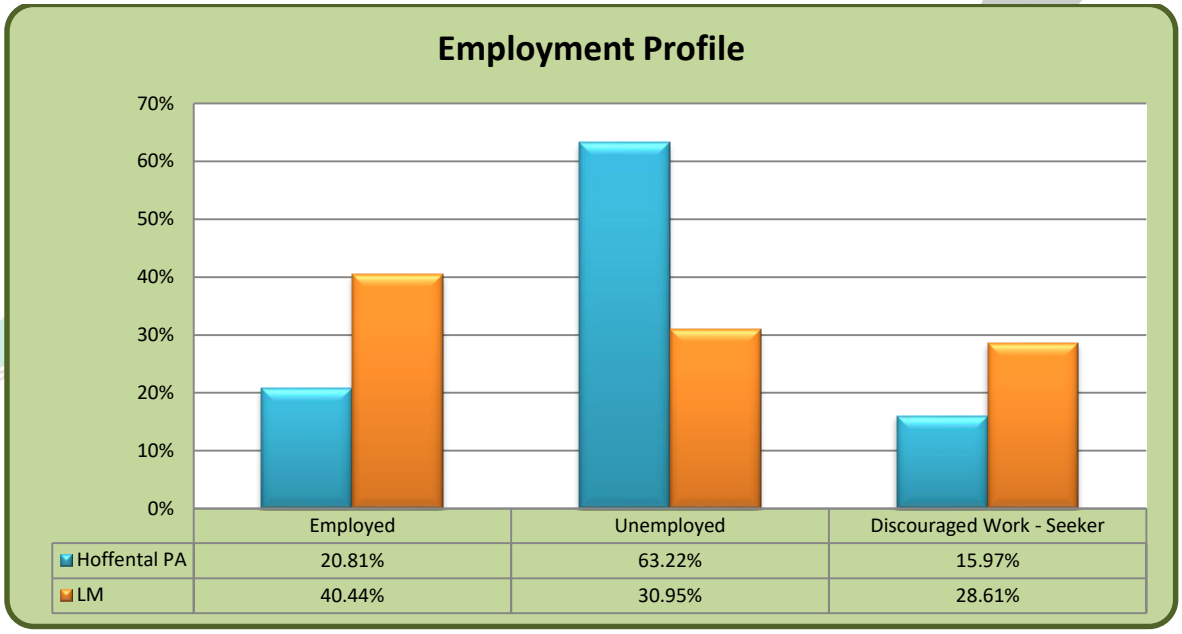
3.2.1.1 Implications for the Rural Subsidised Housing Project:

The figure above indicates relatively low affordability levels within the project area and the overall municipal area. The proposed subsidised housing project will benefit many households with low monthly income and who cannot afford proper housing. The ability of residents to pay for service levels above the minimum required standards will also be very limited.

3.2.2 Employment Profile

Figure 3.6 below illustrates the employment profile of the study area and the overall municipal profile. Approximately 63.22% of the adult economically active population within the study area indicated to be unemployed. These figures include persons older than the age of 15 who indicated that they were unemployed at the time of the survey but seeking employment and are willing to take up any employment position should it be presented. Approximately 20.81% of the economically active population within the study area indicated that they were employed at the time of the survey and 15.97% were discouraged work seekers. The survey on the overall employment profile of the Okhahlamba Local Municipality indicated that 40.44% of the population being employed and as much as 30.95% being unemployed.

Figure 3.6: Percentage of Economically Active Population Unemployed



Source: Statistics SA, Census 2011

3.2.2.1 Implications for the Rural Subsidised Housing Project:

The potential role of the envisaged rural housing project in providing some employment and income generating opportunities during the construction and implementation phases should clearly be a key consideration in the project plan. The development of technical skills relating to construction which could benefit the project beneficiaries after completion of the housing project should also be considered in the project implementation and management stages.

4 SERVICES AND INFRASTRUCTURE

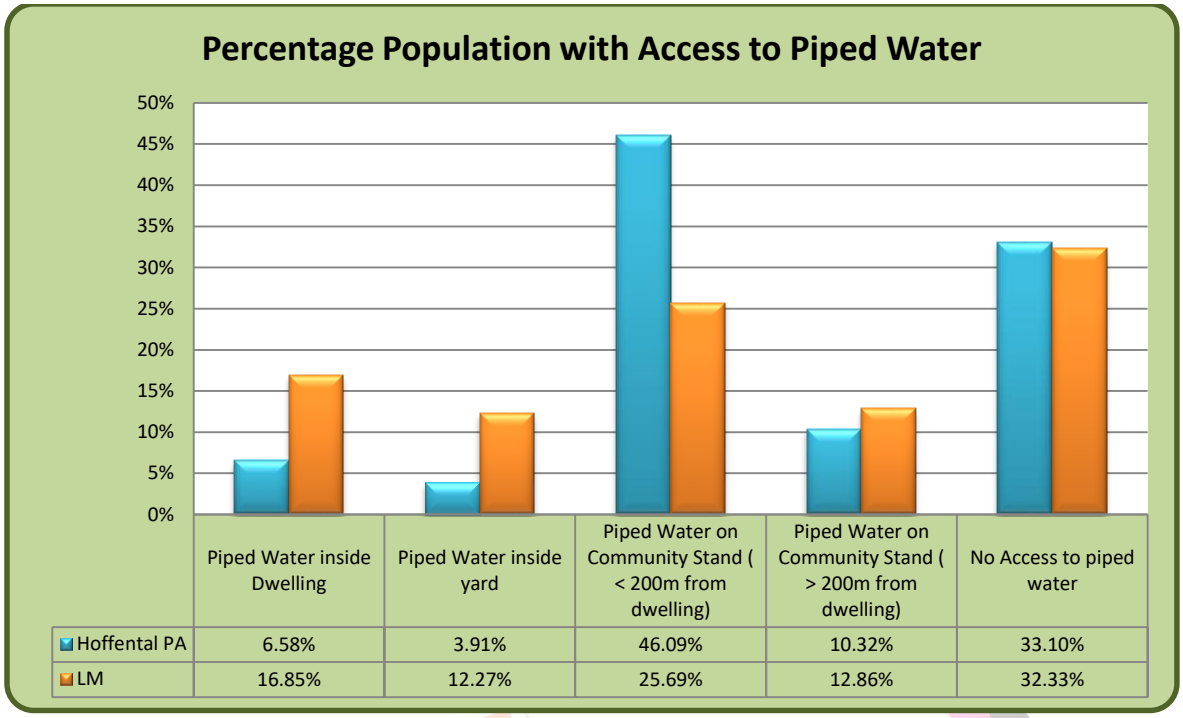
4.1 SERVICES DEMOGRAPHICS

4.1.1 Access to water infrastructure

Figure 4.1 and 4.2 below illustrates the various sources of water, for drinking and other auxiliary household uses, for communities residing within the project area and the overall Okhahlamba Local Municipality. The figure shows relatively good access to running water in the project area with 6.58% of the total number of households having access to piped water “inside dwelling” and 3.91% having piped water “inside the yard”. Approximately 46.09% of households within the project area have to walk less than 200m to get water (which includes piped water inside dwelling and yard), whilst 10.32% of households have to walk more than 200m to get water. Approximately 43.06% of households within the study area make use of boreholes, and 2.14% utilise water from a river or stream. Approximately 0.36% of the households buy water from a vendor who probably sources it from the above mentioned sources which are situated at a greater distance from the households.

The overall figures for the Okhahlamba LM indicate that 16.85% and 12.27% of households having access to piped water “inside dwelling” and “piped water inside yard” respectively. A further 25.69% of households indicated to source water from a communal tap situated within a distance of 200 meters while 12.86% would source water from a communal tap situated more than 200 meters from the dwelling. Approximately 6.25% of households within the municipality utilise water from a water vendor, 4.67% from rivers and streams and 26.96% from borehole.

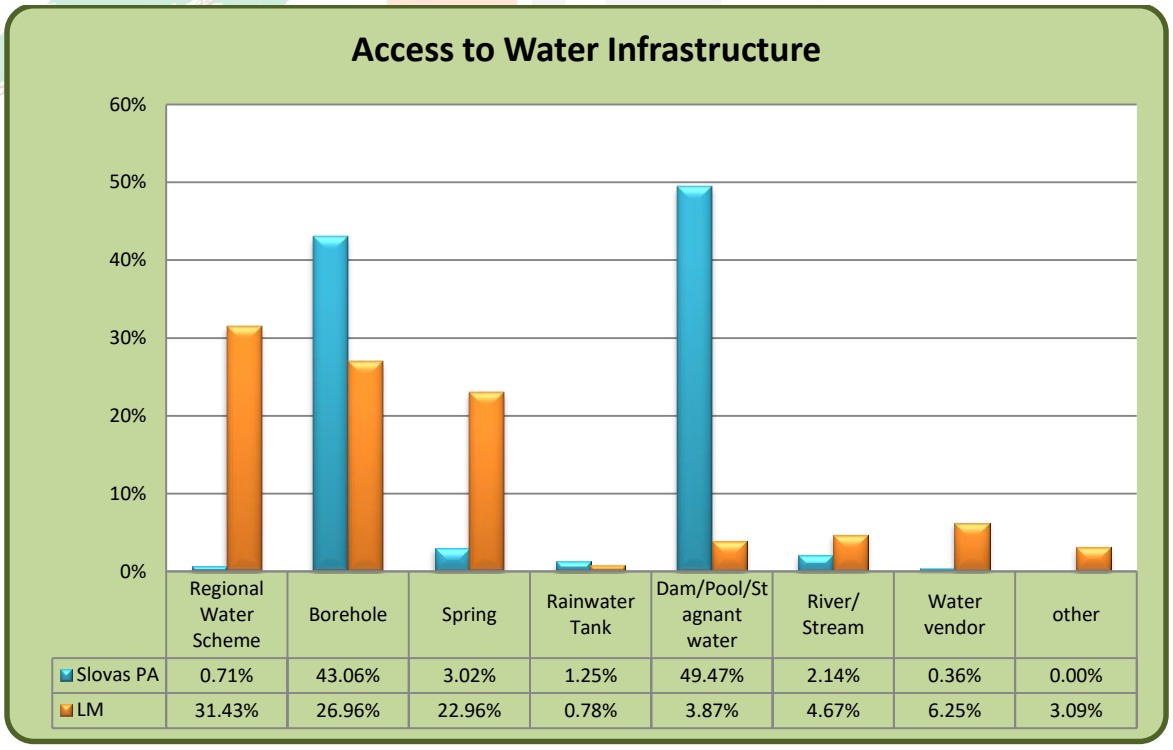
Figure 4.1: Percentage Population with Access to Piped Water



	Piped Water inside Dwelling	Piped Water inside yard	Piped Water on Community Stand (< 200m from dwelling)	Piped Water on Community Stand (> 200m from dwelling)	No Access to piped water
Hoffental PA	6.58%	3.91%	46.09%	10.32%	33.10%
LM	16.85%	12.27%	25.69%	12.86%	32.33%

Source: Statistics SA, Census 2011

Figure 4.2: Percentage Population with Access to Water Infrastructure



	Regional Water Scheme	Borehole	Spring	Rainwater Tank	Dam/Pool/Stagnant water	River/ Stream	Water vendor	other
Slovas PA	0.71%	43.06%	3.02%	1.25%	49.47%	2.14%	0.36%	0.00%
LM	31.43%	26.96%	22.96%	0.78%	3.87%	4.67%	6.25%	3.09%

Source: Statistics SA, Census 2011

4.1.1.1 Implications for the Rural Subsidised Housing Project:

The levels of service delivery derived from acceptable national policy frameworks which are relevant for the level of water services indicate the following definitions as being applicable:

- A 'Survival' level of service providing five (5) to eight (8) litres of water per capita per day at 800 – 1500 meters walking distance;
- The RDP level of service providing twenty-five (25) litres of water per capita per day at 200 meters walking distance; and
- A higher level of service providing more than twenty-five (25) litres of water per capita per day and at less than 200 meters walking distance. It even includes a yard or house connection.

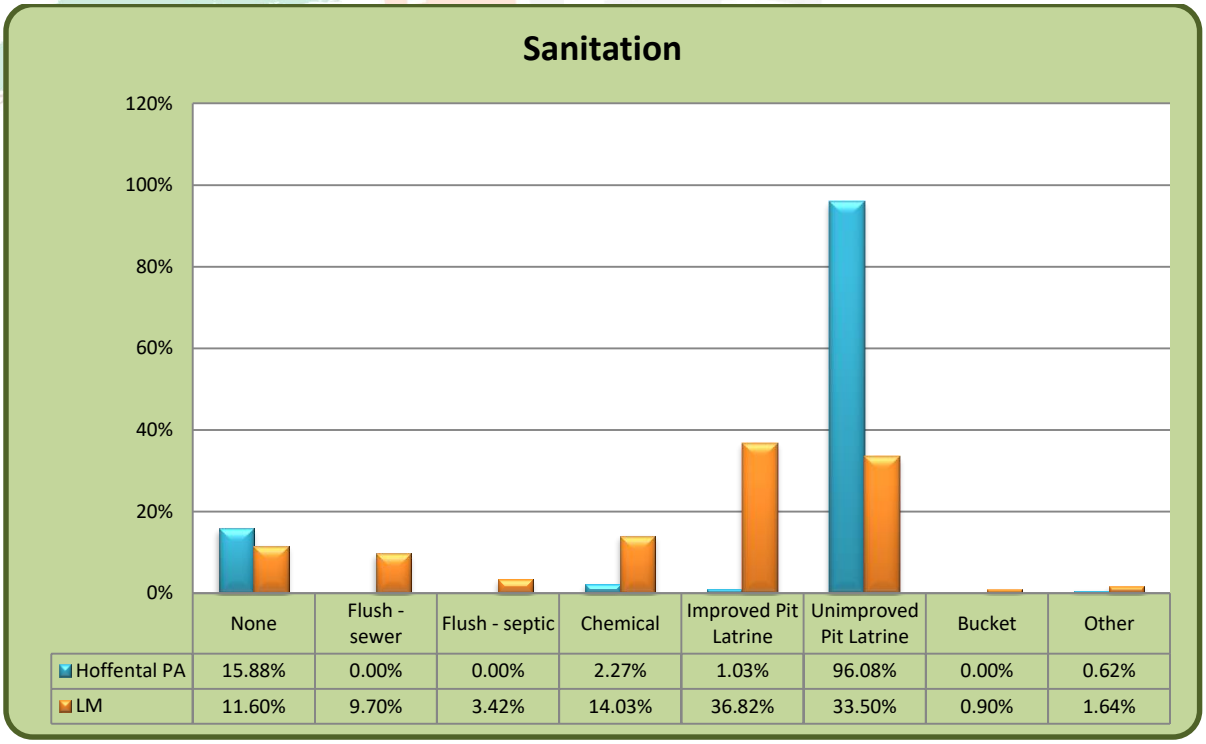
The National legislated (RDP) minimum norms and standards in respect of water supply in South Africa are therefore considered to be a maximum 200 m's walking distance between a communal stand pipe and one's residence. Approximately 54.81% of the Okhahlamba LM and 56.58% of the Hoffental B Rural Housing project area has access to water services at this level or better (Pipes water inside dwelling or yard). This national standard has been accepted by the Department of Housing as their minimum norms and standards for the rural housing instrument as far as subsidised housing provision is concerned. Therefore, due to the fact that the provision of water amounts to housing purposes in terms of the Housing Board/Department of Human Settlements explanation of rural subsidies, the provision of water at the minimum RDP level of service provision should at least constitute a key municipal objective for implementation in the Hoffental B Rural Housing project area, as well as the Okhahlamba Local Municipality as a whole. The provision of Rural Subsidised Housing should therefore not occur in isolation but should be supported by various other necessary infrastructural and service provision projects.

4.1.2 Access to Sanitation Infrastructure

Figure 4.3 below indicates the various sanitation systems used by households within the Hoffental Rural Housing project area and overall Okhahlamba municipal area. From the figures below, 15.88% of the households with in the Hoffental Rural Housing project have no sanitation facilities. Approximately 96.08% of households have the “unimproved pit latrines” and 1.03% have the “improved pit latrines”. The figures indicate that 0% of households in the project area use flush toilets connected to a sewer system, 0% use flush toilets connected to a septic tank and 2.27% make use of chemical toilets.

The statistics of the overall Okhahlamba Local Municipality indicates that 33.50% of households make use of “unimproved pit latrines” with 36.82% having “improved pit latrines”. A total of 14.03% of households at municipal level makes use of chemical toilets and 0.90% makes use of the bucket system. Approximately 11.60% of households within the municipal area indicated to not have any sanitation facility. Approximately 9.70% of the total number of households within the Okhahlamba Local Municipality makes use of flush toilets connected to a sewer system and 3.42% use flush toilets connected to a septic tank.

Figure 4.3: Access to Sanitation Infrastructure



	None	Flush - sewer	Flush - septic	Chemical	Improved Pit Latrine	Unimproved Pit Latrine	Bucket	Other
Hoffental PA	15.88%	0.00%	0.00%	2.27%	1.03%	96.08%	0.00%	0.62%
LM	11.60%	9.70%	3.42%	14.03%	36.82%	33.50%	0.90%	1.64%

Source: Statistics SA, Census 2011

4.1.2.1 Implications for the Rural Subsidised Housing Project:

The levels of service delivery derived from acceptable national policy frameworks which are relevant for the level of sanitation services indicate the following definitions as being applicable:

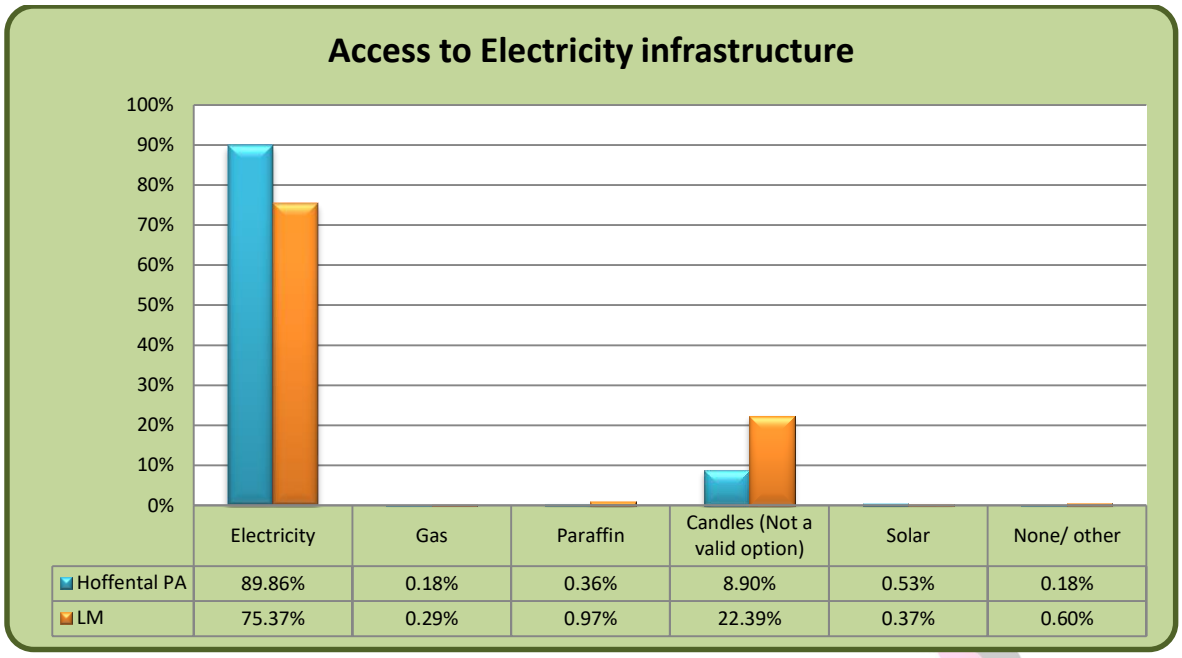
- A Ventilated Improved Pit latrine (VIP) level of service;
- The interim level of service providing on-site sanitation that could include amongst others a on-site dry system (single, double pit or organic systems such as the Enviroloo) or an on-site wet system (such as a low flush or a septic tank and french drain); and
- A waterborne level of service providing treatment of raw sewage by means of a Sewage Treatment Works.

The National legislated (RDP) minimum norms and standards in respect of sanitation service provision in South Africa are considered to be ventilated improved pit toilet (VIP). Approximately 63.97% of the total households in Okhahlamba Local municipal area and 3.30% of the Hoffental B Rural Housing project have access to sanitation services at this level or better (flush-sewer, flush-septic and chemical). This national standard has been accepted by the Department of Human Settlements as their minimum norms and standards for all rural housing instruments as far as subsidised housing provision is concerned. Therefore, due to the fact that the provision of sanitation amounts to housing purposes in terms of the Housing Board/Department of Human Settlements explanation of rural subsidies, the provision of sanitation at the minimum RDP level of service provision at least should constitute a key municipal objective for implementation in the Hoffental B Rural Housing project area, as well as the Okhahlamba Local Municipality as a whole.

4.1.3 Access to electricity infrastructure

Figure 4.4below indicates the various energy sources used for lighting purposes by households within the project area and overall Okhahlamba LM. During the time of the survey, 89.86% (the majority) of households within the project area indicated that they used electricity as a source of lighting, whilst 8.90% utilized candles.

Figure 4.4: Access to Electricity Infrastructure



	Electricity	Gas	Paraffin	Candles (Not a valid option)	Solar	None/ other
Hoffental PA	89.86%	0.18%	0.36%	8.90%	0.53%	0.18%
LM	75.37%	0.29%	0.97%	22.39%	0.37%	0.60%

Source: Statistics SA, Census 2011

4.1.3.1 Implications for the Rural Subsidised Housing Project:

The provision of an internal electrical reticulation network is not viewed as a minimum requirement as far as subsidised housing is concerned, and as such the provision of an internal electrical reticulation network does not form part of the proposed rural subsidised housing project. The absence of appropriate electricity infrastructure can often result in the extensive utilization of firewood for cooking and heating purposes with the resulting potential negative impact on natural vegetation. Limited access to electricity infrastructure often contributes to the general deforestation of the surrounding area, and increased levels of air pollution arising from the use of firewood for cooking and heating purposes.

4.1.4 Access to telecommunication infrastructure

The growing importance of direct access to appropriate telecommunication infrastructure to facilitate access to appropriate sources of information in support of Local Economic Development is becoming an increasingly important development consideration. The inclusion of aspects such

as rural telecentres as part of the housing development initiative could play an important role to address this gap.

4.1.4.1 Implications for the Rural Subsidised Housing Project:

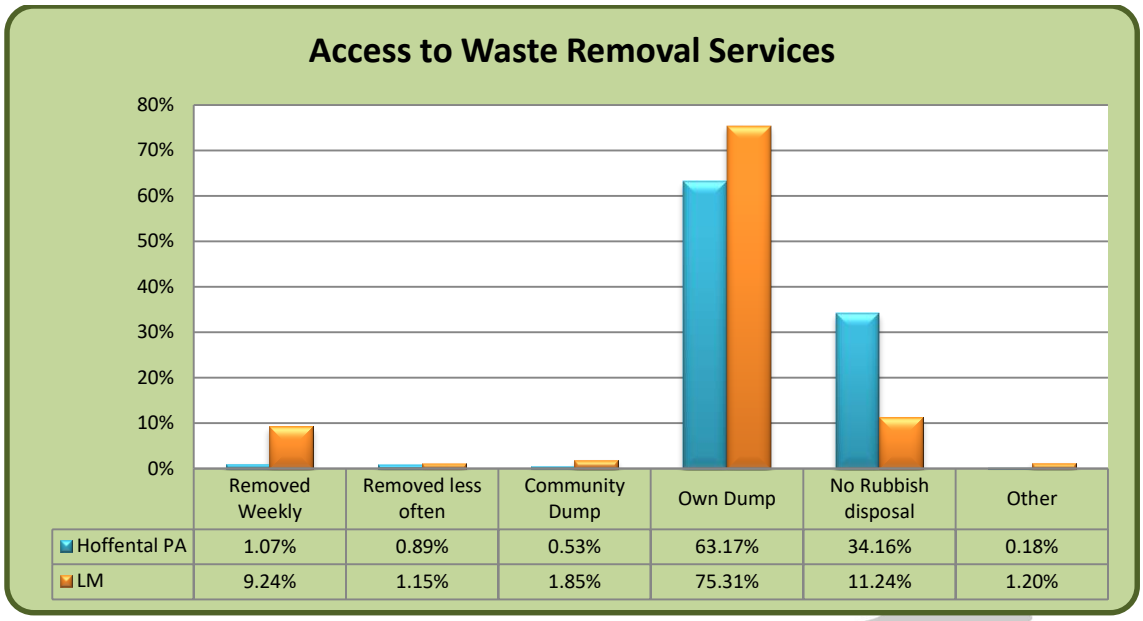
The provision of an internal telecommunications network is not viewed as a minimum service level requirement as far as rural subsidised housing is concerned, and as such the provision of a telecommunication network does not form part of the proposed rural subsidised housing project. The absence of appropriate telecommunication infrastructure can have negative impacts in terms of the local communities' inability to report emergencies as and when they happen in order to receive the necessary response from respective emergency services. A lack of appropriate telecommunication infrastructure also impacts negatively with regards to local businesses which may be trying to operate within the area. Limited access to appropriate and reliable telecommunication infrastructure contributes to certain areas which are un-catered for, being disconnected from the remainderof the general population and unable to keep in touch with their friends, families and loved ones at other locations.

4.1.5 Access to Waste Removal Services

The graph in Figure 4.5 below depicts the various waste management/ removal methods recorded as being used by the various households within the project area and the overall Local Municipality. The limited availability of any form of formalized refuse removal system in the Hoffental Rural Housing project area and the overall Okhahlamba Local Municipality at the time of the survey is clearly illustrated in the graph. As much as 63.17% of the total number of households within the project area indicated that they make use of their own refuse dump, be it pit holes in the yard or in close proximity to the house. Approximately 75.31% of households within the Okhahlamba Local Municipality indicated to use the same method of waste disposal.

The figures from the graph indicate that 9.24% of the households in Okhahlamba Local Municipality had their refuse collected once a week and 1.15% collected less often than on a weekly basis. From the graph it is evident that the majority of households in the Hoffental Rural Housing project area and the overall Okhahlamba municipal area have limited access to waste removal or disposal services and dispose of their refuse through means of their own refuse dumps. It should be noted that approximately 34.16% and 11.24% of households in the project area and local municipality do not have any form of waste removal services.

Figure 4.5:Access to Waste Removal Services



Source: Statistics SA, Census 2011

4.1.5.1 Implications for the Rural Subsidised Housing Project:

The Okhahlamba Local Municipality, who is the service provider responsible for the provision of a functional waste removal and disposal system within the Hoffental B Rural Housing project area, does not currently provide any form of refuse removal and disposal services to the rural areas of its municipal area. The absence of waste removal services in the study area can not only impact negatively on the biophysical environment, but also on the aesthetic appearance of the area, and the overall health profile of the resident communities, as well as their livestock as a result of livestock ingesting such waste.

4.2 INFRASTRUCTURE

4.2.1 Roads

This section of the report provides an overview of existing road networks occurring across and providing access to the Hoffental B Rural Housing (project area). The details of proclaimed road networks are depicted in the Table4.1below. This information describes the various categories/ types of roads and includes National (N), Provincial (P), District (D) and Local (A) or (L) roads;

contained under the respective headings. **It must however be noted that the scope of the proposed Hoffental B Rural Subsidised Housing Project *does not* include any major construction of new roads to the project area, in some instances some individual access roads will be constructed but which will be well below the triggers for environmental authorisation. The accesses will be less than 4-meter-wide, with no construction activity being permitted within a 32m stream, dam, river and wetland.**

Table 4:1: Access to the Hoffental B Rural Housing Project Area

Road Category	Road Number	Access Summary
Provincial	P288	Provides access to the northern and north western section of the project area.
Provincial	P388	Provides access to the south eastern section of the project area.
District	D1376	Provides access to the southern western section of the project area.
Local	L2013	Provides access to the central north westerrn section of the project area.

(i) National Roads

There are no National roads that have been proclaimed through the project area.

(ii) Provincial Roads

There are 2 Provincial roads that have been proclaimed through the project area, namely the P288 and P388.

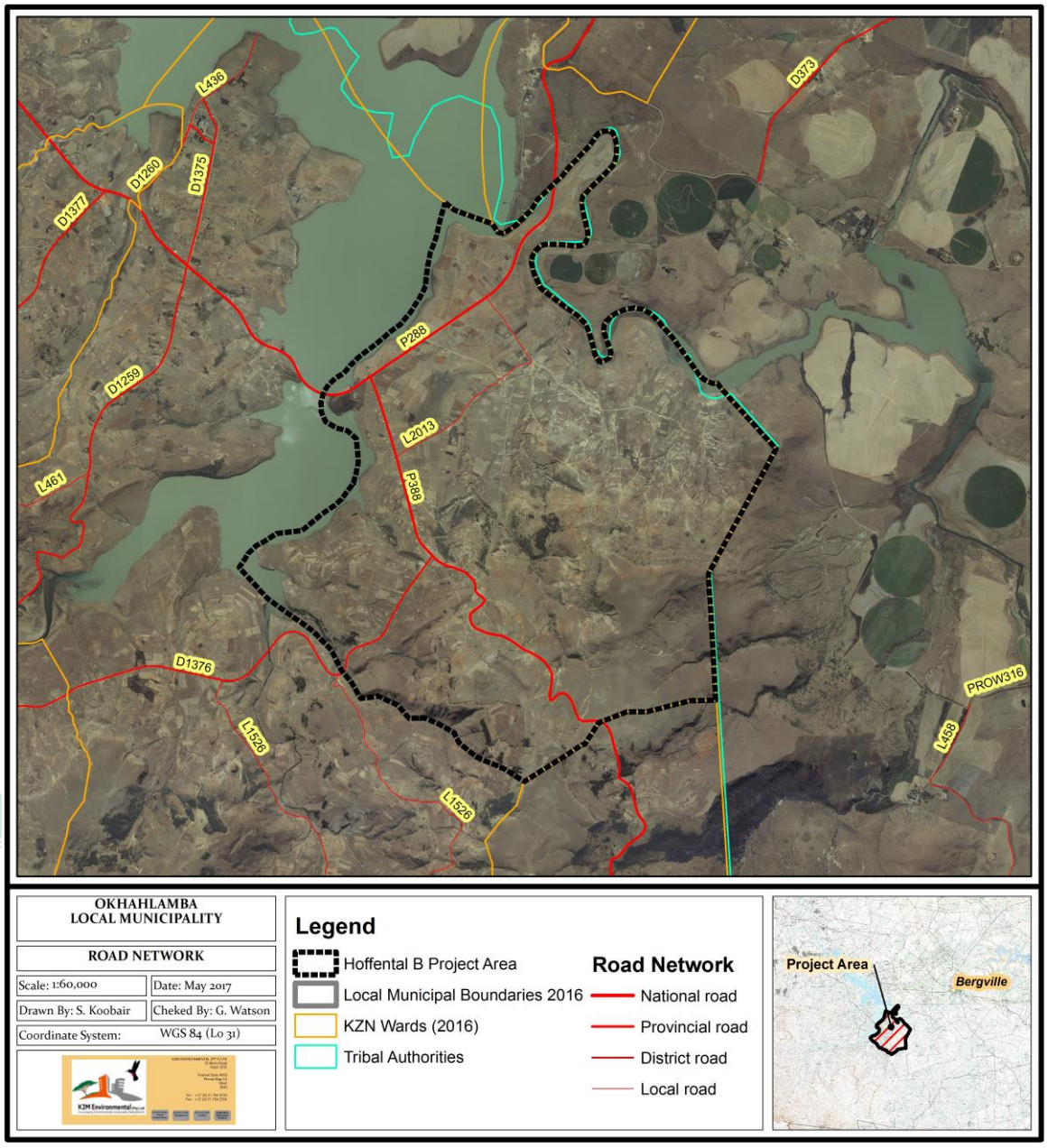
(iii) District Roads

There is 1 district road that traverses the project area, namely the D1376.

(iv) Local Access Roads

There is 1 local road that has been proclaimed through the project area, namely the L2013.

Map 4.1: Road Network



4.2.1.1 Implications for the Rural Subsidised Housing Project:

The National legislated (RDP) minimum norms and standards in respect of roads in South Africa are considered to be “access to all erven with graded or gravel paved roads”. This national standard has been accepted by the Department of Housing as their minimum norms and standards for the rural housing instrument as far as road provision is concerned. It is important to note however that *no new access roads* are planned as part of the Hoffental B Rural Housing

Area's Rural Subsidised Housing Development. Grading processes may be conducted on some existing roads as part of the proposed project in an attempt to improve the current condition of these roads within the Hoffental B Rural Housing project area, and will therefore form part of a road maintenance programme, however such a process will not extend to the creation of any new road networks. Furthermore, due to the fact that no new road networks are planned as part of the proposed development, and due to the fact that grading purposes form part of routine road maintenance the surrounding natural environment will not be adversely impacted upon.

It should also be noted that all District Roads will be allocated a 20 m road reserve, to which an additional 10 m building line will be added onto either side, while all Local Access roads will be afforded a minimum 15 m building line within which no construction activities may occur. This therefore ensures that no construction activities associated with the proposed rural housing project will result in any adverse negative impacts on the existing road network.

4.2.2 Stormwater

Whilst low income rural subsidised housing developments have huge budgetary constraints on the design and implementation of stormwater management and control systems, it is vitally important to dispose of stormwater as effectively and efficiently as possible. This is due to the fact that uncontrolled stormwater runoff can cause damage to property and may erode and destabilise fill and cut banks. The objectives of the stormwater management system should be as follows:

- To adequately dispose of runoff from developed areas without causing soil saturation or erosion. This is particularly important on any sites underlain by erodible soils and on steep slopes;
- To provide overland flow routes through developments to cater for major storms and thereby minimising any risk of damage to property infrastructure and other immovable assets;
- Stormwater systems should be designed to function adequately with low maintenance in the long term, and should cater for silting, etc.

4.2.2.1 Implications for the Rural Subsidised Housing Project:

While the National legislated (RDP) minimum norms and standards in respect of stormwater management in South Africa is considered to be "Lined open channels" the logistics and costs involved with the implementation thereof mean that such a minimum norm and standard is not feasible for implementation as part of the Rural Subsidised Housing development.

5 BIO-PHYSICAL COMPONENT

5.1 CURRENT LAND USE

The current land use is predominantly agriculture together with low to medium dense households as well as cattle grazing. Many of the households within the project area depend on subsistence agriculture for their livelihoods.

5.2 LAND COVER AND TOPOGRAPHY

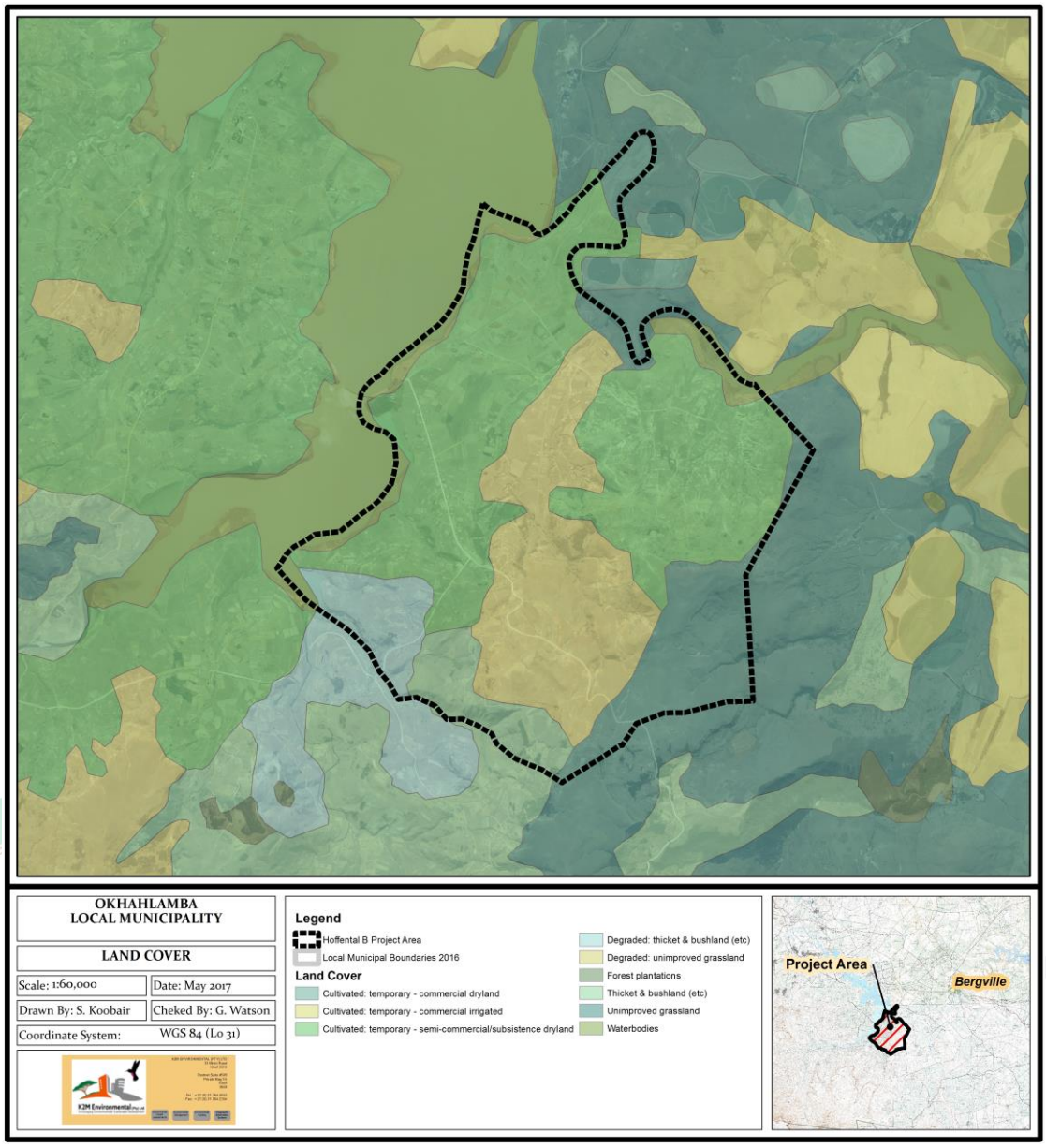
The overall land cover within the study area is summarized in Table 5.1 below and graphically depicted on Map 5.1 below. The dominant land cover within the study area is described as "Cultivated: temporary - semi-commercial/subsistence dryland" and covers approximately 47.97% of the total land area of the project area. This type of landcover can be found in the northern, western and eastern section of the project area. The second dominant land cover type is the "Degraded: unimproved grassland" which accounts for 23.16% of the total surface of the project area and can be found in the central section of the project area.

Table 5:1:Land Cover

Land Cover	Area (Ha)	Percentage of Total Area
Cultivated: temporary- semi-commercial/subsistence dryland	1248.10	47.97%
Degraded: thicket & bushland (etc)	128.35	4.93%
Degraded: unimproved grassland	602.54	23.16%
Thicket & bushland (etc)	139.35	5.36%
Unimproved grassland	341.64	13.13%
Waterbodies	141.93	5.45%
Total Area	**2601.91**	**100.00%**

Source: LANDSAT Landcover

Map 5.1: Landcover



The overall topography of the study area is summarized in Table 5.2 below and clearly depicted on Map 5.2 below. The slope analysis study indicates that the majority of the project area (36.77%) is characterized by slopes that are “Flatter than 1:20”. Approximately 17.71% of the area’s topography has a slope character “Between 1:20-1:10” while 15.13% of the project area is characterised by slopes “Between 1:5-1:3”. Appropriate planning and design principles suitable for

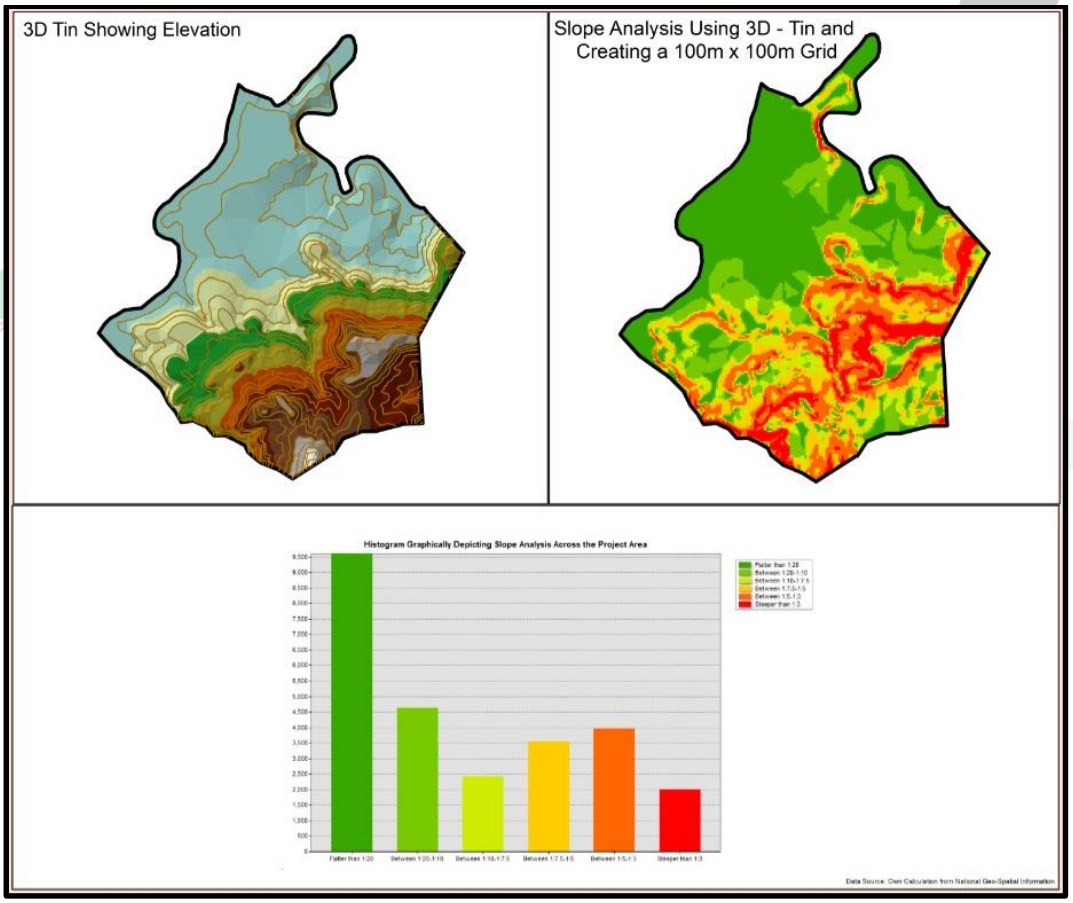
the topography of the area and taking due cognizance of the characteristics of the area, will thus have to be applied during the detailed planning stages of the envisaged housing process.

Table 5:2:Slope Analysis

Slope Analysis	Area (Ha)	Percentage of Total Area
Flatter than 1:20	956.58	36.77%
Between 1:20 - 1:10	460.7	17.71%
Between 1:10 - 1:7.5	240.61	9.25%
Between 1:7.5 - 1:5	352	13.53%
Between 1:5 - 1:3	393.65	15.13%
Steeper than 1:3	198.17	7.62%
Total Area	**2601.71**	**100.00%**

Source: Own calculations

Map 5.2: Slope Analysis



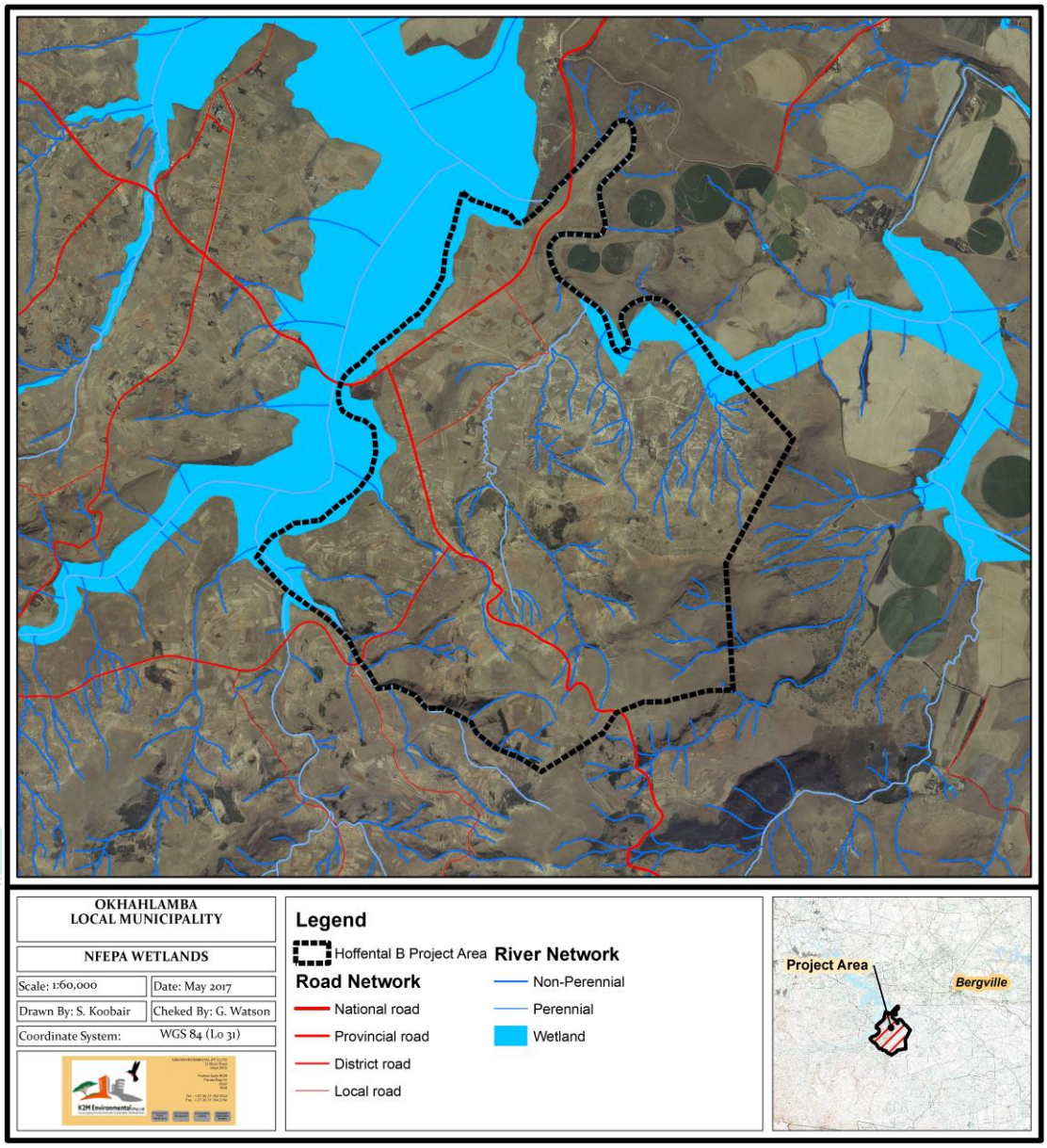
5.3 FRESHWATER ECOSYSTEM PROTECTED AREAS (FEPA'S)

Freshwater Ecosystem Protected Areas (FEPA's) according to the Water Research Council are strategic spatial priorities for conserving freshwater ecosystems and supporting sustainable use of water resources. Freshwater ecosystems refer to all inland water bodies whether fresh or saline, including rivers, lakes, wetlands, sub-surface waters and estuaries. FEPAs are often tributaries and wetlands that support hard-working large rivers, and are an essential part of an equitable and sustainable water resource strategy. FEPAs need to stay in a good condition to manage and conserve freshwater ecosystems, and to protect water resources for human use (Water Research Council).

According to the National Water Act (1998), a wetland is defined as "*Land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land, in normal circumstances, supports or would support vegetation typically adapted to life in saturated soil".*

As indicated on Map 5.3, there are FEPA wetlands within the project area. These wetlands are located on the northern and western boundary of the project area.

Map 5.3: Wetlands



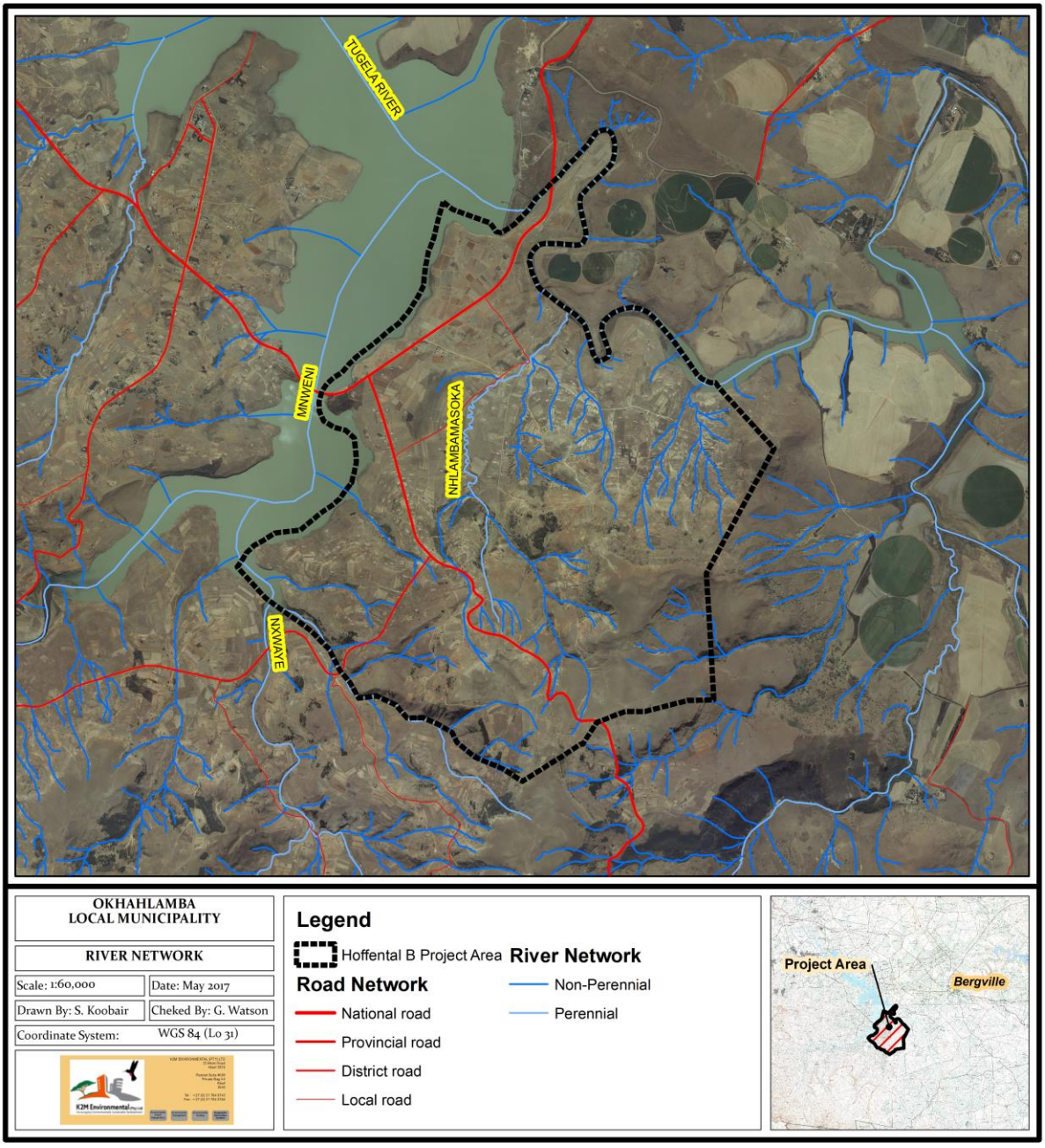
5.4 FLOOD LINE AREAS

The Hoffental B project area is traversed by a number of perennial and non-perennial water courses. The perennial and non-perennial streams occurring within the project area are depicted on Map 5.4 and Table 5.3 below.

Table 5:3: Perennial and non-Perennial Rivers and Streams

Name of River/Stream	Type	Location
Nhlambamasoka	Perennial	Central Section
Nxwaye	Perennial	Southern Section

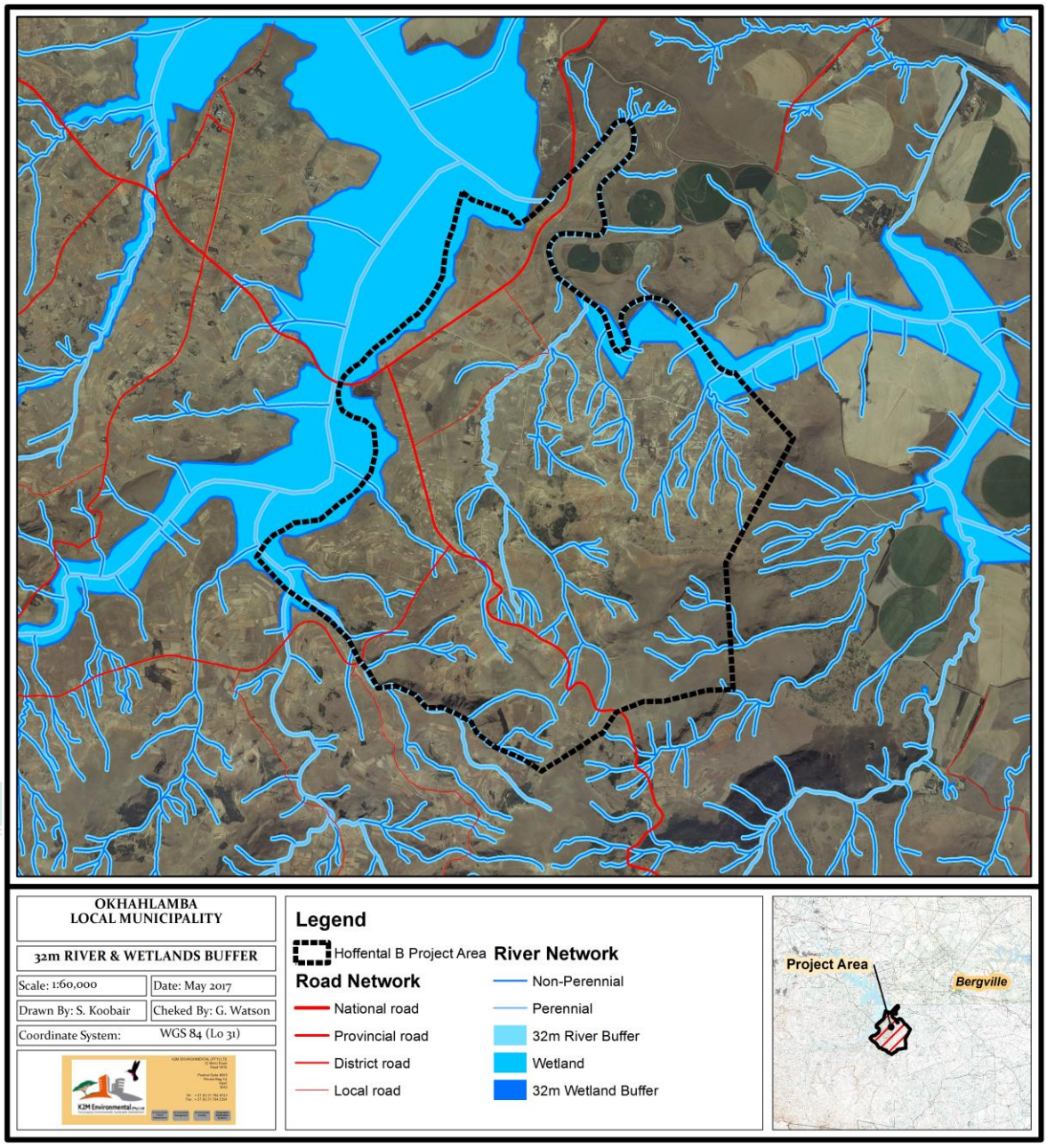
Map 5.4: River Network



The noted water courses within the proposed development area, whether perennial or non-perennial, are subject to periodic flooding depending on the rainfall and subsequent runoff at any point in time, either within or upstream of the specific catchment area. Therefore, in terms of the National Water Act, as well as other applicable development legislation, these areas are subject to a 1:100 year flood line restriction as far as any form of formal development is concerned.

The nature of the settlement pattern and topography of the area has however resulted in most of the beneficiaries tending to settle and develop their traditional houses along hill tops, ridges, saddles and valley lines, etc. Furthermore, in some instances, households have been handed down from one generation to the next, and therefore it is unlikely that a large number of these shelters would be located within areas conducive to periodic flooding. All new households to be constructed as part of the proposed development will however be located outside of the 1:100 year floodline, and where this 1:100 year floodline is not known, all new household structures will be located at least 32 m's away from the bank of any river or stream and wetland. This 32 m default floodline area has been demarcated on the Map 5.5 below.

Map 5.5: 32m Buffer from Rivers and Streams



5.5 AGRICULTURAL POTENTIAL

According to the Agricultural Land Potential Categories External Report, agricultural potential refers to, the potential of the land to produce sustainably over a long period without degradation to the natural resources base. This includes land under production for cultivation purposes (arable land) and for grazing purposes.

As indicated in Table 5.4 below and Map 5.6, majority (42.86%) of the project area is considered Category E (Very Low Potential). Cultivation within this land category is severely limited in both extent and in terms of the natural resources available. Land within this Category however may have a high conservation or tourism status, depending on the locality, or may act as a buffer for a higher Category of adjacent land (Collett and Mitchell, 2013).

Approximately 36.88% of the project area can be can be classified as Moderate Agricultural Potential and can be found throughout the project area. Land with moderate agricultural potential would be required to achieve viable and sustainable food production, although agriculture is the still the majority land use in the rural landscape (Collett and Mitchell, 2013)

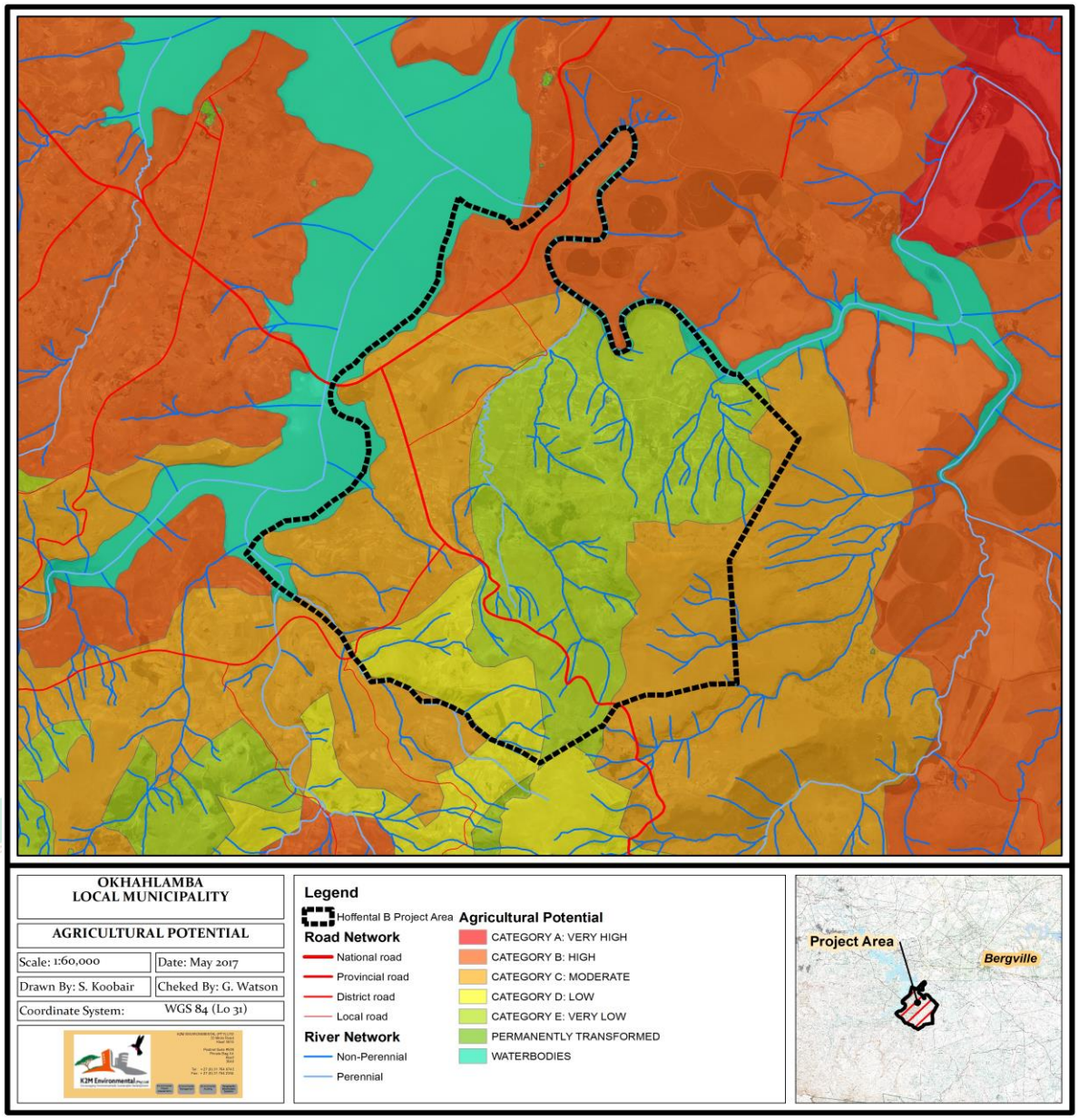
This Category is more limited in the extent of arable land available for cultivation. These areas are more suitable for extensive grazing, the production of fodder crops in support of livestock production, and, from a natural rangeland grazing perspective, additional feed may be required during winter months to supplement the seasonal grazing provided by existing rangeland (Collett and Mitchell, 2013).

Table 5:4: Agricultural Potential

Agricultural Potential	Area (Ha)	Percentage of Total Area
Category B: High	190.69	7.33%
Category C: Moderate	959.64	36.88%
Category D: Low	219.49	8.44%
Category E: Very Low	1115.09	42.86%
Permanently Transformed	0.40	0.02%
Waterbodies	116.60	4.48%
Total Area	**2601.91**	**100.00%**

Source: DARD, 2016

Map 5.6: Agricultural Potential



5.6 VEGETATION

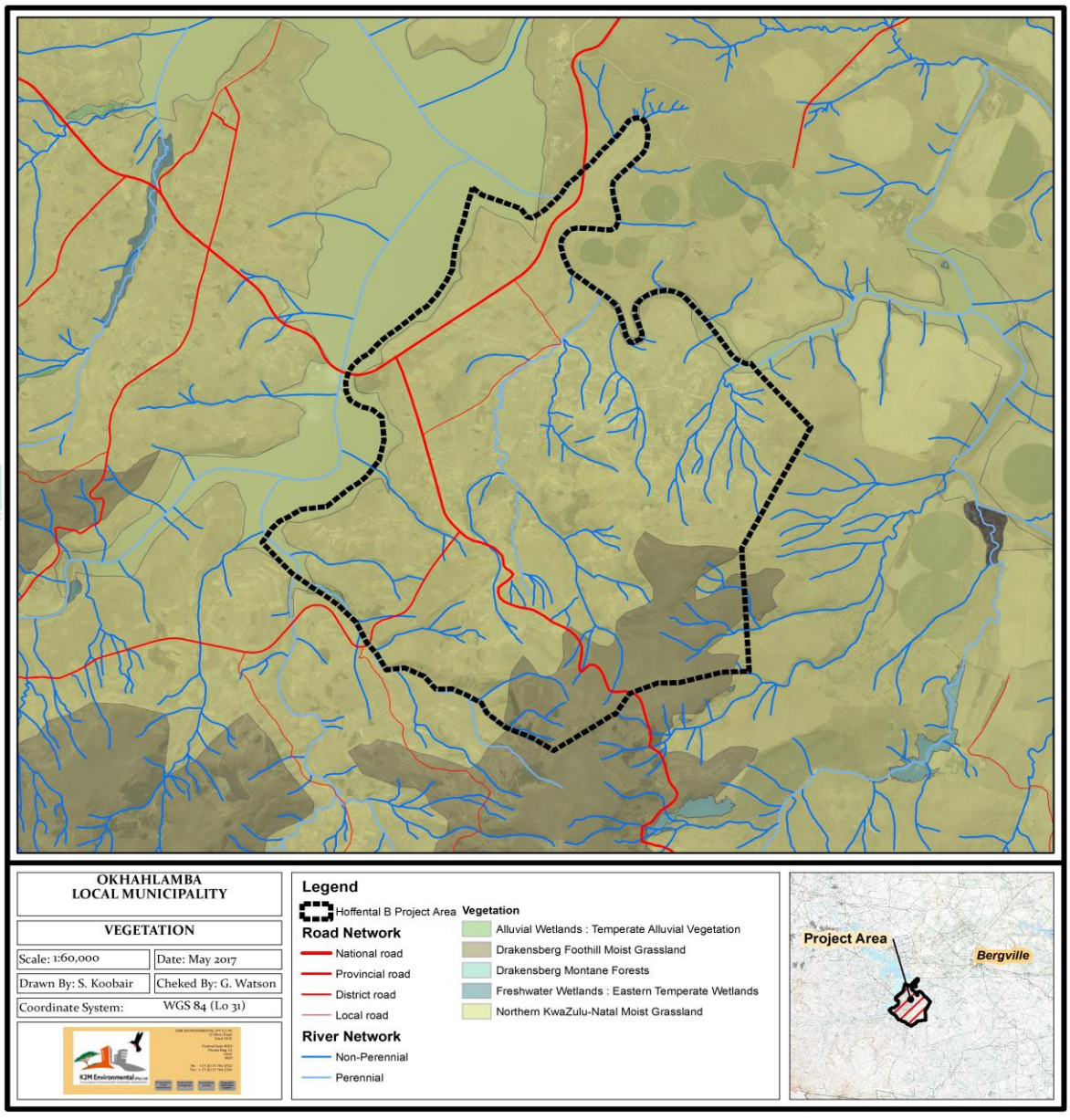
The Hoffental B Rural Housing project area is characterised by 4 vegetation types. The most predominant type is the “Northern KwaZulu- Natal Moist Grassland” and covers approximately 87.10% of the project area.

Table 5:5: Vegetation

Vegetation	Area (Ha)	Percentage of Total Area
Alluvial Wetlands: Temperate Alluvial Vegetation	3.30	0.13%
Drakensberg Foothill Moist Grassland	332.22	12.77%
Drakensberg Montane Forests	0.05	0.00%
Northern KwaZulu- Natal Moist Grassland	2266.34	87.10%
Total Area	**2601.91**	**100.00%**

Source: Musina and Rutherford, 2006

Map 5.7: Vegetation



The dominant vegetation groups have been generally discussed below:

5.6.1 Northern KwaZulu- Natal Moist Grassland (Mucina and Ruthford, 2006)

The Northern KwaZulu- Natal Moist Grassland is distributed mainly in Northern and Northwestern regions of the Province, where it forms a discontinuous rim around the upper Thukela Basin and is situated almost entirely within the catchment of the Thukela River. The most extensive areas are in the vicinity of Winterton, Bergville, Fort Mistake, Dannhauser, Dundee, north of Ladysmith and west of Newcastle. Altitude 1 040-1 440 m.

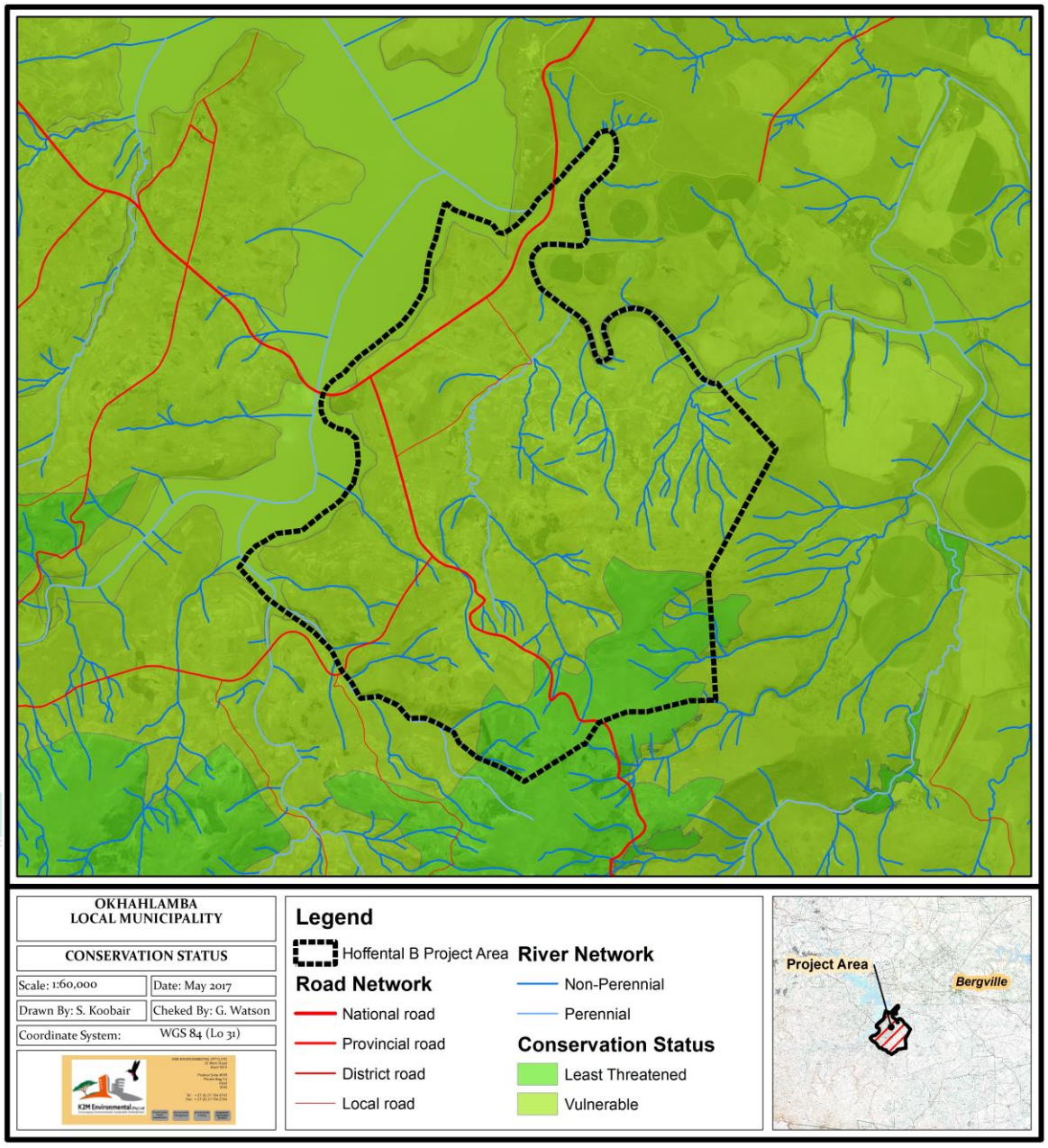
The Northern KwaZulu- Natal Moist Grassland is classified as hilly and rolling landscapes supporting tall tussock grassland usually dominated by Themeda triandra and Hyparrhenia hirta. Open Acacia sieben'anavar. woodi; savannoid woodlands encroach up the valleys, usually on disturbed (strongly eroded) sites. Sandstones and shales of the Beaufort and Ecca Groups of the Karoo Supergroup predominate and are intruded by dolerites of Jurassic age.

The Northern KwaZulu- Natal Moist Grassland vegetation category occurs in areas characterized as receiving summer rainfall with a little rain in winter, with a mean annual precipitation of about 840 mm, mainly as summer thunderstorms. Mist occurs frequently on hilltops in spring and early summer, but summer droughts are also frequent. Summers are warm to hot, with maximum temperature recorded in the hottest month of January (27.8°C). Frosts are severe and occur about 20 days per year.

5.7 CONSERVATION STATUS

Map 5.8 indicates the conservation status for the vegetation types present within the project area. The Conservation Status is determined by comparing the amount of natural habitat remaining in the project area with the biodiversity conservation target of the Vegetation Type. As indicated below, majority of the project area is regarded as vulnerable.

Map 5.8: Conservation Status



5.8 CRITICAL BIODIVERSITY AREAS

The Critical Biodiversity Areas (CBAs) can be divided into two subcategories, namely Irreplaceable and Optimal. The CBA categories are based on the optimised outputs derived using systematic conservation planning software, with the Planning Units (PU) identified representing the localities

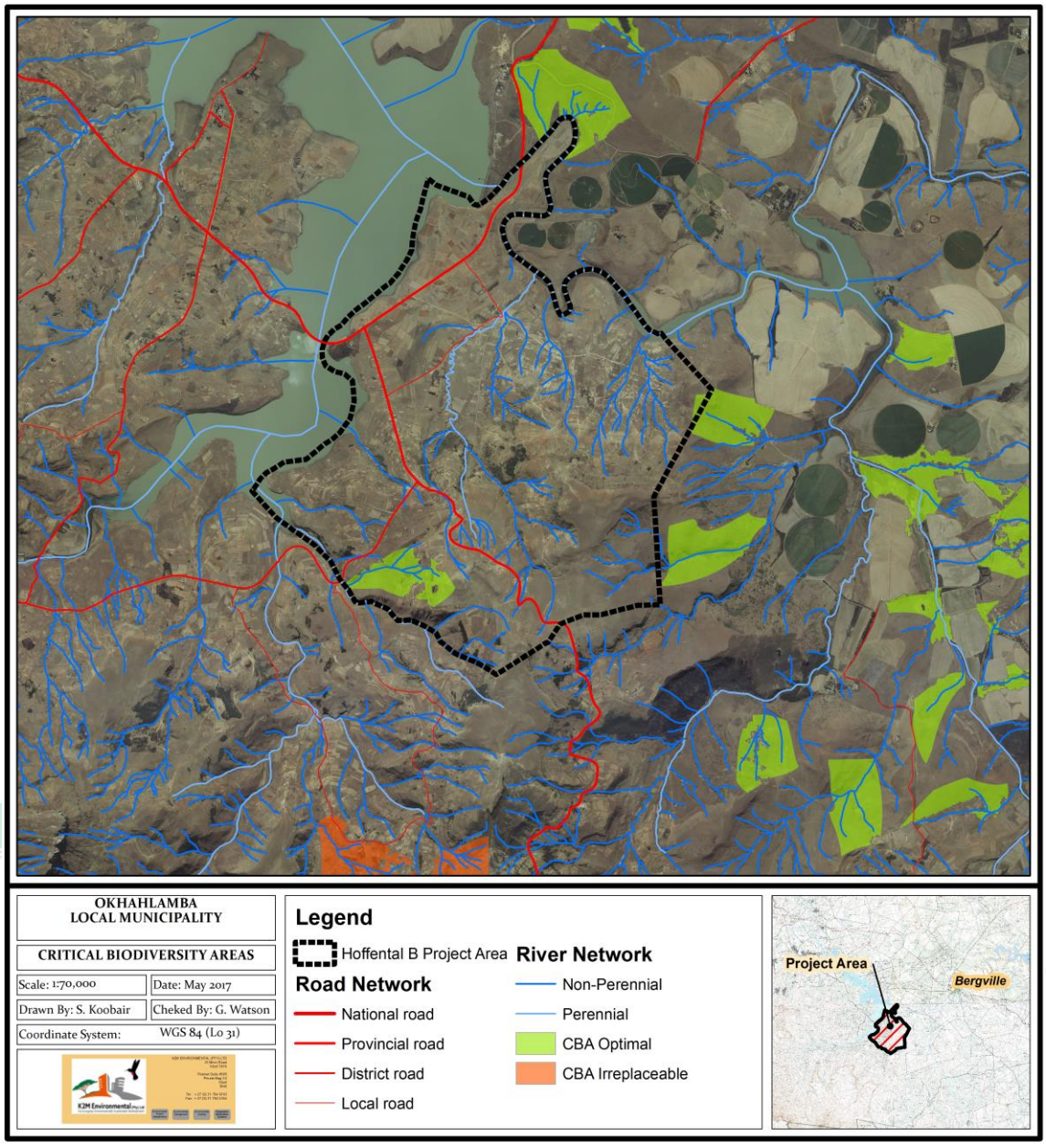
for which the conservation targets for one or more of the biodiversity features contained within can be achieved.

The CBA Irreplaceable Areas represent the localities for which the conservation targets of one or more of the biodiversity features that can be achieved. These areas are considered critical for meeting biodiversity targets and thresholds, and which are required to ensure the persistence of viable populations of species and the functionality of ecosystems. The CBA: Irreplaceable Areas are identified as having an Irreplaceability value of 1.

The CBA: Optimal Areas are areas which represent the best localities out of a potentially larger selection of available PU's that are optimally located to meet both the conservation target but also the criteria defined by either the Decision Support Layers or the Cost Layer. The CBA Optimal Area has an Irreplaceability score of>0 and<0.8.

As indicated on Map 5.9 there is a portion of CBA: Optimal located in the southern section of the project area. **It should be noted that the proposed rural housing development is an in-situ project and will therefore only entail the construction of houses within existing homestead/iMuzi areas and will therefore not have a negative impact on the CBAs. Care should however still be taken to ensure no areas adjacent to the existing iMuzi's are impacted on.**

Map 5.9: Critical Biodiversity Areas

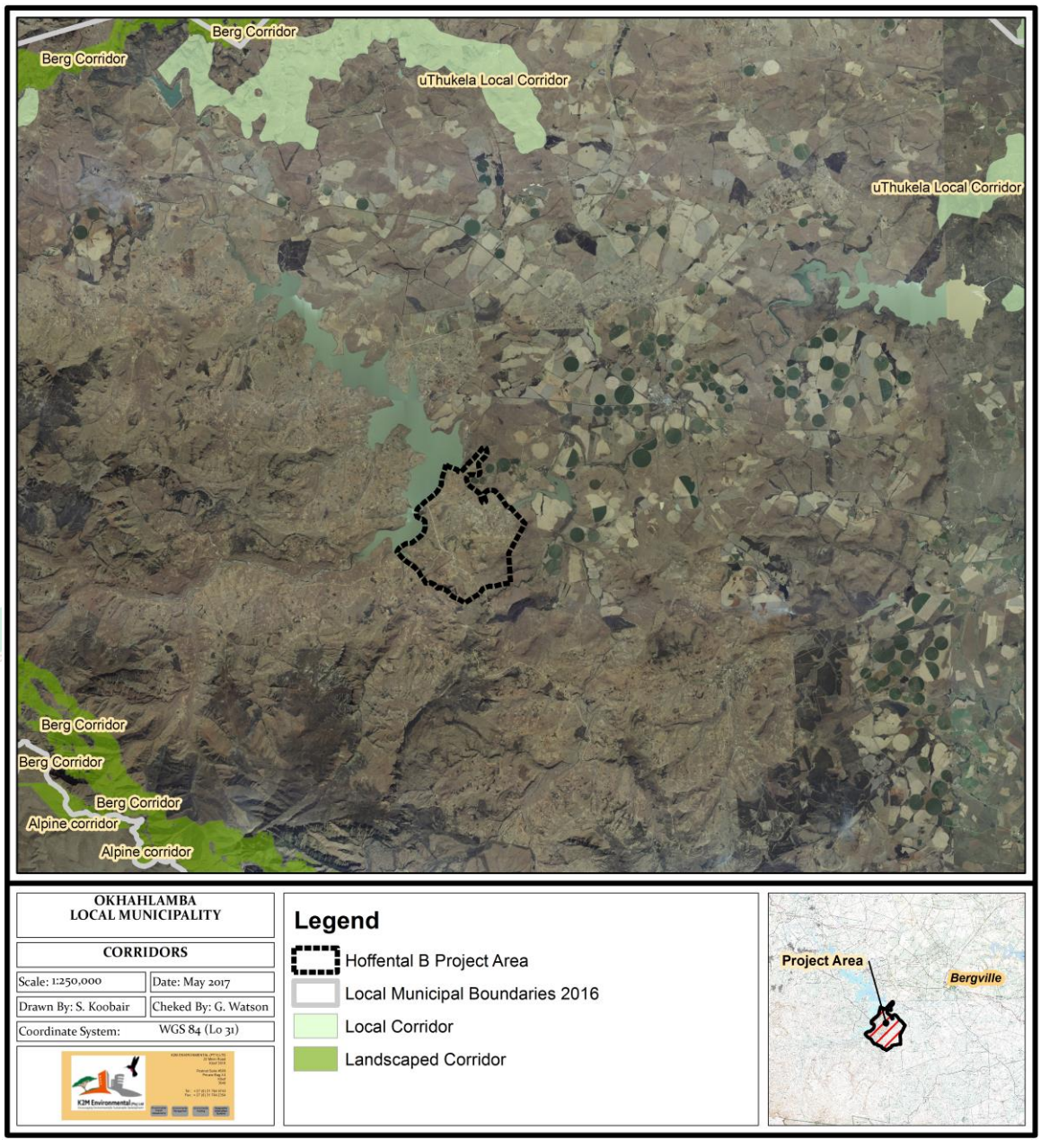


Source: Ezemvelo KZN Wildlife, 2016

5.9 ECOLOGICAL CORRIDORS

As indicated on Map 5.10, there are no corridors within the project area. The closest corridor is the Berg Corridor which is approximately 15km south of the project area.

Map 5.10: Ecological Corridors

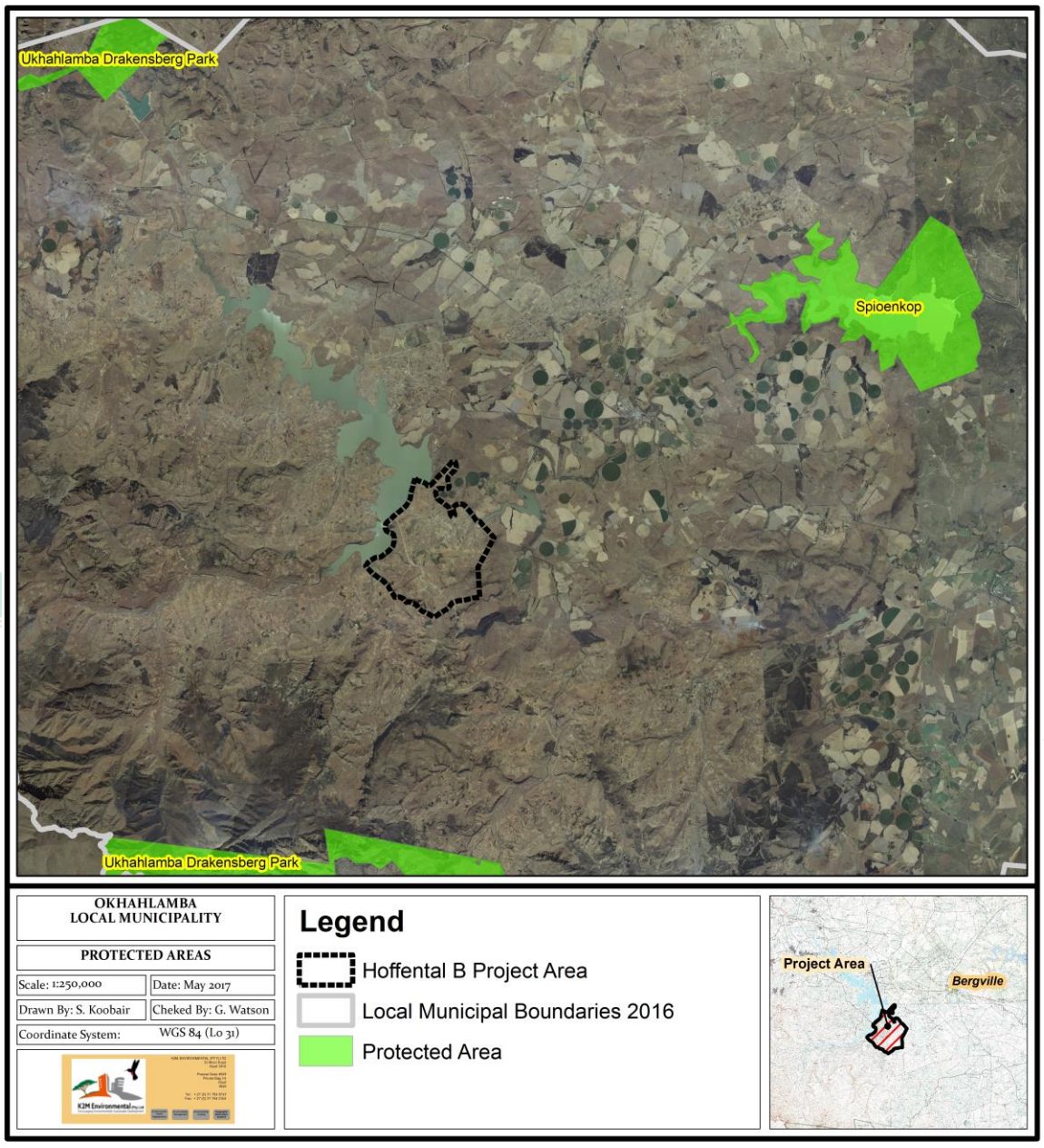


Source: Ezemvelo KZN Wildlife, 2016

5.10 PROTECTED AREAS

There are no protected areas within the project area. The closest protected area is the Ukhahlamba Drakensberg Park which is approximately 12km south of the project area.

Map 5.11: Protected Areas



Source: Ezemvelo KZN Wildlife, 2016

5.11 MINERAL DEPOSITS

There are no known mineral deposits occurring within the boundary of the Hoffental B Rural Housing project area and no known minerals occur within close proximity to the project area.

5.12 ARCHAEOLOGICAL, HISTORICAL AND CULTURAL SITES

No detailed information is currently available on existing archaeological, historical or cultural sites within the boundaries of the study area. The KwaZulu-Natal Heritage Act requires that AmafaAkwazulu-Natali (Heritage KwaZulu Natal) is to comment on the need for an archaeological assessment for proposed development if:

- Development area is larger than 10 000m²
- Development is longer than 300m
- The development area contains known archaeological sites.

However due to the fact that the proposed project constitutes an in-situ type upgrade, it is not expected that the implementation and operation of the proposed project will result in any new adverse impacts on any archaeological, historical or cultural sites which may be present within the area. Documentation will however be submitted to AMAFA for their comment.

6 EXISTING SETTLEMENT PATTERN

The project area is approximately 2 601.91Ha in extent and is located on a portion of Ward 4 the Okhahlamba Local Municipality. The Hoffental B project area is bordered by the remainder of Ward 10 and 12 to the North, Ward 12 to the East, the Woodstock Dam to the West and Ward 3 to the South. The overall population for the Hoffental B Rural Housing project area is approximately 2 866 persons which resides in approximately 562 households within the project area.

The project area's leadership has the right to allocate residential sites to members of their Traditional Authority within the proclaimed Hoffental B Rural Housing area. Each family is then permitted to build their own houses on these allocated sites, which are referred to as "iMuzi's". These iMuzi's comprise of a combination of a number of familial homesteads which are grouped together and constructed in close proximity to one another on the same "communal" patch of land, with patches of cultivated subsistence land which are made use of for subsistence agricultural purposes which are generally located adjacent to and around the homestead areas. Due to the fact that Zulu culture permits men to have more than one wife, this iMuzi settlement pattern is beneficial with regard to polygamous families, where one male may reside in an iMuzi with his various wives and their associated families. When children of the families reach adulthood, they then generally build their own homesteads within the very same iMuzi. These homesteads also get passed down from one generation to the next.

Followers of traditional Zulu culture generally bury their dead within the iMuzi area. Such a practice results in residents being very reluctant to leave their traditional iMuzi areas to relocate to a new area, as their ancestors and loved ones would be left behind.

While most iMuzi's occurring within the project area had areas of land adjacent to their iMuzi which were cultivated and/or planted to be made use of for subsistence purposes, the land throughout the area is available to all its residents for communal livestock to graze on.

The project area is largely characterized by scattered medium to low density traditional rural iMuzi settlements. While homesteads incorporating a mix of round and rectangular structures constructed making use of both traditional (mud brick, wattle and daub, thatch roof) and more modern (cement grouted concrete blocks and corrugated iron roof) materials and techniques were observed within the project area, the vast majority of the homesteads encountered were of a traditional nature comprising of traditional homesteads constructed making use of traditional materials and traditional techniques.

The spatial distribution of households across the area seems to be determined by a number of influencing factors which will be discussed accordingly below:

- The settlement pattern across the project area to a large extent correlates with the existing District and Provincial Road network that provide access to the project area.

- Another important influencing factor regarding the spatial distribution of residents relates to the terrain of the Hoffental B Rural Housing Project area. The slope analysis study indicates that the majority of the project area (36.77%) is characterized by slopes that are "Flatter than 1:20". Approximately 17.71% of the area's topography has a slope character "Between 1:20-1:10" while 15.13% of the project area is characterised by slopes "Between 1:5-1:3". Due to the traditional methods used in the construction of homesteads, and the difficulty associated therewith, the majority of residents residing within the Hoffental B Rural Housing project area have developed their iMuzi's in easier accessible areas, with only a proportion opting for areas characterized by steeper slopes.

- A number of perennial and non-perennial river and stream networks traverse the project area. Aspects such as river networks are an influencing factor with regards to the settlement distribution of the project areas homesteads. Whereas previously the area may not have been adequately catered to with regards to water services and water infrastructure, residents would have traditionally relied predominantly on rivers and streams for their water needs. Historically, residents' dependence on water obtained from rivers and streams located within the area would have been an influencing factor with regards to their households' location. Households would therefore be located within close enough proximity to nearby rivers and streams but predominantly outside of low-lying, flat areas which may have been characterized by periodic flooding.

The spatial distribution of households within the project area is therefore influenced by a number of cultural, historical and natural features. It is important to note however that the spatial distribution of beneficiaries may pose a limiting factor with regards to the implementation of the proposed project. Those households which are located on steep slopes for example may be excluded from the beneficiary list for the project. Furthermore, due to the Zulu culture regarding the burying of one's deceased family members within the iMuzi area may result in households being reluctant to move in order to benefit from the proposed project and such households may also be excluded from the proposed project. Similarly, due to legislative constraints, those households which are located within the stipulated 32m buffer of all river, streams and wetlands will also be omitted from the Hoffental B Rural Subsidised Housing development. The proposed projects "in-situ" type

nature therefore implies that the existing settlement plan and spatial distribution of households may have repercussions with regards to the implementation of the proposed project. Such a notion would therefore require greater attention during the implementation phase of development. The “in-situ” type nature of the development is however very beneficial from an environmental perspective, this is due to the fact that the only construction activities associated with the project would occur within already established iMuzi’s, and therefore no new/additional areas will be impacted upon as a result of the implementation and operation of the Hoffental B Rural Subsidised Housing development.

7 SUMMARY AND RECOMMENDATIONS

As indicated in the Introduction and Background to this report, the exact extent of the housing project in terms of the application of the subsidies for the purposes outlined in the housing code, and the exact spatial location and distribution of beneficiaries within the broader study area are currently not specified. What is however known is that the total number of households in need of housing (including those residing in traditional houses constructed of traditional materials, backyard structures or informal structures) is approximately 62.81%. The purpose of this preliminary assessment is thus to provide a brief overview of the social, economic, biophysical and infrastructural characteristics of the broader area within which this total estimated housing need will have to be addressed.

7.1 SOCIO-ECONOMICASPECTS

A number of important aspects and recommendations relating to the **socio-economic characteristics** of the study area include:

- Approximately (44.90%) of the total population of the study area is younger than 15 years of age. This implies two important aspects as far as the development and implementation of the proposed housing project is concerned:
  - Sufficient and appropriate education facilities according to accepted national norms and standards will have to be provided.
  - A large number of people will be entering the economically active age category over the next five to ten years and will thus be seeking appropriate employment opportunities.

- The study area is characterized as being female dominated with the majority of approximately 54.05% of the project area's total population being represented by females. Measures with which to ensure gender equality will thus have to be implemented as part of the proposed projects development phase.

- According to the figures, approximately 15.46% of the population of the project area have not undergone any form of schooling. The figures also suggest that 20.20% of the

population completed some form of primary school and 6.42% completed primary school (Grade 7). The figures indicate that 28.96% of the population completed some form of secondary school, 28.21% completed matric and 16.20% had the opportunity of furthering their education.

- The information depicted in Section 3 indicated that households are potentially in need of formalized housing is 62.81%. Furthermore, there are a number of households that are expected to qualify for housing subsidies in terms of their income profile. The proposed housing development could thus make a significant positive contribution towards the overall living conditions of the study area beneficiaries.

- Affordability levels in the study area are very low with approximately 53.48% of all households earning less than R 1600 per household per month, whilst 12.66% have no form of income.

- Approximately 63.22% of the adult economically active population within the study area indicated to be unemployed, whilst 20.81% indicated that they were employed and 15.97% indicated that they were discouraged work seekers.

7.2 SERVICES ASPECT

A number of important summary observations regarding the **services characteristics** of the study area population include:

- The figure shows relatively good access to running water in the project area with 6.58% of the total number of households having access to piped water “inside dwelling” and 3.91% having piped water “inside the yard”. Approximately 46.09% of households within the project area have to walk less than 200m to get water (which includes piped water inside dwelling and yard), whilst 10.32% of households have to walk more than 200m to get water. Approximately 43.06% of households within the study area make use of boreholes, and 2.14% utilise water from a river or stream.

- Approximately 96.08% of households have the “unimproved pit latrines” and 1.03% have the “improved pit latrines”. The figures indicate that 0% of households in the project area

use flush toilets connected to a sewer system, 0% use flush toilets connected to a septic tank and 2.27% make use of chemical toilets.

- During the time of the survey, 89.86% (the majority) of households within the project area indicated that they used electricity as a source of lighting, whilst 8.90% utilized candles.

- As much as 63.17% of the total number of households within the project area indicated that they make use of their own refuse dump, be it pit holes in the yard or in close proximity to the house.

7.3 INFRASTRUCTURAL ASPECTS

A number of important summary observations regarding the **infrastructural characteristics** of the study area population include:

- There are 2 provincial roads, 1 district road and 1 local road that traverses the project area.

7.4 BIO-PHYSICAL ASPECTS

As far as the **biophysical characteristics** of the study area are concerned, the key aspects can be summarized as follows:

- The current land use is predominantly agriculture together with low to medium dense households as well as cattle grazing.

- The dominant land cover within the study area is described as “Cultivated: temporary - semi-commercial/subsistence dryland” and covers approximately 47.97% of the total land area of the project area.

- The majority of the project area (36.77%) is characterized by slopes that are “Flatter than 1:20”. Approximately 17.71% of the area’s topography has a slope character “Between 1:20-1:10” while 15.13% of the project area is characterised by slopes “Between 1:5-1:3”.

- The area is traversed by a number of perennial and non-perennial water courses comprising of rivers and streams. All new household structures will be located at least 32 m’s away from the bank of any river, wetland or stream.

- There are FEPA wetlands within the project area.

- Majority (42.86%) of the project area is considered Category E (Very Low Potential).

- The Hoffental B Rural Housing project area is characterised by 4 vegetation types. The most predominant type is the “Northern KwaZulu- Natal Moist Grassland” and covers approximately 87.10% of the project area.

- There are CBAs within the southern section of the project area.

- There are no corridors within the project area. The closest corridor is the Berg Corridor which is approximately 15km south of the project area.

- There are no protected areas within the project area. The closest protected area is the Ukhahlamba Drakensberg Park which is approximately 12km south of the project area.

- There are no known archaeological, cultural or historical sites or artefacts located within the Hoffental B Rural Housing project area. Due to the “in-situ” type nature of the proposed project, should any sites or artefacts of archeological, cultural or historical significance be located within the project area, it is not expected or anticipated that these will not be impacted upon as a result of the proposed development. The Developer is however aware of his responsibilities with regards to the Amafa Heritage Act.

- No detailed quantifiable information is currently available on various forms of pollution in the study area. A number of important observations can however be made in this regard:

- Elevated levels of air pollution, especially during the winter months, are common in the area due to the extensive use of firewood and fossil fuels for heating and cooking purposes.

- High levels of environmental pollution are evident resulting from the absence of any form of waste collection and management system within the area.

7.5 EXISTING SETTLEMENT ASPECTS

As far as the **settlement characteristics** of the study area are concerned, the key aspects can be summarized as follows:

- The area is generally classified as “Cultivated: temporary - semi-commercial/subsistence dryland”.

- The project area is characterized by a low density scattered rural iMuzi settlement.

- Residents are generally reluctant to move or relocate due to the fact that they bury their dead within their familial iMuzi.

- The majority (36.77%) is characterized by slopes that are “Flatter than 1:20”. Approximately 17.71% of the area’s topography has a slope character “Between 1:20-1:10” while 15.13% of the project area is characterised by slopes “Between 1:5-1:3”.

7.6 RECOMMENDATIONS

Based on the existing available desktop overview, it does not appear as if there are any material barriers to the proposed rural housing development from an environmental impact perspective. The specific impacts which can be anticipated and may have to be managed during the implementation phase will only be known once the exact project extent, location and characteristics have been finalized. Some potential mitigation measures include the following:

- Remove invasive alien vegetation at the project sites
- Soil erosion on site must be prevented during the pre-construction, construction and operational phases.
- Suitable erosion control measures must be implemented in all areas potentially sensitive to erosion such as near water supply points edges of slopes etc.
- Ventilated improved pit toilets must be located away from drainage lines, boreholes and natural springs and at a sufficient distance from the 1: 100 year flood line in watercourses.
- AmafaAkwazulu Natali (Heritage KwaZulu-Natal) has to comment on the need for an archaeological assessment for the proposed development according to Section 27 of the KwaZulu-Natal Heritage Act, No. 10 of 1997.
- A solid waste management plan must be formulated for the areas addressing aspects such as the collection, sorting, recycling and disposal of waste.
- Provision of litter containers in public places to address the litter problem.
- No development is to take place within the 32m buffer of rivers, streams and wetlands.
- No development is to take place on slopes that are steeper than 1:3.

7.7 LEGISLATIVE REQUIREMENTS

Possible considerations from a legislation point of view are briefly summarized in the table below.

Act [1]	Section [1]	Summary of requirement [1]	Implication for project
National Water Act (Act 36 of 1998) and regulations	S21, 32, 41	"Water use" in terms of the Act includes "impeding or diverting the flow of water in a watercourse" and "altering the bed, banks, course or characteristics of a watercourse". Department of Water Affairs and Forestry will require water licences for all water uses unless the water use is an "existing lawful water use", or it is a permissible water use in terms of the Schedule 1 of the Act or can be generally authorized. It is advised that the Department of Water Affairs and Forestry be consulted as to their licensing requirements for each development. Licences are not required where water is obtained from the local council or another bulk water supplier.	If part of the rural housing subsidy will be utilized for the provision of water the necessary permits will have to be obtained from the Department of Water Affairs and Forestry (depending on the existing water service authority and water service provider arrangement in the area)
	S144	A person is prohibited from establishing a township unless the layout plan shows, in a form acceptable to the local authority, the 1/100 year flood level, for the purposes of ensuring that all persons who might be affected have access to information regarding potential flood hazards.	Depending on the exact location of the housing components, a 1/100 year floodline will have to be determined.
Water Services Act (Act 108 of 1997)	S6	Access to water services must be through a nominated water services provider, failing which approval should be obtained from the water services authority.	Applicable if water provision will form part of the subsidy application.
Water Services Act (Act 108 of 1997)	S7	Water for industrial use must be obtained through a nominated water services provider and no person may dispose of industrial effluent in any manner other than that approved by the water services provider nominated by the water services authority having jurisdiction in the area of question.	It is not anticipated at this stage that any industrial development will form part of the rural housing development project.
Environmental Conservation Act (Act 73 of 1989)	S20	Waste must be disposed of at a waste disposal facility licensed in terms of the provisions of the Act. Any hazardous waste such as paints, varnishes, waste oils etc accumulated at the construction sites must be disposed of at hazardous waste	A waste disposal license for a waste dump will be required if a formal waste collection and removal system is implemented as part of housing

		sites. If waste dumps are established for housing developments, a waste disposal license will be required from the Department of Water Affairs and Forestry.	project. Waste which is may be generated during the construction process, will have to appropriately disposed of.
National Building Regulations and Building Standards Act (Act 103 or 1997) and Regulations	Reg F6 of Part F	No person may on specified days and during specified times generate noise from a construction site which may unreasonably disturb or interfere with the amenity of the neighborhood, unless authorized to do so by the local authority.	Appropriate specifications will have to be included in the tender documentation
National Heritage Resources Act (Act 25 of 1999)	S34	No person may alter or demolish any structure or part of a structure that is older than 60 years without a permit issued by the relevant provincial heritage resources authority	The existence of graves, archaeological or palaeontological sites will have to be further investigated, once the exact location of the housing project components is known.
	S35	No person may, without a permit issued by the responsible heritage resources authority destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site.	
	S36	No person may, without a permit issued by the South African Heritage Resources Association or a provincial heritage resources authority, destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by the local authority. "Grave" is widely defined in the Act to include the contents, headstone or other marker of such a place, and any other structure on or associated with such place.	
National Forest Act (Act 84 of 1998)	CH 3 Part 1	There is a prohibition against damaging or cutting protected indigenous trees unless a license has been obtained or an exemption has been published in the Government Gazette.	Indigenous trees will have to be protected, where possible, during the implementation phase of the project
Conservation of Agricultural Resources Act (Act 43 of 1983 and GN R1048)		This regulation requires the control of weeds and invader plants, which occur on any land or inland water surface in SA. Category 1 plants are declared weeds and may only occur in biological control reserves. Category 2 plants are declared invader plants and may only occur in demarcated areas and biological control reserves. Category 3 plants are declared invader plants and may occur in biological control reserves. All weeds and invader plants not within the demarcated areas or biological control reserves must be eradicated and control methods are stipulated	Weeds and invader plans should be eradicated if occurring at the final project location.
National Building Regulations and Building Standards Act (Act 103 of 1997) and Regulations R2378	Reg F6 of Part F	The owner of any land on which excavation work is in progress must take precautions in the working area and on surrounding roads and footways to limit to a reasonable level the amount of dust arising from these areas.	Appropriate stipulations should be included in the tender documentation for construction.
Minerals Act (Act 50 of 1991)	S 5 and 9	No person may prospect or mine for any mineral without the necessary authorization granted to him in accordance with the provisions of the Minerals Act (Act 50 of 1991). Should construction material be excavated from borrow pits, the provision of the Minerals Act, are applicable and the Department of Minerals and Energy needs to be contacted in order to determine their requirements in this regard.	If any borrow pits are to be excavated during the construction process in the implementation phase, the necessary permits will have to be acquired from the Department of Minerals and Energy

[1] National Department of Housing – Environmental services for Housing developments

8 CONCLUSION

In view of the summary conclusions outlined above, as well as the fact that the project entails the construction of new houses within the boundaries of existing iMuzi's (in-situ upgrading), it is our view that the project will not impact negatively on the environment. The project will in fact provide suitable living conditions to the rural community and contribute to Rural Development.

It should be noted that from past experience on similar projects, Environmental Authorisation was not required. There will be no construction of roads and no development within 32m of any watercourse. It is important to ensure that no listed activities are triggered during construction. Specific attention needs to be paid to the following activities that could be triggered if contractors are not made aware of it:

Table 8:1: Activities that may be triggered without proper monitoring

Listed Activities	Listed Activities	Potential to be Triggered
Activity 19 of GNR 983	The infilling or depositing of any material of more than 5 cubic meters into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock from *(i) A watercourse*	Temporary access to the project area might be through a stream. Therefore, no crossings of watercourses are permitted. There are to be no sanding wining activities that are to take place within the rivers or river beds.
Activity 12 of GNR 983	The development of. (x) Buildings exceeding 100 square metres in size; where such development occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, Excluding where such construction will occur behind the development setback line.	Although each imuzi to be constructed will be 42 square metres, the cumulative impact will be larger than 100 square metres hence no development is to take place within 32m of any watercourse.