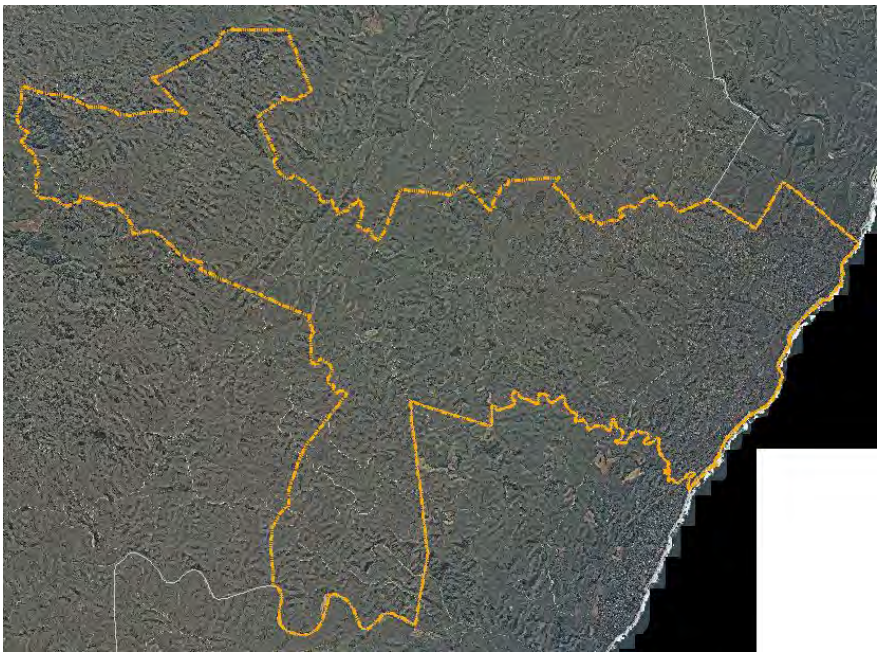
UMZUMBE A RURAL SUBSIDISED HOUSING DEVELOPMENT

PRELIMINARY ENVIRONMENTAL ASSESSMENT



MAY 2014

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1 INTRODUCTION

1.1 PROJECT BACKGROUND

The Umzumbe Local Municipality has, through its IDP process, and extensive consultation with respective beneficiary communities residing within the Umzumbe Local Municipality (LM), 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 municipality's 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 on Ingonyama Trust Land 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 Umzumbe A Rural Subsidised Housing Project is aimed at providing suitable housing to beneficiaries residing in Wards 10, 16, 17, 18, and 19 of the Umzumbe Local Municipality. The project area includes land falling under the rule of the Hlongwa, Thulini, Qwabe and Ndelu Tribal Authorities and some areas are privately owned which make-up Wards 10, 16, 17, 18, and 19 of the Umzumbe Municipality. The project shall be titled and referred to as the "Umzumbe A Rural Housing Project/ Project Area" for the purpose of easy reference in report writing.

All rural subsidised housing development projects require that a Preliminary Environmental Assessment study be conducted, as part of the initial rural housing application. This document provides a preliminary 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 has not yet been specified, it is known that the proposed Rural Subsidised Housing project will result in the construction of approximately 2 000 new top structures within the project area, and will therefore service approximately 2 000 beneficiaries and their associated families. This document thus provides a preliminary overview of

factors that are relevant to the broader study area, while taking into account the existing settlement pattern and distribution.

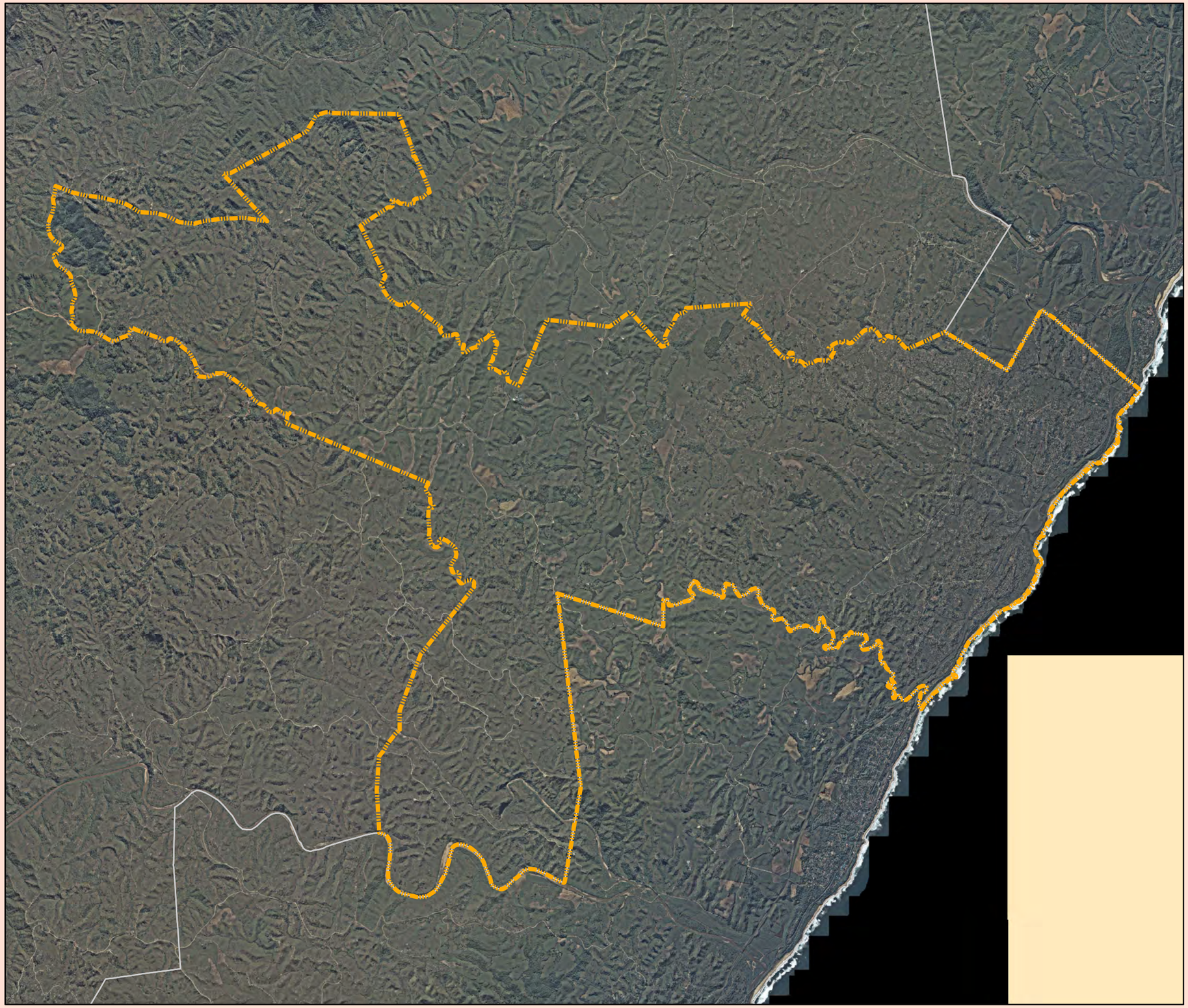
According to Chapter 11 of the National Housing Code, rural housing subsidies may be used for any purposes which, in the discretion of the Housing Board, amount to housing purposes. Without limiting the discretion of any particular Housing Board, the following purposes may be regarded as housing purposes:

- 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 Umzumbe Local Municipality and is situated on Wards 10, 16, 17, 18, and 19. The Umzumbe LM is one of six local municipalities making up the Ugu District Municipality of southern KwaZulu-Natal. The total extend of the project area is approximately 12 313.9 Ha. The settlements are characterised by relatively poor communities but the area seem relatively well serviced in terms of infrastructure provision (access roads, water supply, sewers, power grids, telecommunications etc.).

The Umzumbe A project area accounts for approximately 0.77% of Umzumbe Municipal land. The total population of the Umzumbe Local Municipality, as recorded in the Census 2011 is estimated at 160 975 persons while the overall population of the Umzumbe A Rural Housing project area is approximately 51 006 persons which resides in approximately 10 814 households within the project area. The location of the project area, relative to the Umzumbe LM, is depicted in the attached thematic map.



UMZUMBE LOCAL MUNICIPALITY

UMZUMBE A PHASE 2 RURAL SUBSIDISED HOUSING DEVELOPMENT

PROJECT AREA

LEGEND:

- uMzumbe A Phase 2
- Local Municipal Boundaries

LOCALITY MAP:

SCALE :
0 0.5 1 2 3 Kilometers
1:80 000

N

DATE : MAY 2014

MAP REFERENCE/ VERSION NUMBER : Version 1

COORDINATE SYSTEM : Municipal WGS84 (Lo31)

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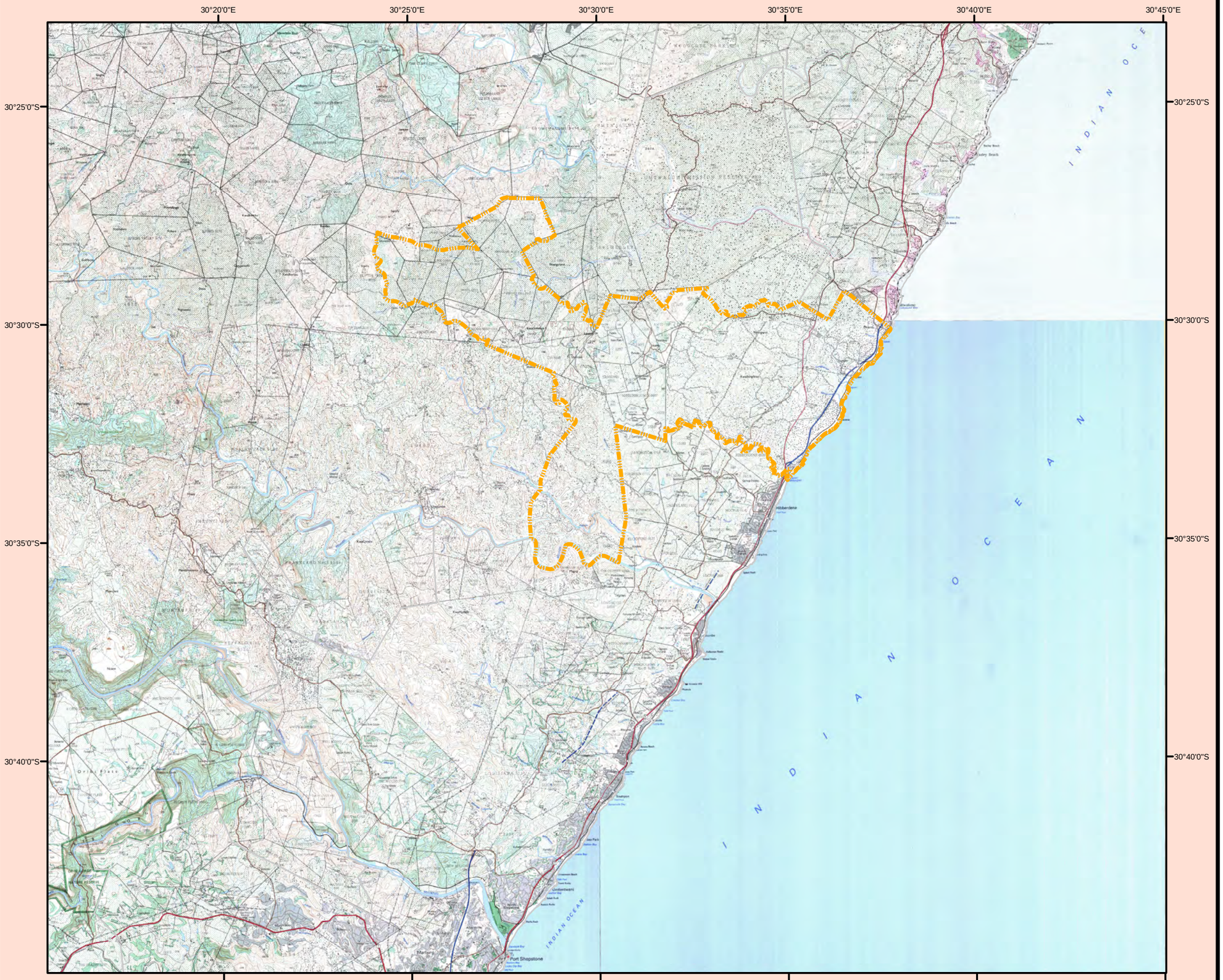
Environmental Impact Assessments | Environmental Management | Environmental Auditing | Geographic Information Systems

UMZUMBE LOCAL MUNICIPALITY

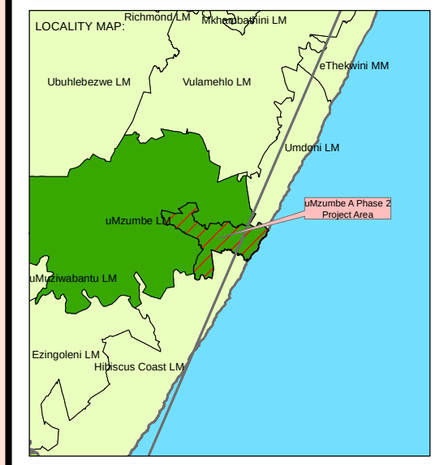
UMZUMBE A PHASE 2 RURAL SUBSIDISED HOUSING DEVELOPMENT

LOCALITY MAP



LEGEND:

- uMzumbe A Phase 2
- Local Municipal Boundaries



SCALE :
0 1 2 4 6 Kilometers
1:160 315

N

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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 2010, 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 2010 will require a Basic Assessment to be conducted while activities listed EIA Regulations Listing Notice 2 of 2010 will require a thorough EIA process which includes a Scoping Report and an Environmental Impact Assessment Report.

The Department of Agriculture and Environmental Affairs (DAEA) have in the pass 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 Agriculture and Environmental Affairs for projects of this nature. However a recent change in the Rural Housing Process methodology which focuses on the densification of areas and as such the establishment of greenfield sites will require Environmental Authorisation from the Department of Agriculture and Environmental Affairs.

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"* if not controlled. In terms of the Environmental Impact Assessment (EIA) Regulations Listing Notice 1, Listing Notice 2 and Listing Notice 3 of 2010, such activities are prohibited until written authorisation is obtained from the Minister or his delegated authority. Activities listed in EIA Regulations Listing Notice 1 (Gov. Notice

No. R544) and Listing Notice 3 (GNR R546) of 18 June 2010 will require a Basic Assessment to be conducted while activities listed EIA Regulations Listing Notice 2 (GNR R545) of 18 June 2010 will require a Full EIA process which includes a Scoping phase and an Environmental Impact Assessment phase. The development footprint of the Greenfield Sites will ultimately determine whether a Basic Assessment Process or a full EIA process should be undertaken. Should the development footprint be 20 hectares or less then only a Basic Assessment Report should be required, however should the development footprint be calculated as larger than 20 hectares then the full EIA process should be undertaken.

The purpose of this preliminary 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 Preliminary 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 DAEA 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 Preliminary 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 Umzumbe A Rural Housing project area. The summarized overviews of various aspects contained within the Preliminary 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 Umzumbe Local Municipality Integrated Development Plan 2012/2013; 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 Umzumbe A 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 cover, topography and drainage, floodline areas, soils,

geology, vegetation, Ezemvelo KwaZulu-Natal's C-Plan irreplaceability value, 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 Umzumbe A Rural Housing project area, and discusses some of the impacts associated there with. The project area (Hlongwa, Thulini, Qwabe and Ndelu Tribal Authorities with other sections falling under private ownership) covers Wards 10, 16, 17, 18, and 19 of the Umzumbe Local Municipality.

- **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

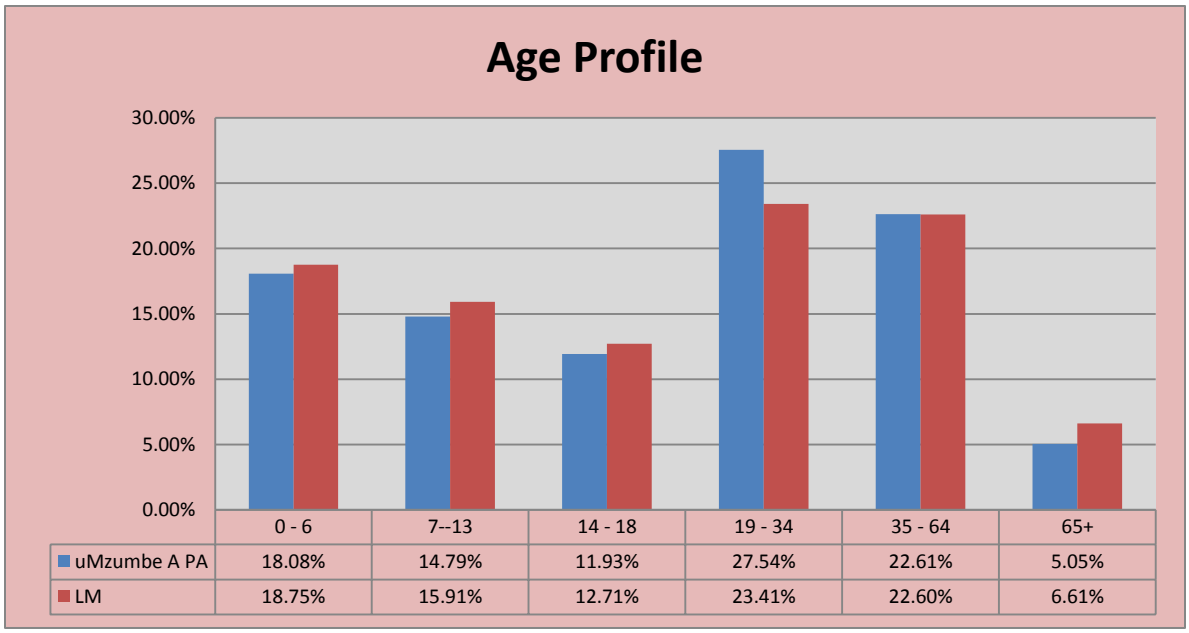
3.1 SOCIAL DEMOGRAPHIC CHARACTERISTICS

The figures illustrated below were prepared from the Census 2011 data and present a socio-economic overview of the study area. The Umzumbe A Rural Housing Project Area falls within the jurisdiction of the Umzumbe 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 51 006 persons and the population of the municipality is estimated at 160 975 persons. The population of the Umzumbe A Rural Housing project area accounts for 31.69% of the total population of the Umzumbe Local Municipality.

3.1.1 Age Profile

The age profile of the Umzumbe A Rural Housing (project area) and of the Umzumbe Local Municipality is depicted in Figure 3.1 below. It is clearly evident from the graph that a large proportion of the population (44.8%) of the project area are younger than the age of 19 years, which is slightly lower than the comparative municipal figure of 47.37%. A total of 27.54% are between the ages of 19 and 34 years, which is indicates that a large proportion of the economically active population can be classified as youth.

Figure 3.1: Age Profile



	0 - 6	7--13	14 - 18	19 - 34	35 - 64	65+
uMzumbe A PA	18.08%	14.79%	11.93%	27.54%	22.61%	5.05%
LM	18.75%	15.91%	12.71%	23.41%	22.60%	6.61%

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 development 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

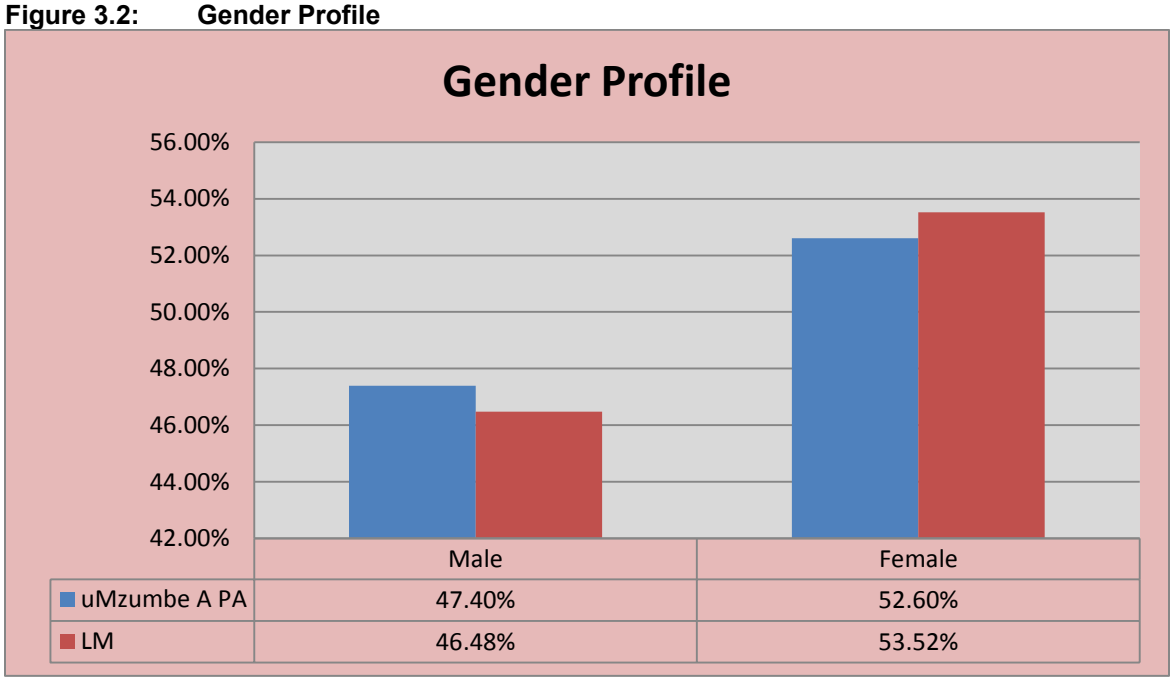
dependency ratio which places increased pressure on social services, facilities, and amenities. Provision of such services will not only benefit young individuals but rather the community at large.

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 52.60% of the total population of the study area is female and 47.40% are male. Relatively similar trends of a female dominant population are evident for the overall Umzumbe municipal area with 53.52% of the total population being female and 46.48% being male. The 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

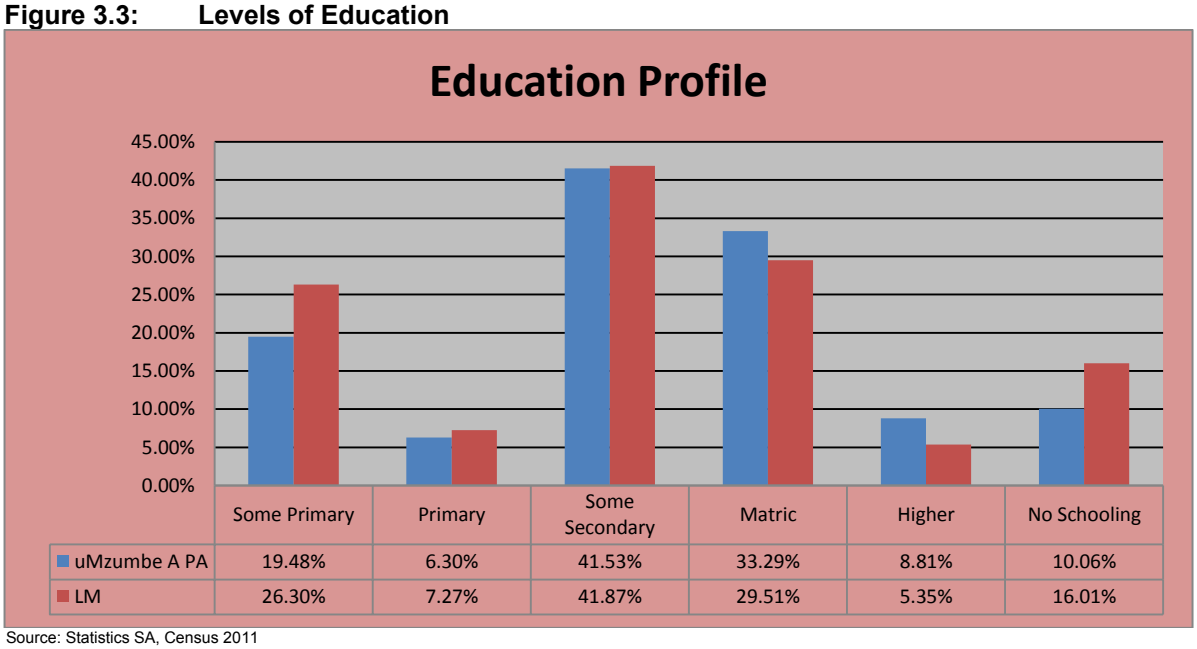
3.1.2.1 Implications for the Rural Subsidised Housing Project:

The implication of gender roles within the Umzumbe A Rural Housing project area therefore 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 study area and the Umzumbe Local Municipality is illustrated in Figure 3.3 below. These figures illustrate the education levels of persons over the age of 20 years and therefore falling into the economically active categories of the population. It is evident that 10.06% of the total project area has not undergone any form of schooling. 19.48% have indicated that they had some primary education while only 33.29% have indicated that they obtained matric/grade 12 with 8.81% that had post matric education.

Figure 3.3: Levels of Education



	Some Primary	Primary	Some Secondary	Matric	Higher	No Schooling
uMzumbe A PA	19.48%	6.30%	41.53%	33.29%	8.81%	10.06%
LM	26.30%	7.27%	41.87%	29.51%	5.35%	16.01%

Source: Statistics SA, Census 2011

3.1.3.1 Implications for the Rural Subsidised Housing Project:

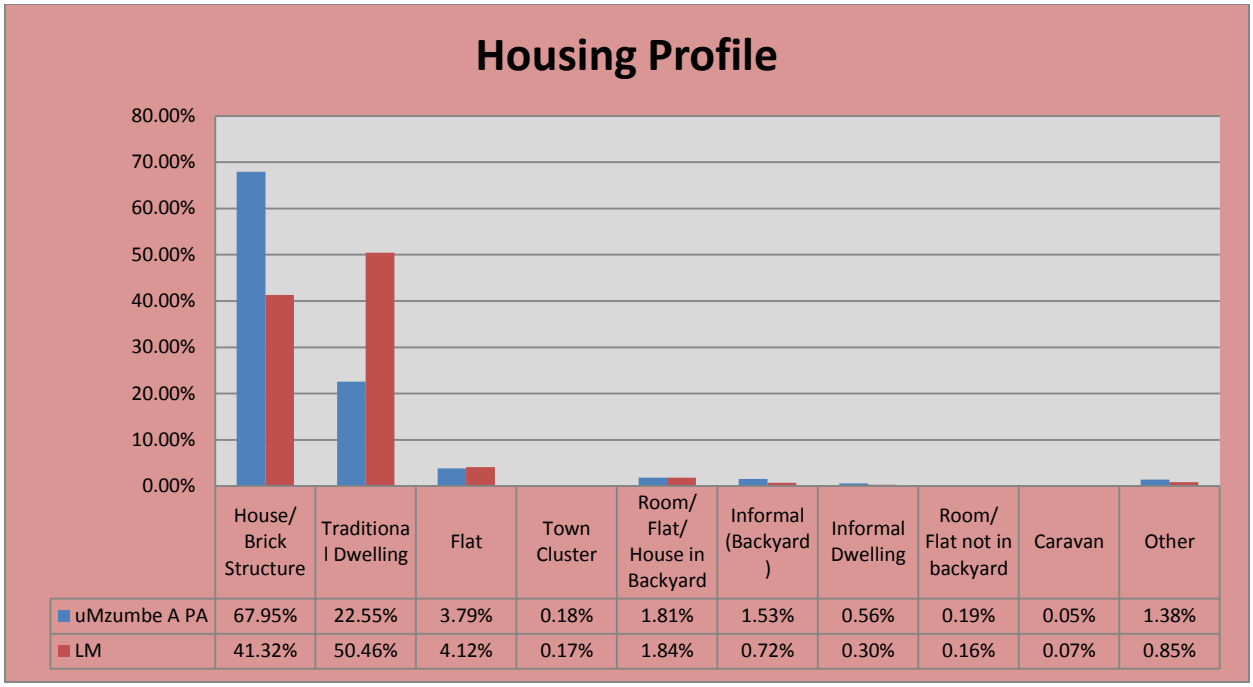
The level of illiteracy within the Umzumbe A Rural Housing project area will need to be taken into consideration with regards to the implementation of the proposed project to ensure that that

proportion of the study area 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 population 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.

3.1.4 Housing Profile

Figure 3.4 below depicts the housing profile of the study area and for the Umzumbe Local Municipality. The most predominant housing type within the study area is “House/ Brick Structure” with the majority (67.95%) of household within the project area residing in structures of this nature; the second most predominant housing type is the “Traditional Dwelling” with 22.55% of houses within the project area falling into this category. Traditional dwellings include mud houses, clay houses and huts made of animal manure. Other housing types exist within the study area but in relatively low numbers as depicted in the graph below. The overall figures for the municipality area depict a relatively similar housing profile with the second most predominant housing type being “traditional dwellings made of traditional material”.

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
uMzumbe A PA	67.95%	22.55%	3.79%	0.18%	1.81%	1.53%	0.56%	0.19%	0.05%	1.38%
LM	41.32%	50.46%	4.12%	0.17%	1.84%	0.72%	0.30%	0.16%	0.07%	0.85%

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 m^2 (minimum), of which 67.95% of households in the project area; and 41.32% of the households within Umzumbe 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.

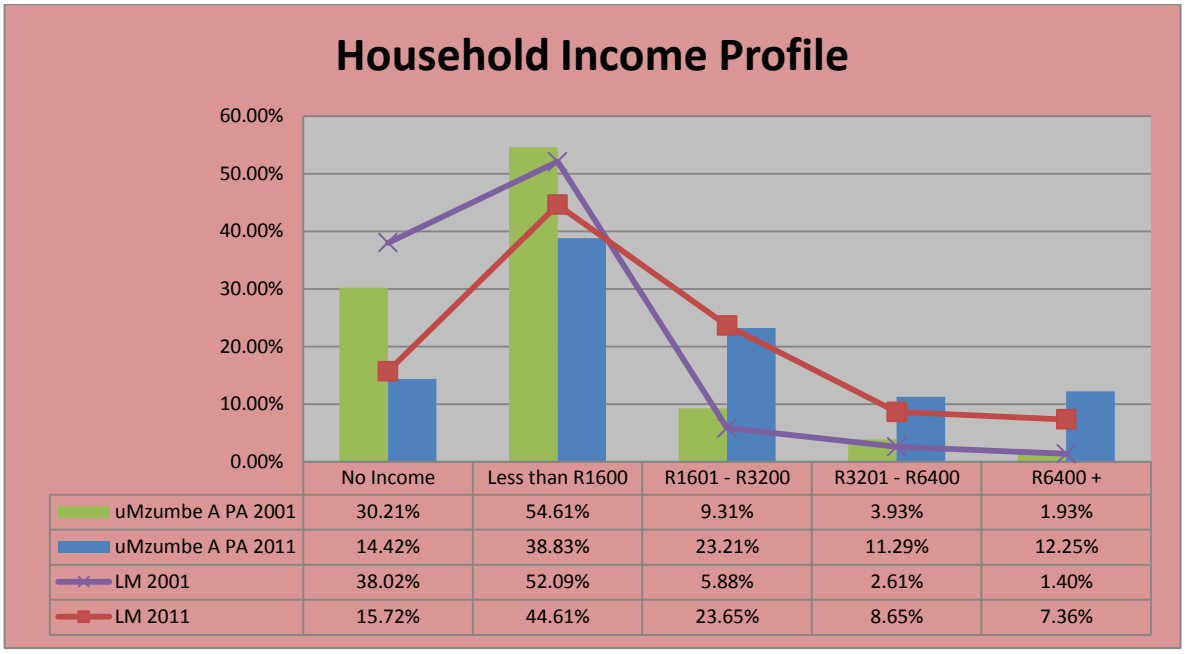
Due to the informal and traditional nature of a significant number (24.64%) of houses situated within the Umzumbe A Rural Housing project area, the need for the implementation of a rural subsidized housing project is clearly evident. Such a factor should therefore support and favour the implementation of the proposed project on the Umzumbe A Rural Housing 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 Umzumbe A Rural Housing project area and the overall Umzumbe Local Municipality. As much as 30.21% of the total number of households within the study area indicated that they have no source of income with a further 54.61% indicating that they earn less than R1600 per month.

Figure 3.5: Monthly household income



	No Income	Less than R1600	R1601 - R3200	R3201 - R6400	R6400 +
uMzumbe A PA 2001	30.21%	54.61%	9.31%	3.93%	1.93%
uMzumbe A PA 2011	14.42%	38.83%	23.21%	11.29%	12.25%
LM 2001	38.02%	52.09%	5.88%	2.61%	1.40%
LM 2011	15.72%	44.61%	23.65%	8.65%	7.36%

Source: Statistics SA, Census 2011

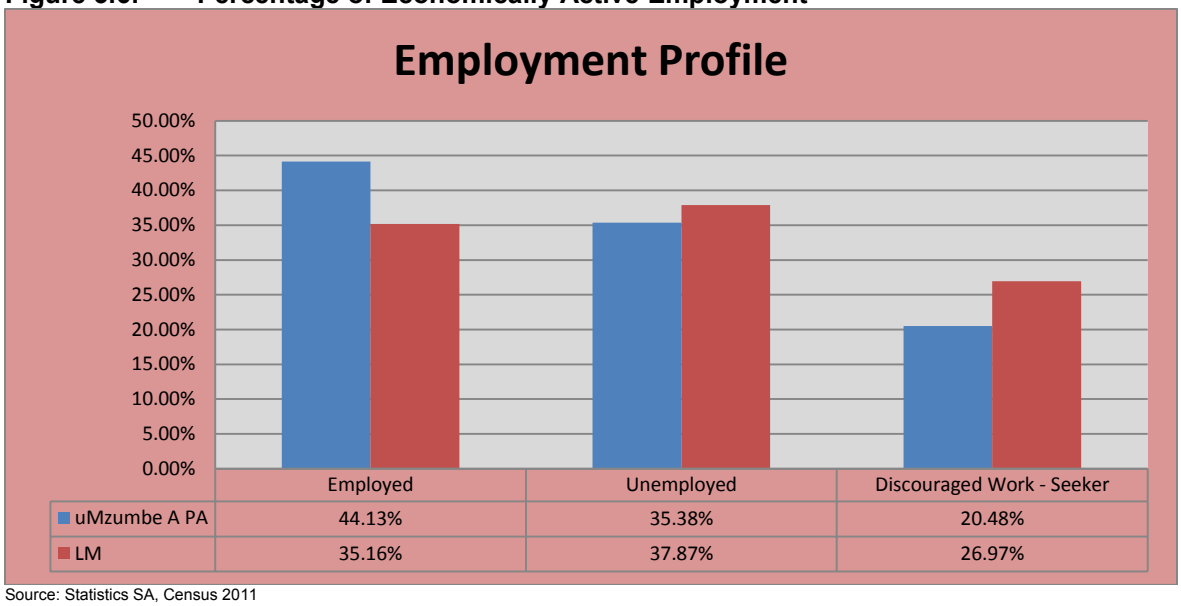
3.2.1.1 Implications for the Rural Subsidised Housing Project:

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. As much as 35.38% of the adult economically active population indicated to be unemployed, with a further 20.48% indicated to be discouraged work-seekers meaning they will work but have given up searching for work. The survey on the overall employment profile of the Umzumbe local municipality indicated relatively similar to that of the project area. The very low affordability levels of the study area population are directly related to the high unemployment rate within the area.

Figure 3.6: Percentage of Economically Active Employment



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.

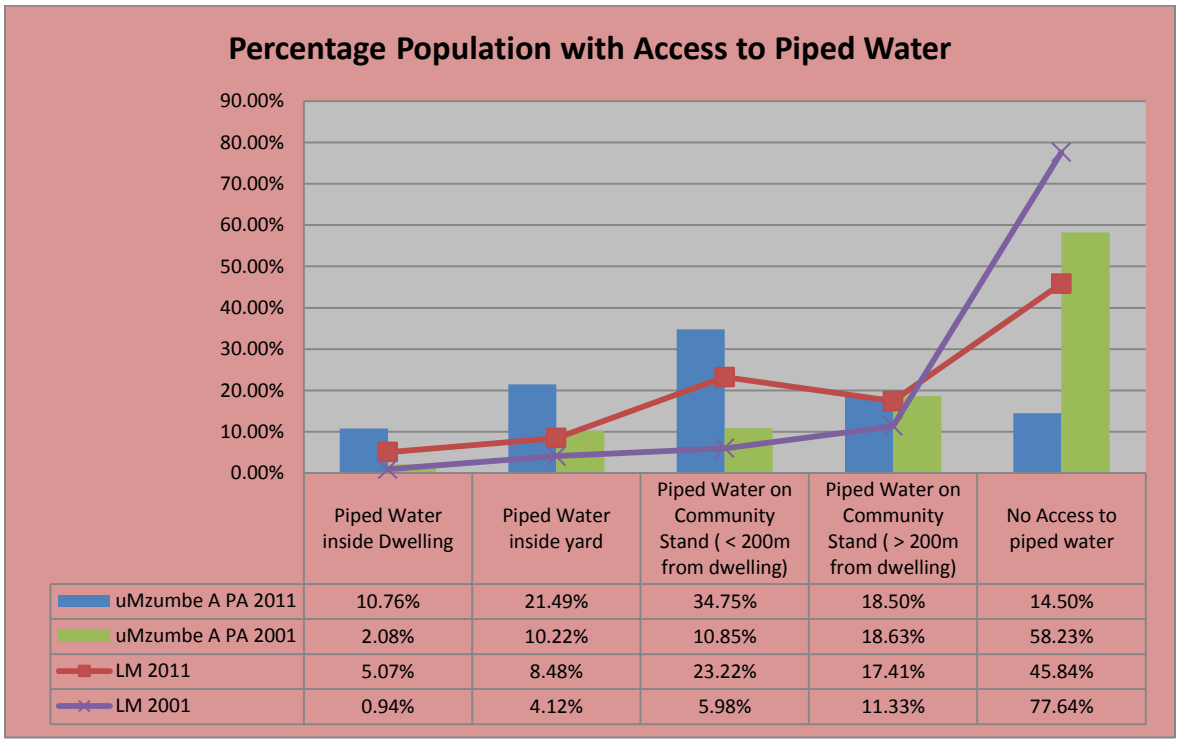
4 SERVICES AND INFRASTRUCTURE

4.1 SERVICES DEMOGRAPHICS

4.1.1 Access to water infrastructure

Figure 4.1 and 4.2 below illustrates the various sources of water and the percentage population with access to piped water infrastructure, for drinking and other auxiliary household uses, for communities residing within the project area and the overall Umzumbe Local Municipality. The information depicted in Figure 4.1 and 4.2 indicates that more than 10.76% of households within the project area have got access to water inside their dwelling with an additional 21.49% indicating that they have access to water within their property boundary. It is however important to take cognisance of the fact that approximately 11.25% of the community within the project area still use water from a river or stream.

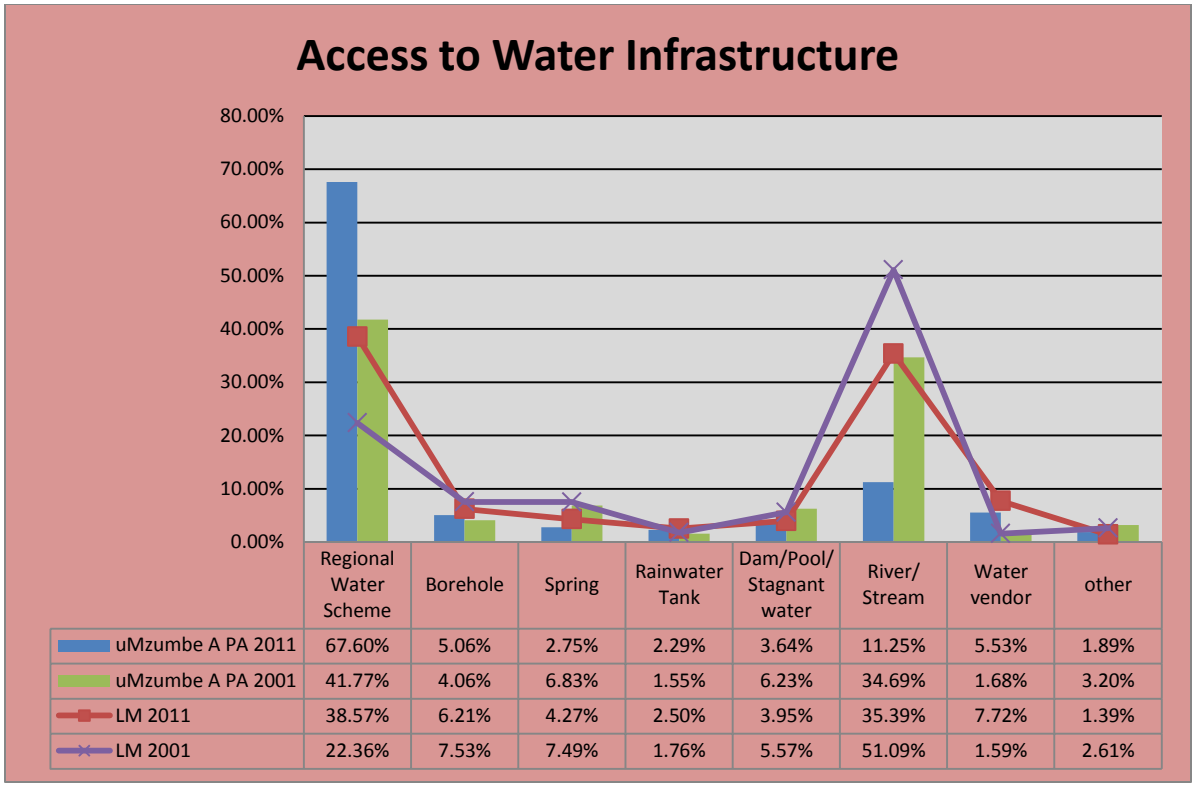
Figure 4.1: Percentage Population with access to Piped water infrastructure



	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
uMzumbe A PA 2011	10.76%	21.49%	34.75%	18.50%	14.50%
uMzumbe A PA 2001	2.08%	10.22%	10.85%	18.63%	58.23%
LM 2011	5.07%	8.48%	23.22%	17.41%	45.84%
LM 2001	0.94%	4.12%	5.98%	11.33%	77.64%

Source: a. Statistics SA, Census 2011
b. Statistics SA, Census 2001

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
uMzumbe A PA 2011	67.60%	5.06%	2.75%	2.29%	3.64%	11.25%	5.53%	1.89%
uMzumbe A PA 2001	41.77%	4.06%	6.83%	1.55%	6.23%	34.69%	1.68%	3.20%
LM 2011	38.57%	6.21%	4.27%	2.50%	3.95%	35.39%	7.72%	1.39%
LM 2001	22.36%	7.53%	7.49%	1.76%	5.57%	51.09%	1.59%	2.61%

Source: a. Statistics SA, Census 2011
b. Statistics SA, Census 2001

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, of which approximately only 23.22% of the total Umzumbe Local municipal population and 34.75% of the Umzumbe A Rural Housing project areas total population have access to water 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. 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 at least should constitute a key municipal objective for implementation in the Umzumbe A Rural Housing project area, as well as the Umzumbe 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.

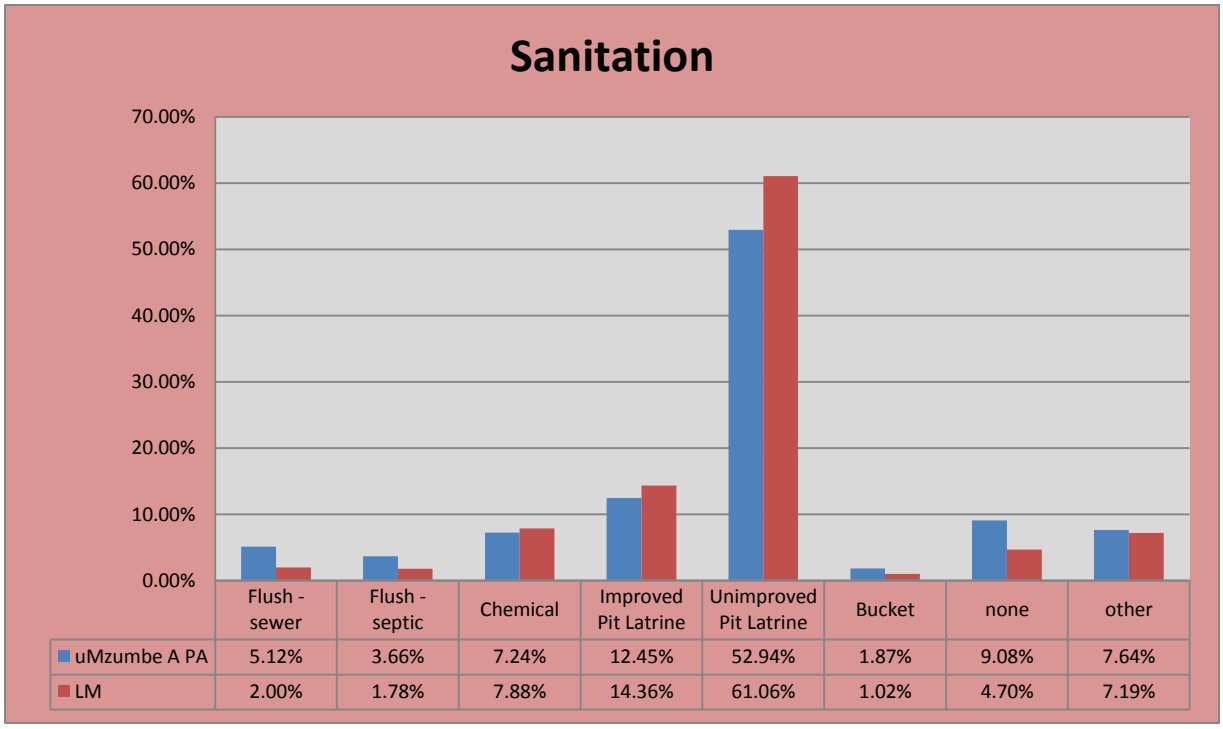
4.1.2 Access to Sanitation Infrastructure

As much as 52.94% of the total number households with in the Umzumbe A Rural Housing project area make use of “unimproved non ventilated Pit latrine” toilet facilities and 12.45% having improved “ventilated pit latrine” toilets.

The statistics of the overall Umzumbe Local municipality indicate that 61.06% of households making use of “non-ventilated pit toilets” with 14.36% having “ventilated pits toilets”. A total of 7.88% of households at municipal level make use of chemical toilets and 1.02% is on the bucket system. As much as 4.70% percentage of households within the overall municipal area indicated to not have any sanitation facility while 2.00% of the total number of households within the Umzumbe local municipality makes use of flush toilets connected to a sewer.

The potential impact of the extensive utilization of unimproved pit latrines and other forms of inappropriate sanitation infrastructure, on biophysical aspects such as surface and ground water, as well as the potential health implications is clearly evident from these figures, as is the need for improved access to sanitation infrastructure in both the Umzumbe A Rural Housing project area and the greater Umzumbe Local Municipality.

Figure 4.3: Access to sanitation infrastructure



	Flush - sewer	Flush - septic	Chemical	Improved Pit Latrine	Unimproved Pit Latrine	Bucket	none	other
uMzumbe A PA	5.12%	3.66%	7.24%	12.45%	52.94%	1.87%	9.08%	7.64%
LM	2.00%	1.78%	7.88%	14.36%	61.06%	1.02%	4.70%	7.19%

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.

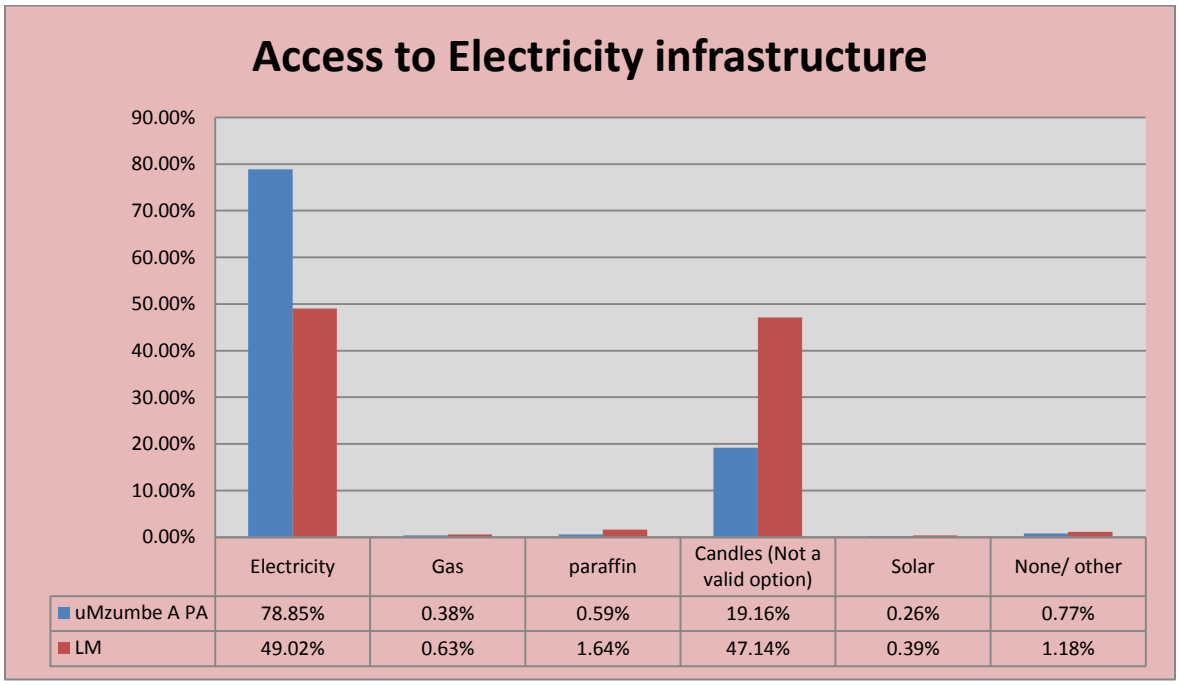
The National legislated (RDP) minimum norms and standards in respect of sanitation service provision in South Africa is considered to be ventilated improved pit toilet (VIP), of which approximately 14.36% of the total households in Umzumbe Local municipal area and 12.45% of the Umzumbe A Rural Housing project areas total population have access to sanitation services at this level. 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 Umzumbe A Rural Housing project area, as well as the Umzumbe 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.

4.1.3 Access to electricity infrastructure

Figure 4.4 below indicates the various energy sources used for lighting purposes by households within the Umzumbe A Rural Housing project area and overall Umzumbe municipal area. During the time of the survey, 78.85% (the majority) of households within the project area indicated that they made use of electricity as a source of lighting in the house while 19.16% used candles. The trends in "energy for lighting" statistics recorded for the overall municipal area were slightly worse with as much as 49.02% of the households within the overall Umzumbe municipality indicating to make use of electricity for lighting while 47.14% used candles for lighting in 2011

Figure 4.4: Access to electricity infrastructure



	Electricity	Gas	paraffin	Candles (Not a valid option)	Solar	None/ other
uMzumbe A PA	78.85%	0.38%	0.59%	19.16%	0.26%	0.77%
LM	49.02%	0.63%	1.64%	47.14%	0.39%	1.18%

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.

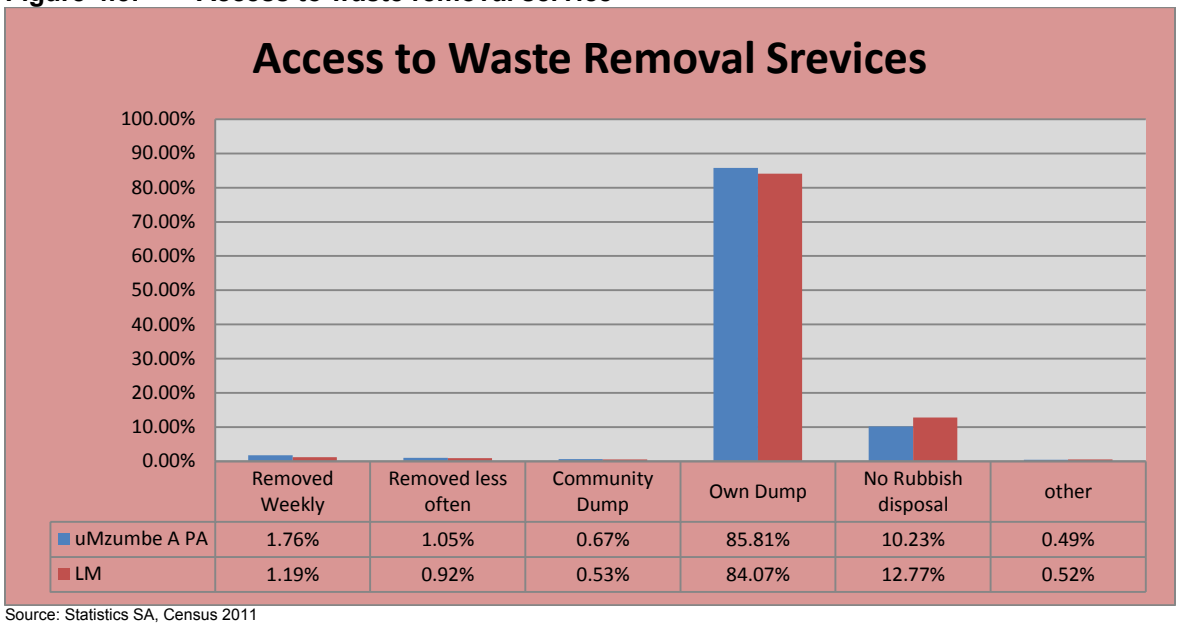
4.1.4.1 Implications for the Rural Subsidised Housing Project:

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 uncatered for being disconnected from the remainder of the general population being unable to keep in touch their friends, families and loved ones at other locations, and results in numerous inconveniences which wouldn't normally be experienced in areas which are appropriately catered to regarding telecommunication infrastructure.

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 Umzumbe A Rural Housing project area and the overall Umzumbe Local Municipality at the time of the survey is clearly illustrated in the graph. As much as 85.81% 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. A further 10.23% of households in the project area and 12.77% in the overall municipal area indicated that they had no practised waste disposal method in place. A figure of 1.76% of households in Umzumbe A indicated that their refuse was collected by the local municipal authority less often than on a weekly basis.

Figure 4.5: Access to waste removal service



	Removed Weekly	Removed less often	Community Dump	Own Dump	No Rubbish disposal	other
uMzumbe A PA	1.76%	1.05%	0.67%	85.81%	10.23%	0.49%
LM	1.19%	0.92%	0.53%	84.07%	12.77%	0.52%

Source: Statistics SA, Census 2011

4.1.5.1 Implications for the Rural Subsidised Housing Project:

The Umzumbe Local Municipality, who is also the service provider responsible for the provision of a functional waste removal and disposal system within the Umzumbe A 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 Umzumbe A Rural Housing (project area). The details of proclaimed road networks are depicted in the Table 4.6 below. This information describes the various categories/ types of roads and includes Provincial (P), District (D) and Local (A) or (L) roads; contained under the respective headings. **It must however be noted that the scope of proposed Umzumbe A Subsidised Housing Project *does not* include any construction or major maintenance of new or existing access roads to the project area.**

Table 4.6: Access to the Umzumbe A Rural Housing Project Area:

Ward	Category	Road No.	Description
Ward 10	Provincial	P3-1	Entering in the north eastern section of the Project Area
	District	D954	North eastern section of the project area
		D2191	North eastern section of the Project Area
		D2118	Entering in on the northern boundary of the Project Area
Ward 16	Provincial	P286	Central section of the project area
		P73	Running on the western border of the project area
		P75-3	Entering in the northern section of the project area
	District	D950	Running in the southern section of the project area
		D1119	Running in the southern section of the project area
		D454	Traversing the central section of the project area
		D2105	Traversing the northern section of the project area
		D949	Entering the Project area in the south western section
		D2114	Running in the western section of the Project Area
		D1056	Western section of the Project Area
		D931	Western section of the project area
Ward 17	National	N2-23	Traversing the Project Area in the eastern section
	District	D952	Eastern section
		D953	Eastern section

Ward 18	Provincial	P198	South eastern section of the Project Area
	District	D951	Runing from the P198 to the N2 in the eastern section of the project area
Ward 19	Provincial	P74	Entering in the eastern section of the project area
	District	D954	Eastern section
		D1099	Eastern section

(i) National Roads

There is one National Road (N2) that have been proclaimed through the project area.

(ii) Provincial Roads

There are six provincial roads (P74, P198, P286, P73, P75-3 and P3-1) that has been proclaimed through the proposed project area

(iii) District Roads

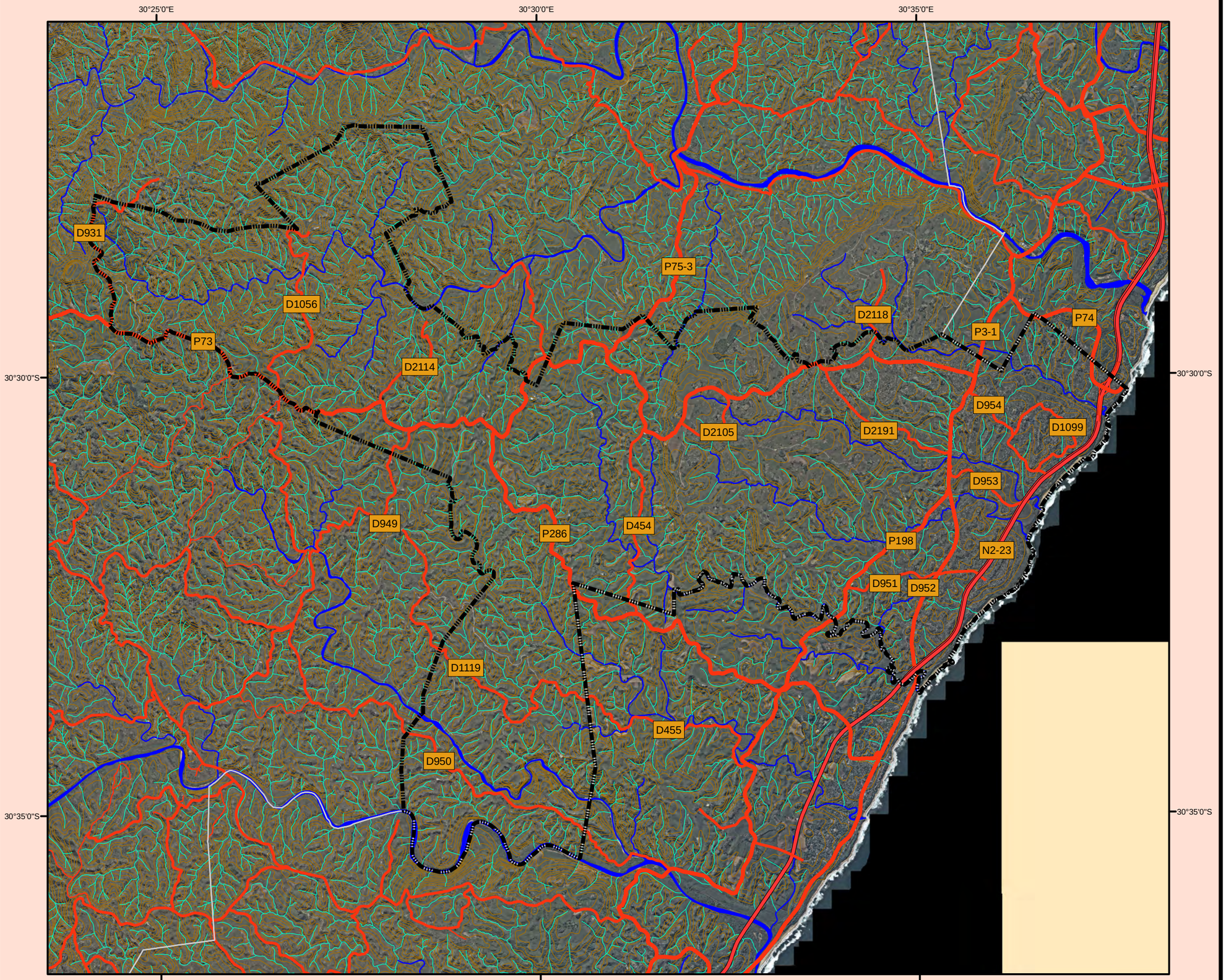
There are fifteen district roads that have been proclaimed through the proposed project area. (D951, D954, D1099, D952, D953, D931, D1056, D2114, D949, D2105, D454, D1119, D950, D2118, D2191 and D954)

(iv) Numbered Local Access Roads

There are no Local Access Roads that have been proclaimed through the project area.

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 Umzumbe A 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 Umzumbe A 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.



UMZUMBE LOCAL MUNICIPALITY

UMZUMBE A PHASE 2 RURAL SUBSIDISED HOUSING DEVELOPMENT

ROAD NETWORK

LEGEND:

- uMzumbe A Phase 2
- Local Municipal Boundaries
- 20m Contours

River Network

- Non-Perennial Rivers and Streams
- Perennial Rivers and Streams

Road Network

- National Road
- Provincial Road
- Main Road
- District Road
- Local Access Road

SCALE :
0 0.5 1 2 3 Kilometers
1:80 000

N

DATE : MAY 2014

MAP REFERENCE/ VERSION NUMBER : Version 1

COORDINATE SYSTEM : Municipal WGS84 (Lo31)

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It should also be noted that all District Roads will be allocated a 30 m road reserve, to which an additional 15 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 Umzumbe A Rural Subsidised Housing development.

5 BIO-PHYSICAL COMPONENT

5.1 LAND COVER AND TOPOGRAPHY

The overall land cover within the study area is summarized in Table 5.1 below and graphically depicted on the attached thematic map. The dominant land cover within the study area is described as "*Degraded: thicket & bushland*" and covers approximately 69.28% of the total land area of the Umzumbe A Rural Housing project area.

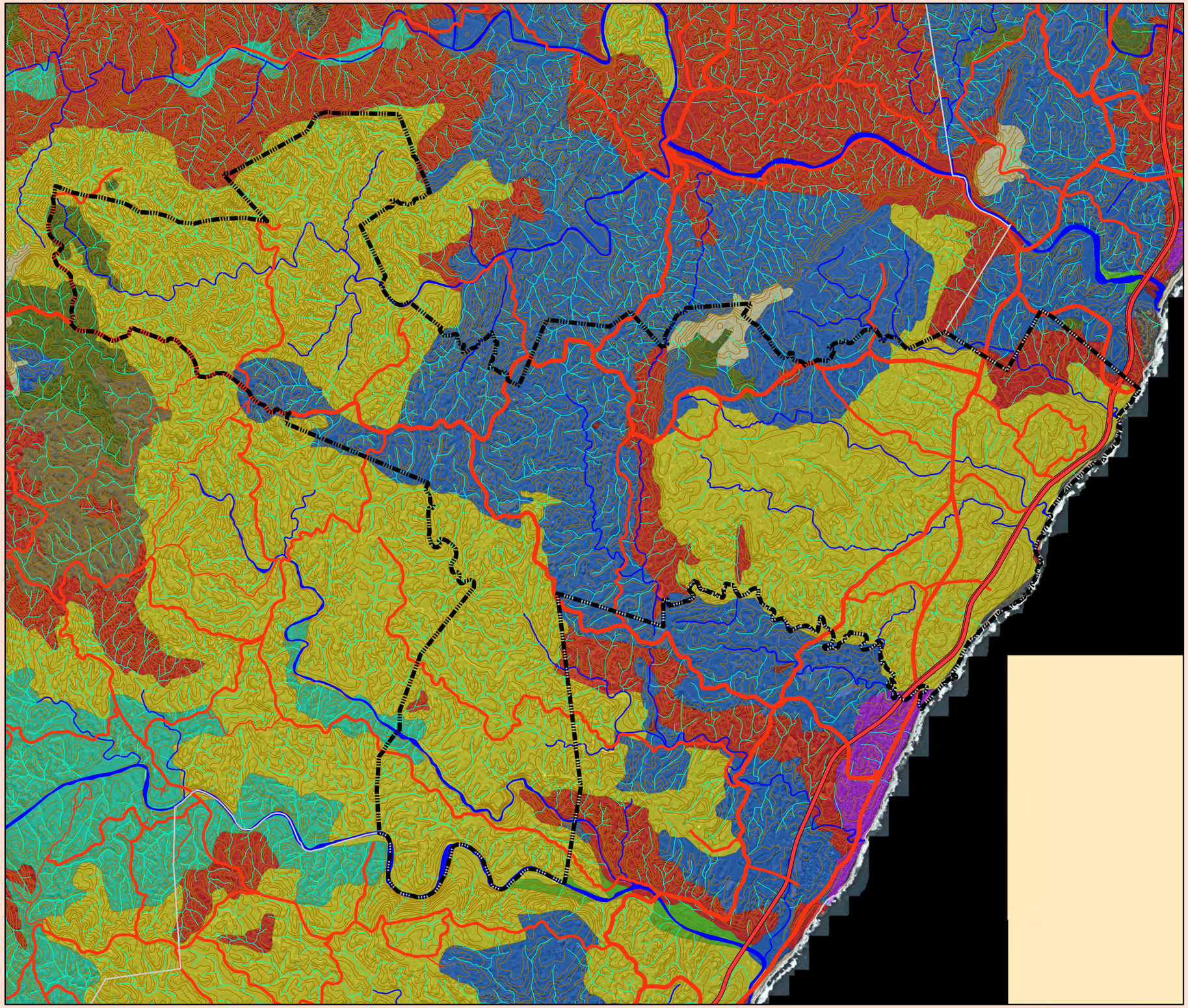
The "*Cultivated : permanent - commercial sugarcane"* land cover type accounts for 22.28% of the total surface of the project area and mostly occurs in the central parts of the Umzumbe A project area. A land cover thematic map is attached to give a visual illustration of the distribution of the various land covers discussed above and listed in Table 5.1 below.

Table 5.1: Land Cover

Land Cover	Area (Ha)	Percentage of Total Area
Cultivated : permanent - commercial sugarcane	2729.36	22.28%
Cultivated : temporary - semi-commercial/subsistence dryland	44.88	0.37%
Degraded: thicket & bushland	8488.68	69.28%
Forest and plantations	218.7	1.78%
Thicket & bushland	654.95	5.35%
Unimproved grassland	100.44	0.82%
Urban/ built-up: residential (small holdings: bushland)	9.83	0.08%
Waterbodies	4.98	0.04%
wetlands	0.47	0.00%
Total Area	**12252.29**	**100%**

Source: LANDSAT Landcover

The overall topography of the study area is summarized in Table 5.2 below and clearly depicted on the attached thematic map. The slope analysis study indicates that the majority of the project area (26.80%) is characterized by fairly flat slopes (Between 1:20 – 1:10) and 21.76% of the area's topography has a slope character "*Flatter than 1:20*" while 2.05% of the area has a slope of



UMZUMBE LOCAL MUNICIPALITY

UMZUMBE A PHASE 2 RURAL SUBSIDISED HOUSING DEVELOPMENT

LANDCOVER

LEGEND:

- uMzumbe A Phase 2
- Local Municipal Boundaries
- 20m Contours

River Network

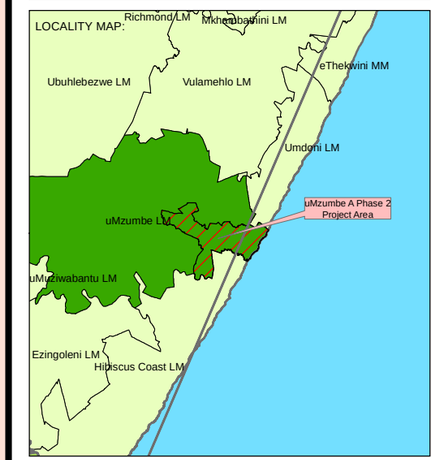
- Non-Perennial Rivers and Streams
- Perennial Rivers and Streams

Road Network

- National Road
- Provincial Road
- Main Road
- District Road
- Local Access Road

Land Cover

- Cultivated: permanent - commercial sugarcane
- Cultivated: temporary - semi-commercial/subsistence dryland
- Degraded: thicket & bushland (etc)
- Degraded: unimproved grassland
- Forest plantations
- Thicket & bushland (etc)
- Unimproved grassland
- Urban / built-up land: residential (small holdings: bushland)
- Waterbodies
- Wetlands



SCALE :
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1:80 000

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DATE : MAY 2014

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COORDINATE SYSTEM : Municipal WGS84 (Lo31)

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"*Steeper than 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 below illustrates the slope analysis summary of the project area

Table 5.2: Slope Analysis

Slope Analysis	Area (Ha)	Percentage of Total Area
Flatter than 1:20	2674.08	21.76%
Between 1:20 - 1:10	3292.95	26.80%
Between 1:10 - 1:7.5	2154.91	17.54%
Between 1:7.5 - 1:5	2222.39	18.09%
Between 1:5 - 1:3	1691.72	13.77%
Steeper than 1:3	251.53	2.05%
Total Area	**12287.58**	**100.00%**

Source: Own Calculations

5.2 FLOOD LINE AREAS

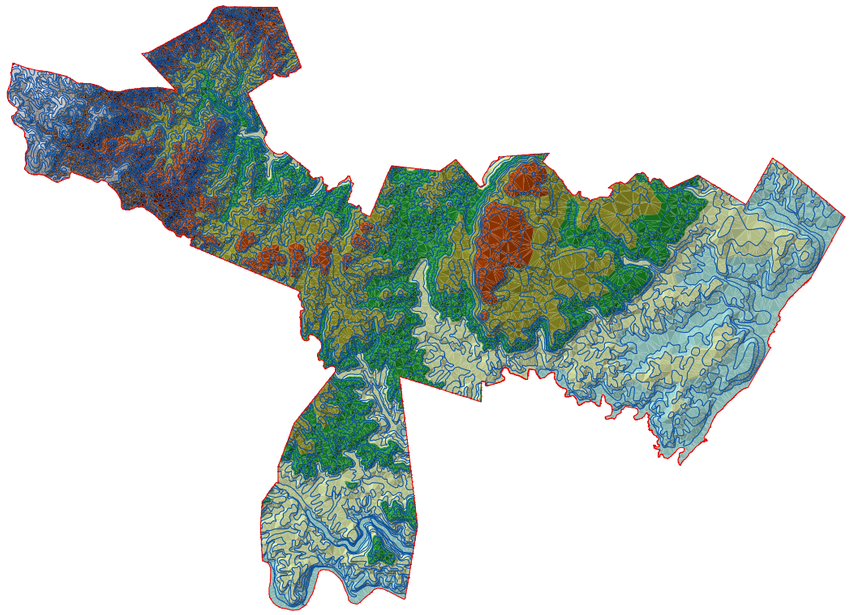
The Umzumbe A project area is traversed by a number of perennial and non-perennial water courses. The perennial and non-perennial streams occurring within the project area are depicted on the attached thematic map. The predominant perennial streams which have been named are summarized in Table 5.3 below:

Table 5.3: Streams and Rivers of the Umzumbe A Rural Housing Project Area

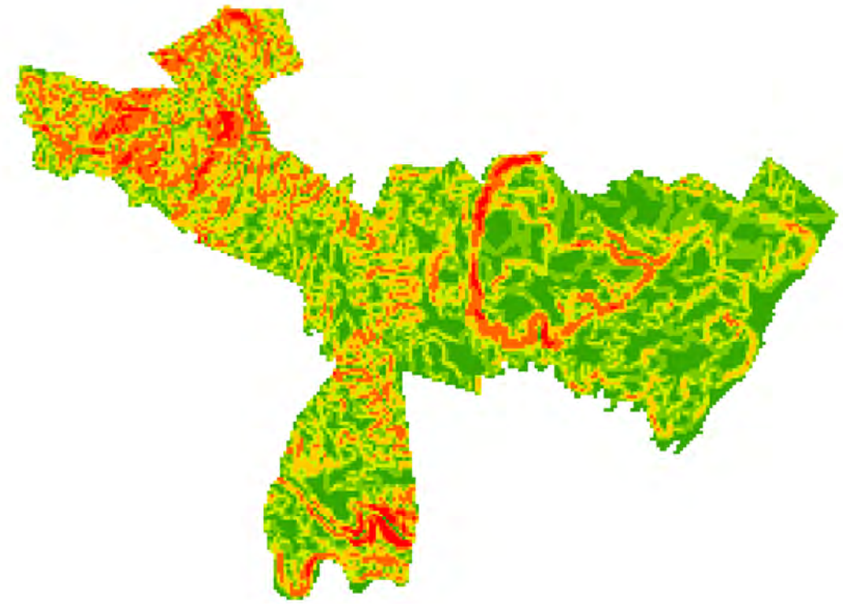
Water Course Name	Category	Location within Project Area
Mngeni River	Perennial	North western section of the project area
Kwalacha River	Perennial	Traversing the north western area of the project area
Mzimayi River	Perennial	Traversing the central section
Kwamalukaka River	Perennial	Southern section of the project area
Mzumbe River	Perennial	Running on the southern boundary.
Ka-guquka River	Perennial	Entering in the northern section of the project area
Kwamakosi River	Perennial	North eastern section of the project area
Mhlungwa River	Perennial	Central section of the project area
Mnamfu River	Perennial	Running on the north eastern boundary
Mfazazana River	Perennial	Traversing the eastern area of the project area

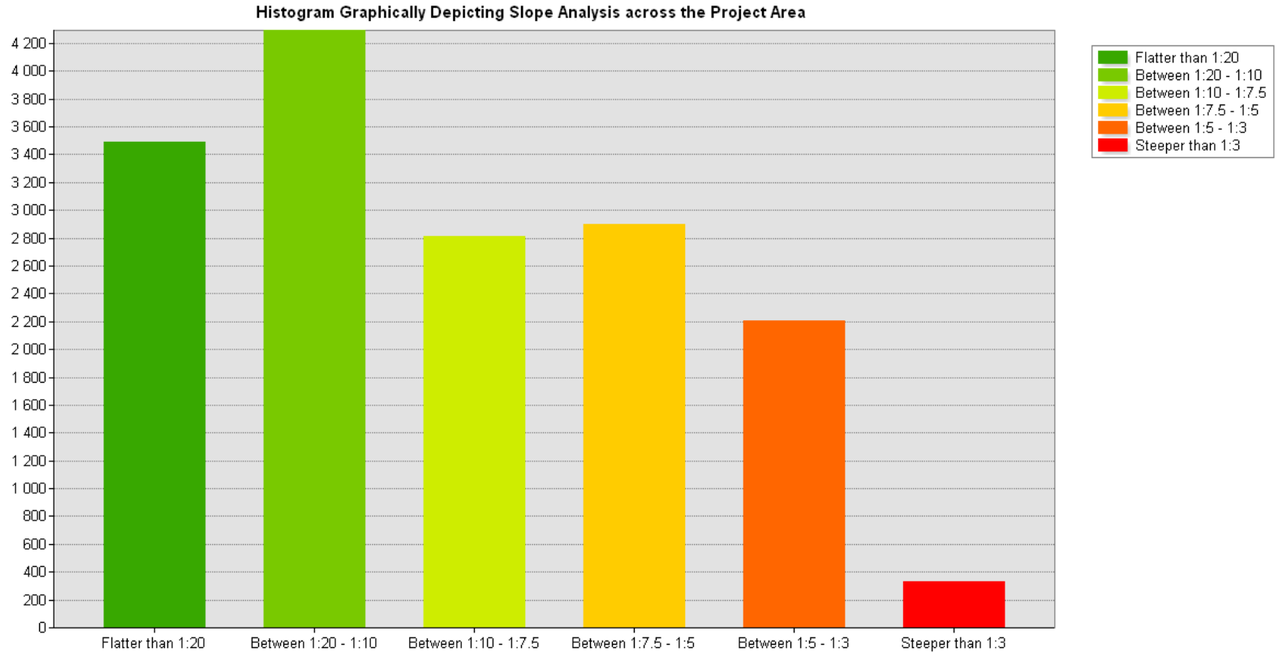
Source: Chief Directorate: National Geo-Spatial Information

3D Tin Showing Elevation



Slope Analysis Using 3D - Tin and Creating a 100m x 100m Grid





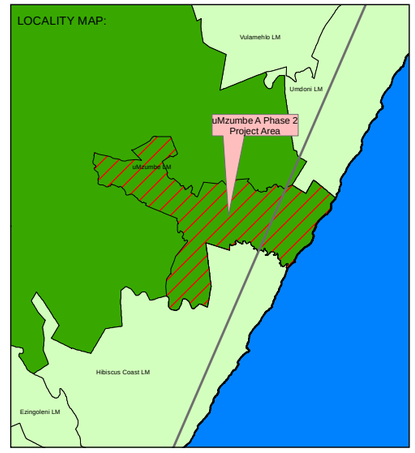
UMZUMBE LOCAL MUNICIPALITY

UMZUMBE A PHASE 2 SUBSIDISED HOUSING DEVELOPMENT

Slope Analysis

TOPOGRAPHY ON SITE		
CATEGORY	TYPE	AREA (Ha)
1	Flatter than 1:20	2674.08
2	Between 1:20 - 1:10	3292.95
3	Between 1:10 - 1:7.5	2154.91
4	Between 1:7.5 - 1:5	2222.39
5	Between 1:5 - 1:3	1691.72
6	Steeper than 1:3	251.53

LOCALITY MAP:



SCALE :
Not Drawn to Scale

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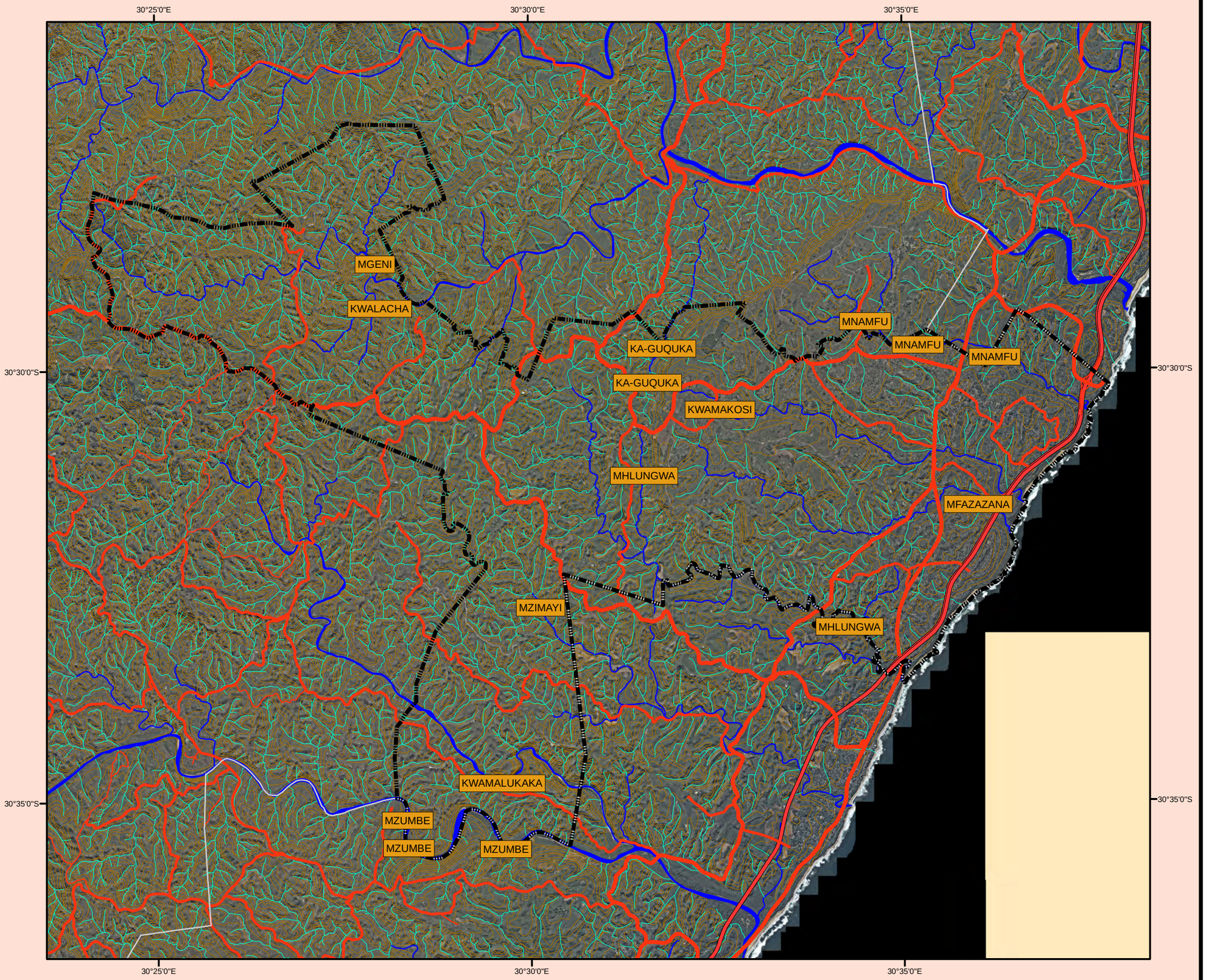

UMZUMBE LOCAL MUNICIPALITY

UMZUMBE A PHASE 2 RURAL SUBSIDISED HOUSING DEVELOPMENT

RIVER NETWORK

LEGEND:

- uMzumbe A Phase 2
- Local Municipal Boundaries
- 20m Contours

River Network

- Non-Perennial Rivers and Streams
- Perennial Rivers and Streams

Road Network

- National Road
- Provincial Road
- Main Road
- District Road
- Local Access Road

LOCALITY MAP:

SCALE :

0 0.5 1 2 3 Kilometers

1:80 000

N

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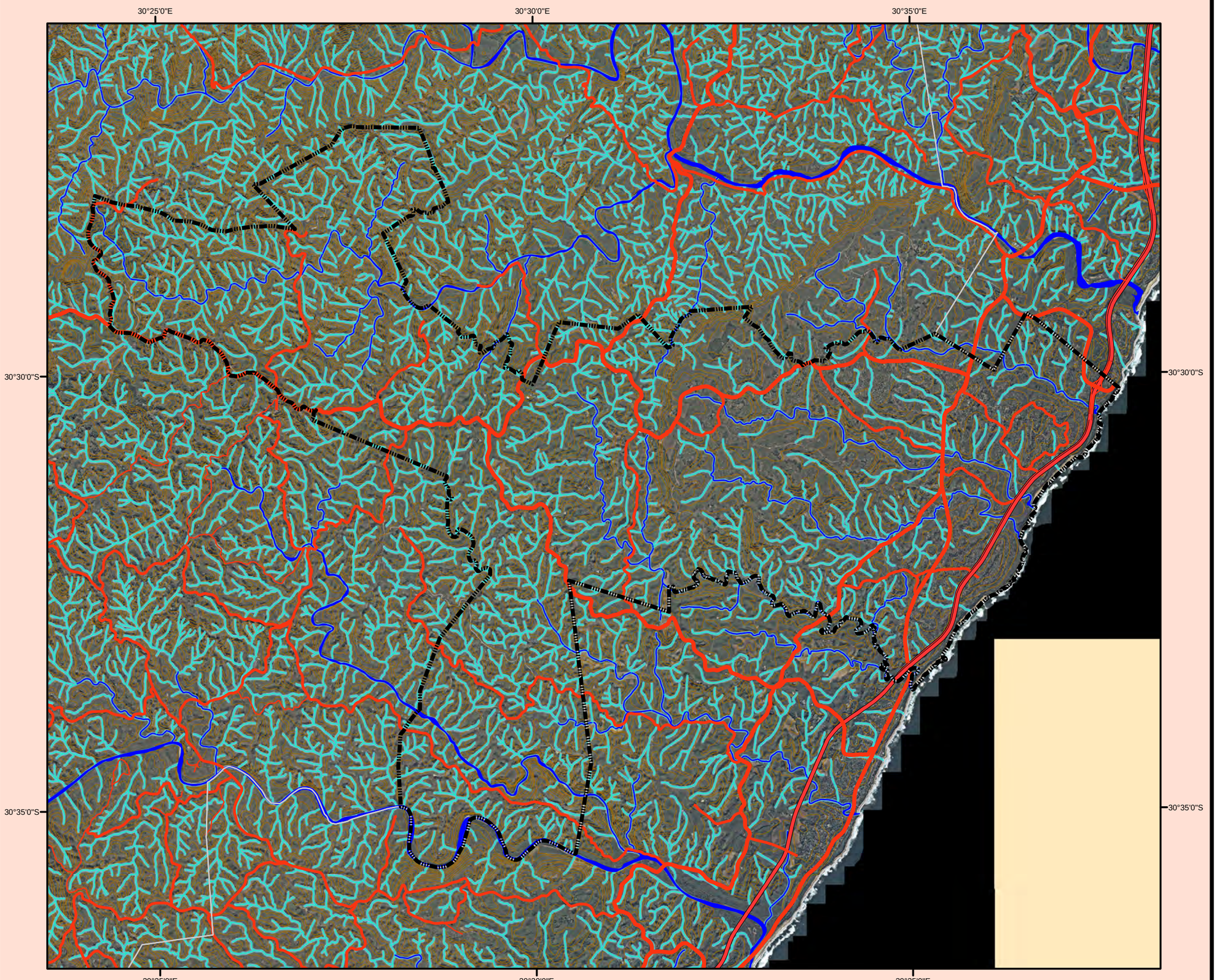


UMZUMBE LOCAL MUNICIPALITY

UMZUMBE A PHASE 2 RURAL SUBSIDISED HOUSING DEVELOPMENT

32m Buffer of Rivers and Streams

LEGEND:

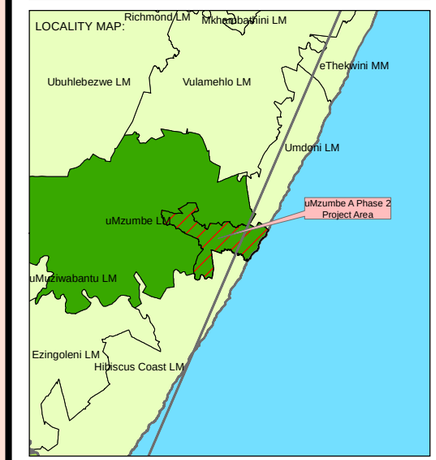
- uMzumbe A Phase 2
- Local Municipal Boundaries
- 20m Contours
- 32m Buffer of Rivers and Streams

River Network

- Non-Perennial Rivers and Streams
- Perennial Rivers and Streams

Road Network

- National Road
- Provincial Road
- Main Road
- District Road
- Local Access Road



SCALE :
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The above 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 Water Act, as well as various 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, wetland or stream. This 32 m default floodline area has been demarcated on the attached thematic map.

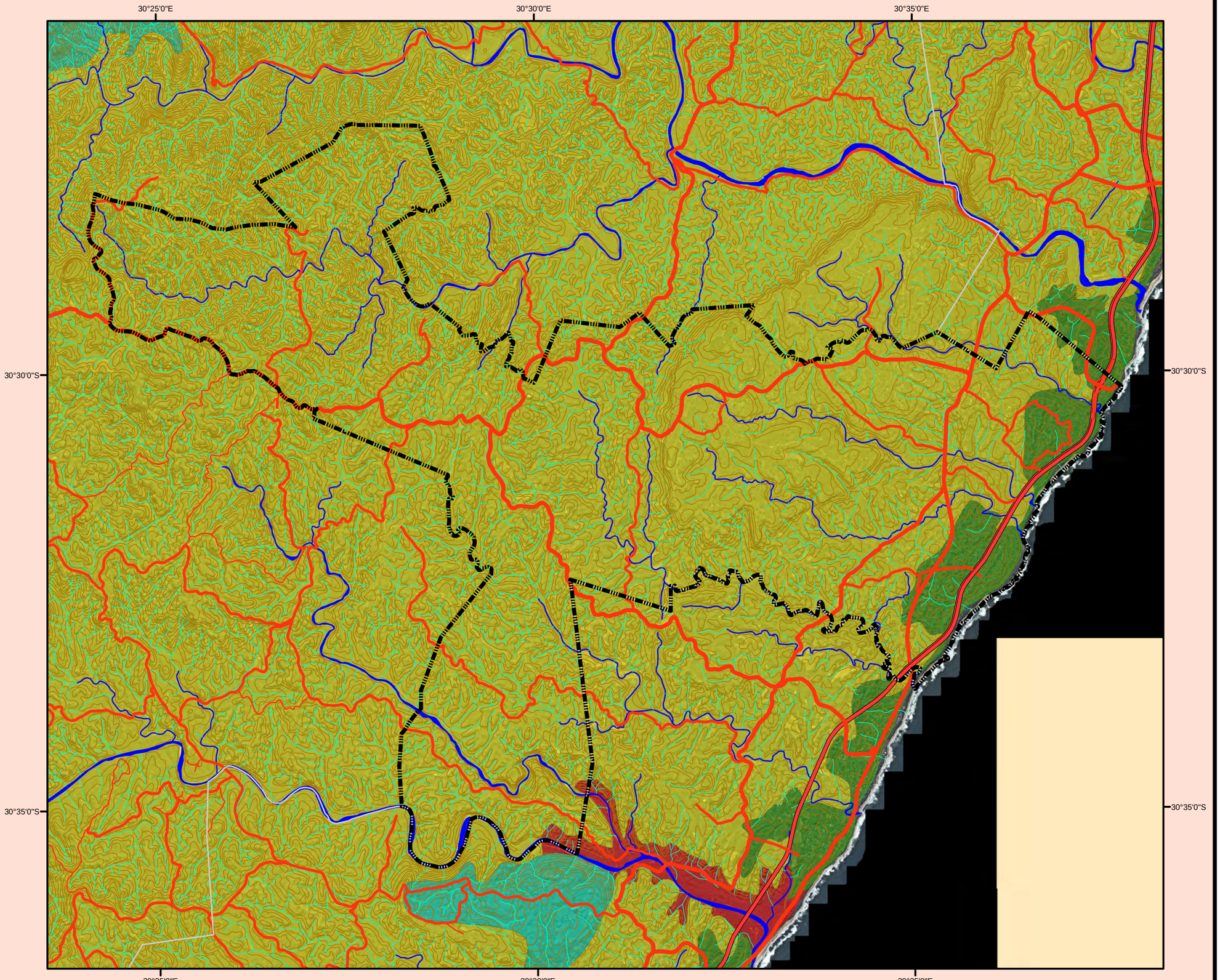
5.3 SOIL DESCRIPTION, POTENTIAL AND DEPTH

As indicated in Table 5.4 below and on the attached thematic map, three soil types occur within the Umzumbe A Rural Housing project area. The dominant soil in the project area can be described as *"Glenrosa and/or Mispah forms (other soils may occur), lime rare or absent in the entire landscape"* which underlies approximately 94.03% of the total project area, and is located across the project area. The second most dominant soil category found in the project area is the "*Grey regic sands and other soils*" soil forms which cover approximately 5.71% of the total surface of the project area. Other soils occur but in small amounts.

Table 5.4: Soils

Soil Description	Area (Ha)	Percentage of Total Area
Glenrosa and/or Mispah forms (other soils may occur), lime rare or absent in the entire landscape	11504.51	94.03%
Grey regic sands and other soils	698.95	5.71%
Miscellaneous land classes, undifferentiated deep deposits	31.6	0.26%
Total Area	**12235.06**	**100%**

Source: KZN Environmental Potential Atlas



UMZUMBE LOCAL MUNICIPALITY

UMZUMBE A PHASE 2 RURAL SUBSIDISED HOUSING DEVELOPMENT

SOIL DESCRIPTION

LEGEND:

- uMzumbe A Phase 2
- Local Municipal Boundaries
- 20m Contours

River Network

- Non-Perennial Rivers and Streams
- Perennial Rivers and Streams

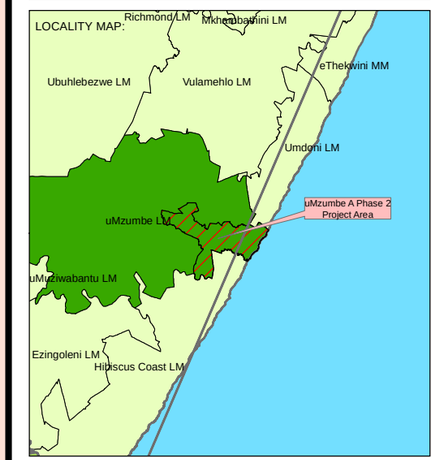
Road Network

- National Road
- Provincial Road
- Main Road
- District Road
- Local Access Road

Soils

- Glenrosa and/or Mispah forms (other soils may occur), lime rare or absent in the entire landscape
- Grey regic sands and other soils
- Miscellaneous land classes, undifferentiated deep deposits
- Red-yellow apedal, freely drained soils; red, dystrophic and/or mesotrophic

LOCALITY MAP:



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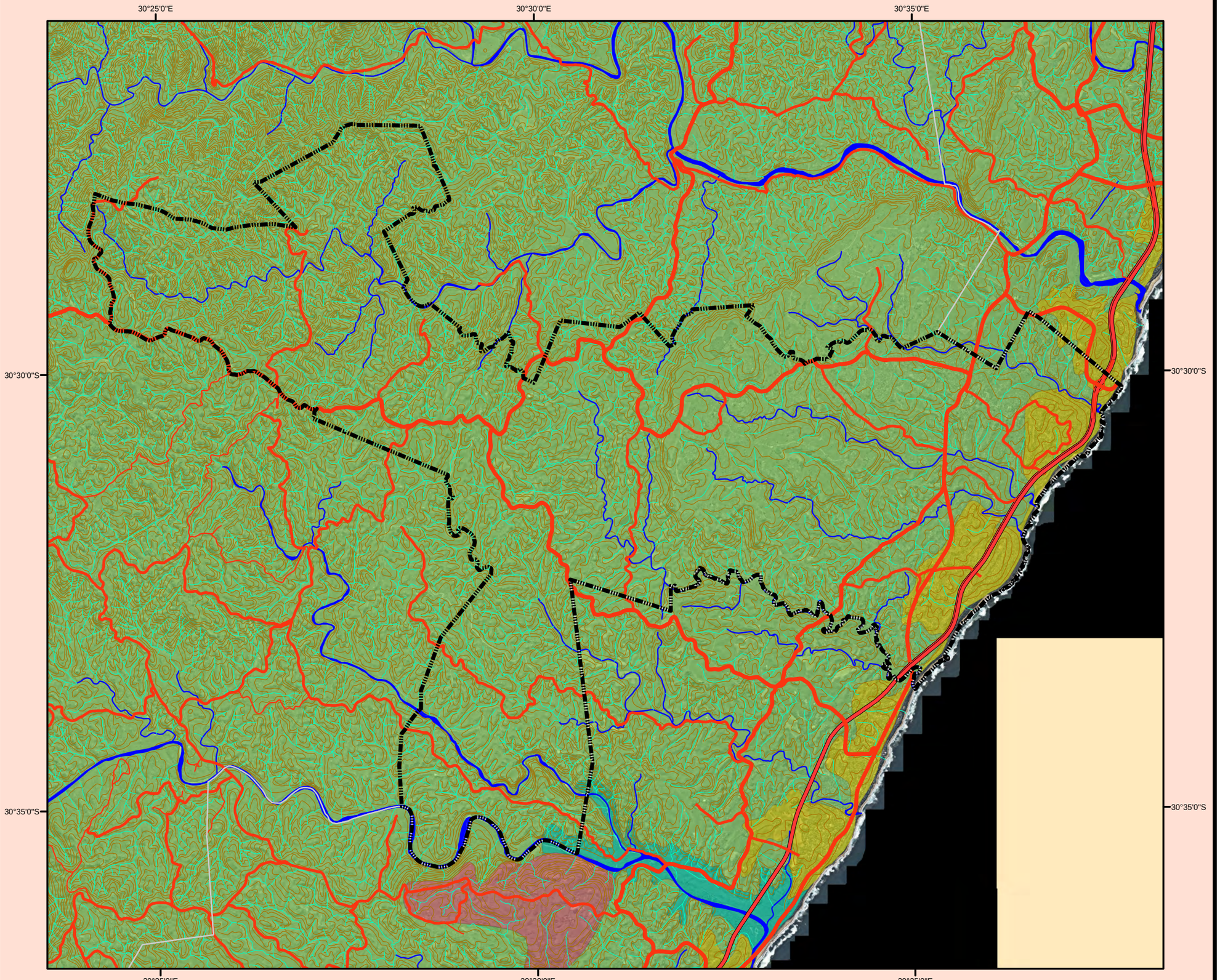


UMZUMBE LOCAL MUNICIPALITY

UMZUMBE A PHASE 2 RURAL SUBSIDISED HOUSING DEVELOPMENT

SOIL POTENTIAL

LEGEND:

- uMzumbe A Phase 2
- Local Municipal Boundaries
- 20m Contours

River Network

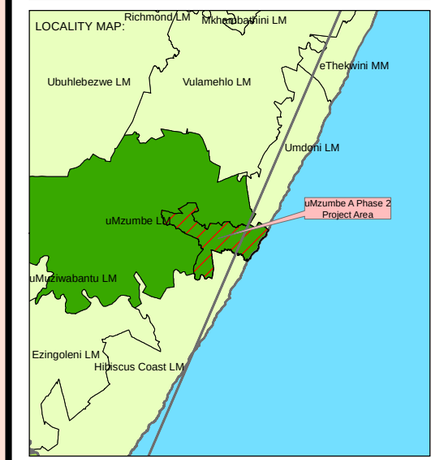
- Non-Perennial Rivers and Streams
- Perennial Rivers and Streams

Road Network

- National Road
- Provincial Road
- Main Road
- District Road
- Local Access Road

Soil Potential

- Not suitable for agriculture or commercial forestry; suitable for conservation, recreation or water catchments
- Soils not suitable for arable agriculture; suitable for forestry or grazing where climate permits
- Soils of intermediate suitability for arable agriculture where climate permits
- Soils of poor suitability for arable agriculture where climate permits



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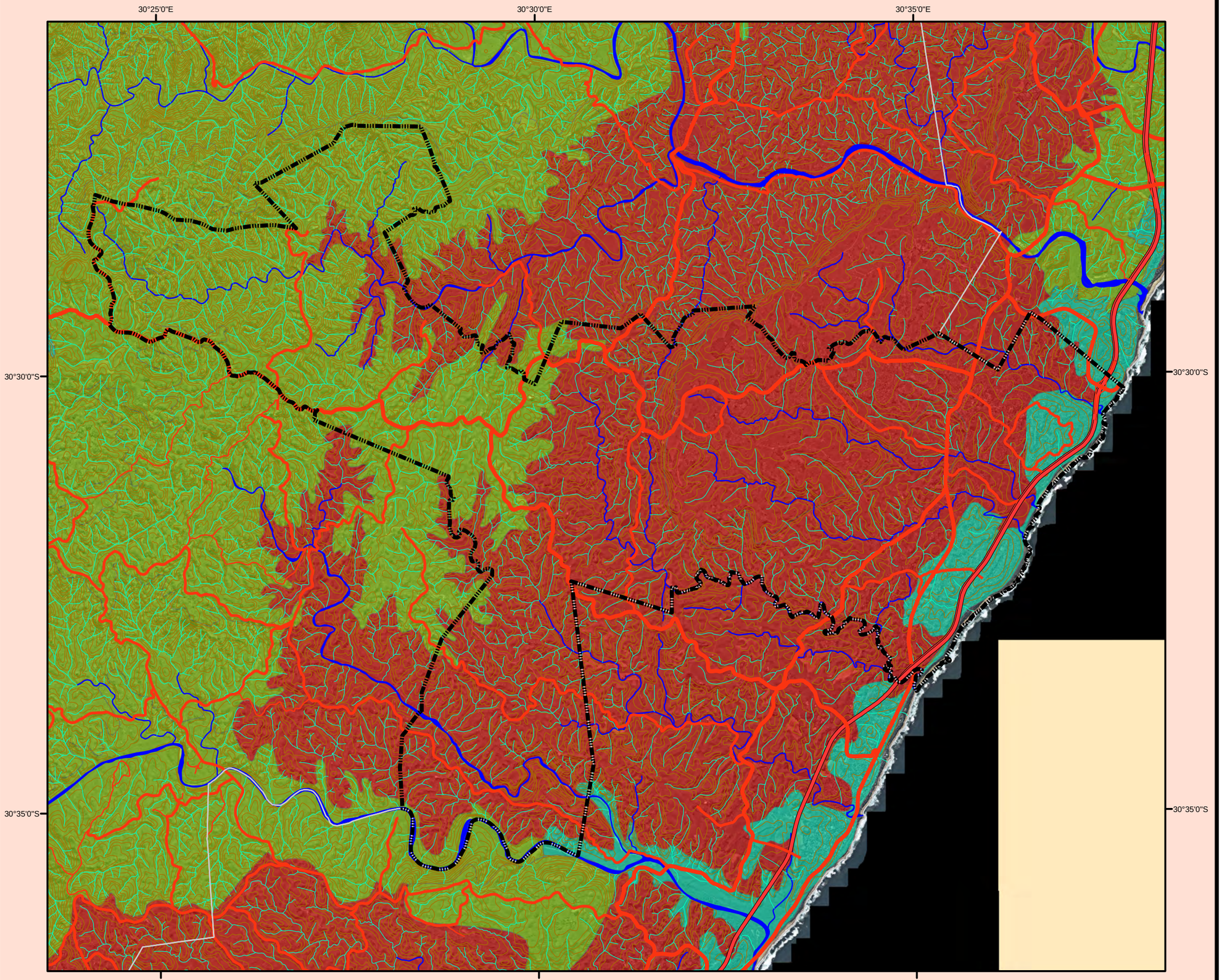


UMZUMBE LOCAL MUNICIPALITY

UMZUMBE A PHASE 2 RURAL SUBSIDISED HOUSING DEVELOPMENT

SOIL DEPTH

LEGEND:

- uMzumbe A Phase 2
- Local Municipal Boundaries
- 20m Contours

River Network

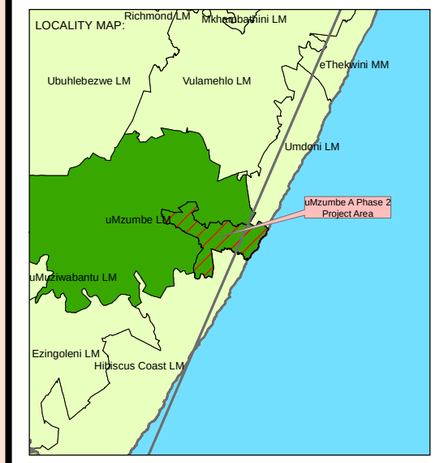
- Non-Perennial Rivers and Streams
- Perennial Rivers and Streams

Road Network

- National Road
- Provincial Road
- Main Road
- District Road
- Local Access Road

Soil Depth

- < 450mm
- 450mm - 750mm
- >750mm



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The implication of the soil descriptions outlined above together with the other influencing physical factors from an agricultural point of view are depicted in Table 5.5 and graphically portrayed on the attached thematic map. The soil potential of the predominant soils within the study area is described as *"Soils not suitable for arable agriculture, suitable for forestry or grazing where climate permits"*, which underlie approximately 94.03% of study area.

Table 5.5: Soil Potential

Soil Potential	Area (Ha)	Percentage of Total Area
Not suitable for agriculture or commercial forestry, suitable for conservation, recreation or water catchments	31.6	0.26%
Soils not suitable for arable agriculture, suitable for forestry or grazing where climate permits	11504.5	94.03%
Soils of poor suitability for arable agriculture where climate permits	698.97	5.71%
Total Area	**12235.07**	**100%**

Source: KZN Environmental Potential Atlas

The approximate depths of the various soil types occurring across the Umzumbe A Rural Housing project area are depicted on the attached thematic map and indicated in Table 5.6 below. The information provided indicates that the soil depths of the various spoil types of project area range from 0 mm to more than 750 mm.

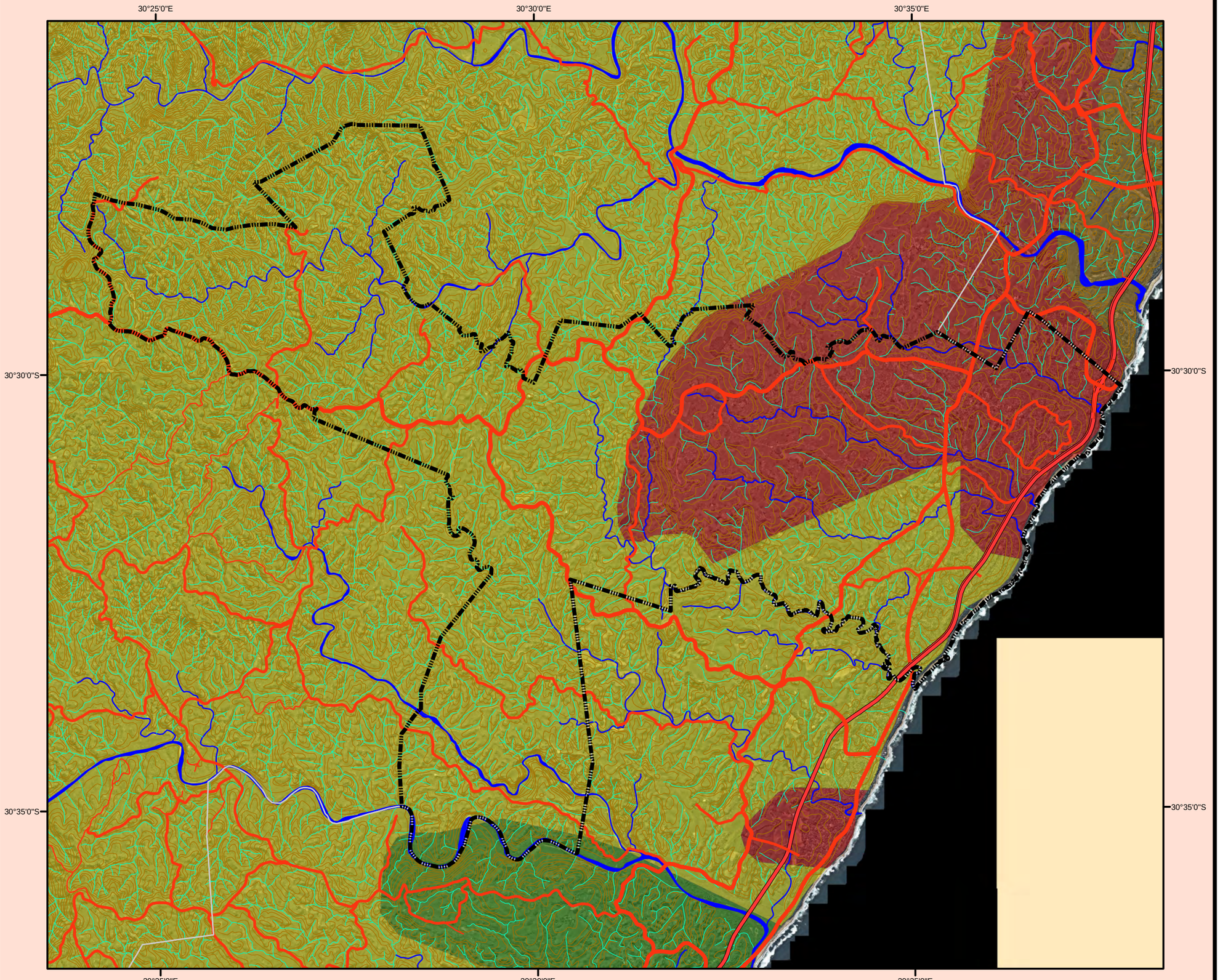
Table 5.6: Soil Depth

Soil Depth	Area (Ha)	Percentage of Total Area
< 450 mm	7952.12	64.99%
450 mm – 750 mm	3552.39	29.03%
> 750 mm	730.55	5.97%
Total Area	**12235.06**	**100%**

Source: KZN Environmental Potential Atlas

5.4 GEOLOGY

Table 5.7 below depicts the geological characteristics of the Umzumbe A Rural Housing project area; this geological overview gives an overall description of the various geological formations of the area. The area is underlain by three distinct rock types and the dominant geological formation is



UMZUMBE LOCAL MUNICIPALITY

UMZUMBE A PHASE 2 RURAL SUBSIDISED HOUSING DEVELOPMENT

GEOLOGY

LEGEND:

- uMzumbe A Phase 2
- Local Municipal Boundaries
- 20m Contours

River Network

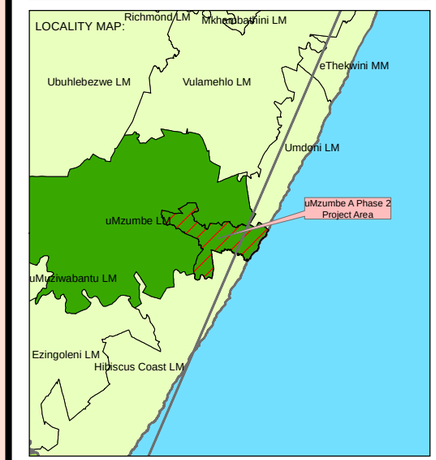
- Non-Perennial Rivers and Streams
- Perennial Rivers and Streams

Road Network

- National Road
- Provincial Road
- Main Road
- District Road
- Local Access Road

Geology

- ARENITE
- GNEISS
- MARBLE
- TILLITE



SCALE :
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"G*neiss"* which covers approximately 69.16%, the second most dominant geological formation is "*Arenite* with 29.59%. Other formations occur but in small amounts.

Table 5.7: Geology

Geology	Area (Ha)	Percentage of Total Area
Arenite	3621.02	29.59%
Marble	153.71	1.26%
Gneiss	8463.38	69.16%
Total Area	**12238.11**	**100%**

Source: KZN Environmental Potential Atlas

More detailed information on the geotechnical conditions of the study area is contained in a preliminary geotechnical report. This report indicates the physical implications and impact of these geotechnical conditions on overall development.

5.5 VEGETATION

The Umzumbe A Rural Housing project area is located within eleven vegetation types. The "*Zululand Lowveld*" is the most dominant vegetation type with 54.38% followed by the "*Zululand Coastal Thornveld*" vegetation type which covers 24.89%.These vegetation types are further discussed below. Other vegetation types that occur are of small amounts.

Table 5.8: Vegetation

Vegetation	Area (Ha)	Percentage of Total Area
KwaZulu-Natal Coastal Belt	11937.94	96.97%
Ngongoni Veld	336.83	2.74%
Subtropical Seashore Vegetation	35.59	0.29%
Total Area	**12310.36**	**100%**

Source: Muchina and Rutherford, 2006

5.5.1 KwaZulu-Natal Coastal Belt (Musina & Rutherford, 2006)

The KwaZulu-Natal Coastal Belt can be found in KwaZulu-Natal Province: Long and in places broad coastal strip along the KwaZulu-Natal coast, from near Mtunzini in the north, via Durban to Margate and just short of Port Edward

in the south. Altitude ranges from about 20-450 m. The vegetation category is characterized by highly dissected undulating coastal plains which presumably used to be covered to a great extent with various types of subtropical coastal forest. Some primary grassland dominated by *Themeda triandra* still occurs in hilly, high-rainfall areas where pressure from natural fire and grazing regimes prevailed. At present the KwaZulu-Natal Coastal Belt is affected by an intricate mosaic of very extensive sugarcane fields, timber plantations and coastal holiday resorts, with interspersed secondary *Aristida* grasslands, thickets and patches of coastal thornveld.

The geology and soils associated with this vegetation include Ordovician Natal Group sandstone, Dwyka tillite, Ecca shale and Mapumulo gneiss (Mokolian) dominate the landscapes of the KwaZulu-Natal Coastal Belt. Weathering of old dunes has produced the red sand, called the Berea Red Sand, in places. The soils supported by the above-mentioned rocks are shallow over hard sandstones and deeper over younger, softer rocks. Fa land type dominates the area, while Ab land type is only of minor importance.

The KwaZulu-Natal vegetation category occurs in areas characterized as receiving summer rainfall, but with some rainfall also in winter. A high air humidity and no incidence of frost occurring. Mean maximum and minimum monthly temperatures for Durban (airport) are 32.6°C and 5.8C and for Port Shepstone 30.6°C and 8.8° (both for January and July, respectively). This vegetation type is regarded as endangered, with a conservation target of 25%. Only very small part statutorily conserved in Ngoye, Mbumbazi and Vernon Croakes Nature Reserves. About 50% transformed for cultivation, by urban sprawl and for road-building.

Figure 5.5.2: KwaZulu-Natal Coastal Belt: Complex of primary species-rich grasslands and subtropical forests in Vernon Crookes Nature Reserve near Umzinto, KwaZulu-Natal.

5.5.2 Ngongoni Veld (Musina & Rutherford, 2006)

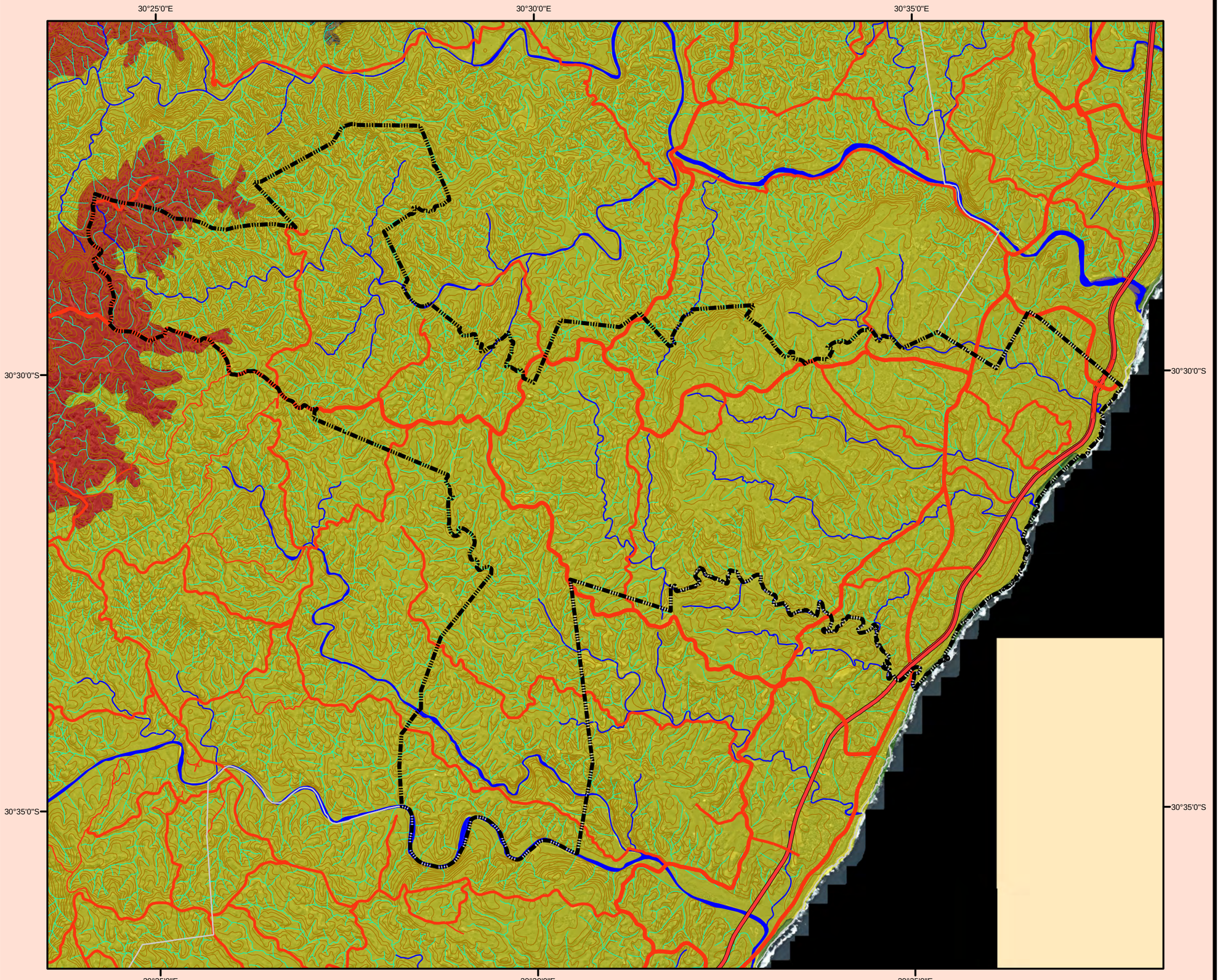
The Ngongoni Veld vegetation group can be found in the KwaZulu-Natal and Eastern Cape provinces from Melmoth in the north to near Libode in the former Transkei (including Eshowe, New Hanover, Camperdown, Eston, Richmond, Dumisa, Harding, Lusikisiki and the Libode area), at an altitude of 400 to 900 m's above sea level. The vegetation category is characterised as dense, tall grassland overwhelmingly dominated by unpalatable, wiry Ngongoni grass *(Aristida junciformis)*. The dominance of this species in Ngongoni veld results in low species diversity. Wooded areas (thornveld) are found in valleys at lower altitudes, where the vegetation unit grades into KwaZulu-Natal Hinterland Thornveld and Bhisho Thornveld. Termitaria support bush clumps with *Acacia* species, *Cussonia spicata, Ziziphus mucronata, Coddia rudis* and *Ehretia rigida* etc.

The geology and soils associated with this vegetation include acidic, leached, heavy soils derived from Karoo Supergroup sediments (including significant Dwyka tillites) and intrusive Karoo dolerites, while Glenrosa and Mispah soils also occur.

The Ngongoni Veld vegetation category occurs in areas characterized as receiving summer rainfall with some rain in winter, with a mean annual precipitation of between 700 – 1100 mm's. Mean monthly maximum and minimum temperatures of 37.0 °C and 4.9 °C for Melmoth and 38.2 °C and -

0.2 °C for New Hanover were recorded for January and June respectively. Some valleys are sheltered and may show weak rain shadow effects, while Frost is infrequent, it occurs in areas where cold air becomes trapped in valleys. This vegetation type is regarded as being vulnerable, with a conservation target of 25%, of which only less than 1% is statutorily conserved in the Ophathe and Vernon Crookes Nature Reserves. Approximately 39% has been transformed for cultivation, plantations and urban development purposes.

Figure 5.5.2: Example of Ngongoni Veld in the Vernon Crookes Nature Reserve near Scottburgh, southern KwaZulu-Natal.



UMZUMBE LOCAL MUNICIPALITY

UMZUMBE A PHASE 2 RURAL SUBSIDISED HOUSING DEVELOPMENT

VEGETATION

LEGEND:

- uMzumbe A Phase 2
- Local Municipal Boundaries
- 20m Contours

River Network

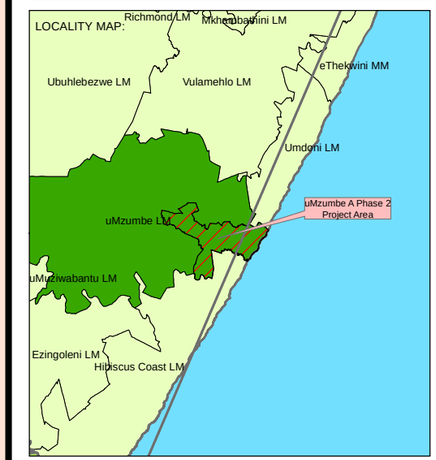
- Non-Perennial Rivers and Streams
- Perennial Rivers and Streams

Road Network

- National Road
- Provincial Road
- Main Road
- District Road
- Local Access Road

Vegetation

- KwaZulu-Natal Coastal Belt
- Ngongoni Veld
- Subtropical Coastal Lagoons
- Subtropical Seashore Vegetation



SCALE :
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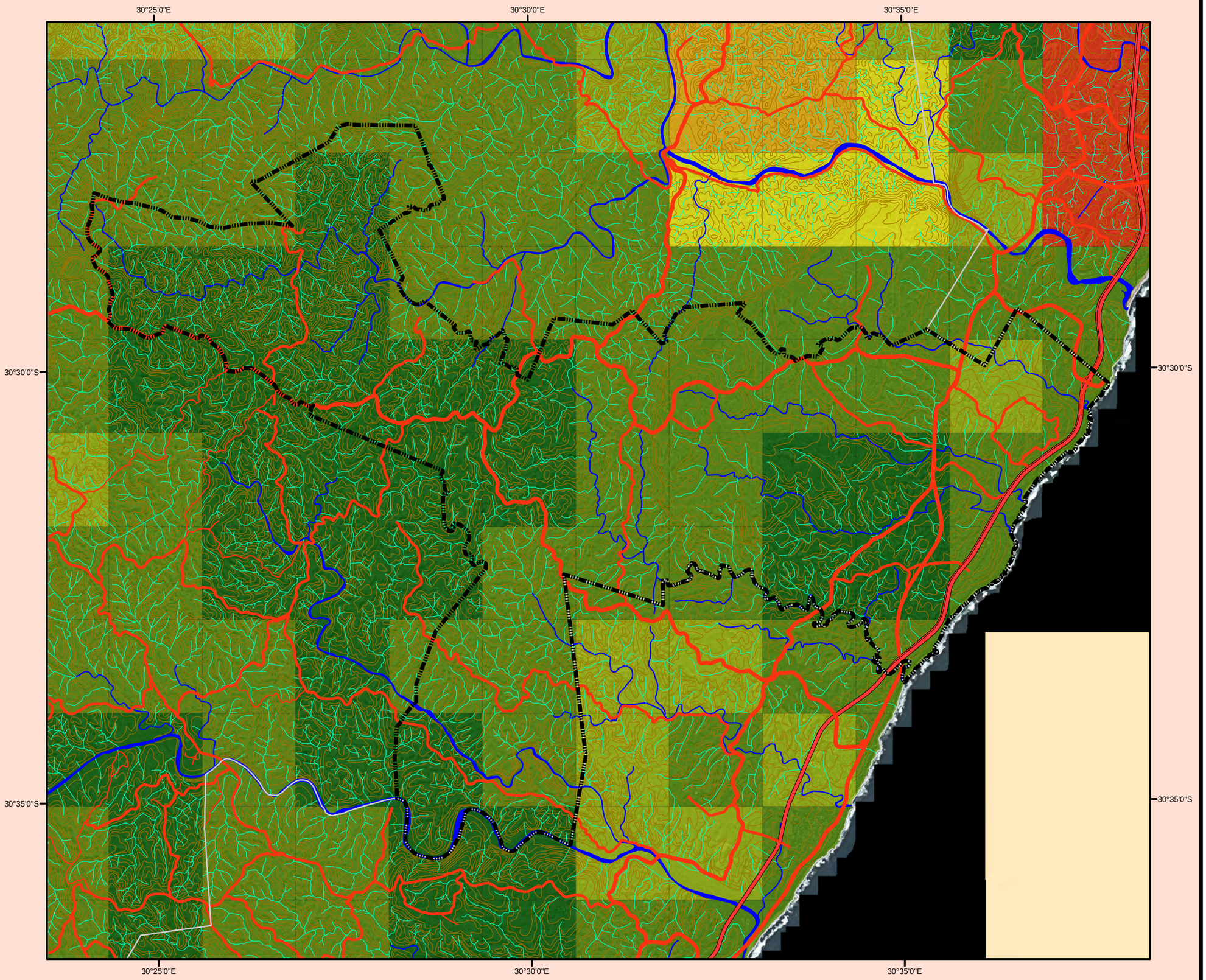
5.6 EZEMVELO KZN CONSERVATION PLAN

South Africa has ratified the International Convention on Biological Diversity, which commits the country, including KwaZulu-Natal, to develop and implement a strategy for the conservation, sustainable use and equitable sharing of the benefits of biodiversity. This requires Provincial Authorities together with the Department of Environment and Tourism, to compile and implement a 'Bioregional Plan' for the province that ensures that a minimum area of each bioregion with all its representative ecosystems is protected. In order to address these requirements in a logical manner, KZN Wildlife in collaboration with the Development Bank of Southern Africa and the KZN Town and Regional Planning Commission has collaborated on a project which aimed to develop a systematic but flexible decision-framework for the conservation of the province's biodiversity. The project was entitled the 'Systematic Conservation Plan and Decision-Framework for KwaZulu-Natal'. The first product of the conservation planning analysis in C-Plan is an irreplaceability map of the planning area, in this case the province of KwaZulu-Natal. A low irreplaceability value indicates that many options are available for meeting the conservation targets set for each element of biodiversity that is likely to be found in the area. Conservation targets represent the amount (e.g. area or population size) required to conserve that biodiversity element in perpetuity and is determined prior to each element being included into the analysis.

The irreplaceability map for the study area indicates that the area's irreplaceability value varies from 0 to 0.4, thus indicating that the Umzumbe A Rural Housing project area is considered low intensity irreplaceable with regards to biodiversity (see Attached Thematic Map). The project area's biodiversity is therefore likely to be characterized as being not threatened or not endangered characteristics in these areas, and therefore the implementation of the proposed housing project should be well planned and wary not have any adverse or negative impact on the areas biodiversity. A diverse approach to biological protection should however be adopted and implemented as part of the proposed project as part of the good practice principle and to protect any biologically diverse features which may occur within the area. **It should however 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 surrounding environment. Care should however still be taken to ensure no areas adjacent to the existing iMuzi's are impacted on.**



UMZUMBE LOCAL MUNICIPALITY

UMZUMBE A PHASE 2 RURAL SUBSIDISED HOUSING DEVELOPMENT

IRREPLACEABILITY

LEGEND:

- uMzumbe A Phase 2
- Local Municipal Boundaries
- 20m Contours

River Network

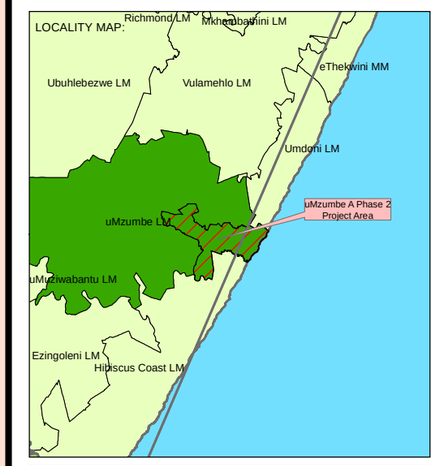
- Non-Perennial Rivers and Streams
- Perennial Rivers and Streams

Road Network

- National Road
- Provincial Road
- Main Road
- District Road
- Local Access Road

Irreplaceability

- 0
- 0 - 0.2
- 0.2 - 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 0.9
- 1



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5.7 MINERAL DEPOSITS

There are no known mineral deposits occurring within the boundary of the Umzumbe A Rural Housing project area.

5.8 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 Amafa Akwazulu 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. This aspect will however have to be further investigated during the environmental scoping phase and be informed by detailed land use information emanating from the planning component of the project.

6 EXISTING SETTLEMENT PATTERN

The project area is approximately 12 313.9 Ha's in extent and is located in the Umzumbe Local Municipality. The project area includes land falling under the rule of the Hlongwa, Thulini, Qwabe and Ndelu Tribal Authorities and some sections are privately owned which make-up Wards 10, 16, 17, 18, and 19 of the Umzumbe Municipality. The project area is bordered by Ward 7 of the Big 5 False Bay Local Municipality and Wards 15 and 11 of the uMzumbe Local Municipality to the north. The ocean serves as the border of the project area to the east. The project area is bordered by Wards 13 and 15 of the Hibiscus Coast Local Municipality and Wards 13 and 14 of the uMzumbe Local Municipality to the south, and Ward 12 of the uMzumbe Local Municipality to the west. The project shall be titled and referred to as the "Umzumbe A Rural Housing Project/ Project Area" for the purpose of easy reference in report writing. The total population of the project area, as indicated in the South African Census 2011 community survey, was estimated to be approximately 51 006 persons.

The project area's leadership with regards to the Act's mentioned above therefore have the right to allocate residential sites to members of their Traditional Authority within the proclaimed Umzumbe A 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. Alternatively however, homesteads built within the iMuzi may be 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 Provincial and District Road network that provide access to the project area.

- 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. Such a notion is reflected as recently as 2011, in the 2011 South African Census which depicted approximately 11.25% of the total Umzumbe A Rural Housing project area households as being reliant on untreated water from 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 project areas households 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 32 m buffer of all rivers, wetlands and streams will also be omitted from the Umzumbe A 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 Umzumbe A Rural Subsidised Housing development.

7 CONCLUSIONS 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 24.64%. 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 44.8% of the total population of the study area is younger than 19 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 52.60% 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.

- The information depicted in Section 3 indicated that the majority of all households are potentially in need of formalized housing (24.64%). It was furthermore indicated in Section 4

that the majority of households 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 38.89% of all households earning less than R 1600 per household per month.

- The low affordability levels in the study area are clearly the result of the high unemployment rate (35.38%).

7.2 SERVICES ASPECT

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

- Only 34.75% of households in the study area receive water at levels above the minimum RDP standards according to the 2011 Census information (piped water within a 200 m radius). In addition, a small proportion of the project area population approximately 11.25% of households utilize water directly from rivers or streams within the area.

- Approximately 52.94% of all households in the study area are reliant on unimproved pit latrines. The potential impact of the extensive utilization of unimproved pit latrines and other forms of inappropriate sanitation infrastructure, together with the widespread use of untreated surface and ground water as far as potential health implication is clearly evident from this information.

- As much as 78.85% of the total number of households within the study area has access to electricity for lighting purposes. These high access levels to electricity infrastructure mean that it is likely to result in the little use of firewood and other alternative forms of energy for heating and cooking purposes which will minimise negative impact on the biophysical environmental.

7.3 INFRASTRUCTURAL ASPECTS

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

- The project area seems to be fairly well serviced with regards to access, with the National Road (N2), Provincial roads P3-1, P286, P73, and P75-3 traversing the project area, in addition to a number of District roads and other access and local footpaths and tracks service access to the 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 dominant land cover within the study area is the *"Degraded: thicket & bushland"* (69.28% of the total land area); followed by the *"Cultivated : permanent - commercial sugarcane"* land cover accounts (22.28%). From a development perspective it is important to take due consideration of cultivated areas of land which are made use of for subsistence purposes, so as to minimize any loss of, or impact to, subsistence land which may in turn negatively impact on the residents of the project area.

- The majority of the project area (26.80%) is characterized by fairly flat slopes (Between 1:20 – 1:10) and 21.76% of the area has a slope character *"Flatter than 1:20"* while 2.05% of the area has a slope of "Steeper than 1:3". Appropriate planning and design principles suitable for the areas typography taking due cognizance of the characteristics of the area must be applied during the planning and design stages of this housing process.

- The area is traversed by a number of perennial and non-perennial water courses comprising rivers, wetlands and streams, all of which are conducive to periodic flooding. Due cognizance of the 32 m Buffer must be taken to ensure no construction activities occur within floodline areas.

- The project area is covered by three vegetation categories occurring across the project area, namely the “KwaZulu-Natal Coastal Belt” which covers 96.97% and the “Ngongoni Veld” which covers 2.74%.

- According to Ezemvelo KwaZulu-Natal Wildlife’s C-Plan information for the Ugu District, the Umzumbe A Rural Housing project area has an irreplaceability value which ranges between 0 and 0.4 across the total extent of the project area. Whereas an irreplaceability value of 1 indicates that the area is considered to be completely irreplaceable with regards to biodiversity, the figures for the Umzumbe A Rural Housing area thus indicate that the area is considered low intensity irreplaceable with the area being 0 – 0.4 in terms of the biodiversity contained therein.

- There are no known mineral deposits occurring within the boundary of the Umzumbe A Rural Housing project area and traces of Nickel deposit points occur within close proximity to the project area.

- There are no known archaeological, cultural or historical sites or artefacts located within the Umzumbe A 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 Degraded: thicket & bushland.
- The project area is characterized by low, medium and high 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 of the project area (26.80%) is characterized by fairly flat slopes (Between 1:20 – 1:10) and 21.76% of the area has a slope character “Flatter than 1:20” while 2.05% of the area has a slope of “Steeper than 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.

- Amafa Akwazulu 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.

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 sites. If waste dumps are established for housing developments, a waste disposal license will be required from the Department of Water Affairs and Forestry.	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 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		This regulation requires the control of weeds and invader plants, which occur on any land or inland water surface in SA.	Weeds and invader plans should be eradicated if occurring at the final

Resources Act (Act 43 of 1983 and GN R1048)		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	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

7.8 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.

UMZUMBE A RURAL SUBSIDISED HOUSING DEVELOPMENT

PRELIMINARY ENVIRONMENTAL ASSESSMENT

May 2014

Mr. Gert Watson
K2M Environmental (Pty) Ltd
DIRECTOR

Date