

ENVIRONMENTAL SCREENING REPORT

SANDLWANA HOUSING PROJECT OKHAHLAMBA LOCAL MUNICIPALITY UTHUKELA DISTRICT MUNICIPALITY KWAZULU NATAL

21 JULY 2017

Prepared for:

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EXECUTIVE SUMMARY

The Okhahlamba Local Municipality in KwaZulu Natal is proposing the upgrading of rural homesteads through the construction of Low Income Houses within the area called Sandlwana situated approximately 26Km west of Bergville. The development may consist of the construction of additional houses and the upgrading of buildings at the existing homesteads.

EnviroMatrix Environmental Services was appointed by Plan Centre Town Planners to gain a preliminary understanding of the environmental status quo of the site. For this a desktop-level assessment was conducted using the following (i) aerial imagery from Google Earth and SANBI BGIS associated mapping and (ii) literature that is available in the public domain. The Desktop survey was followed by a site investigation on 14 July 2017 to assess the current environmental conditions and to identify areas which will have potential environmental issues in terms of the physical, social and heritage environment.

The proposed Sandlwana development area is known as Ward 5 of Okhahlamba Local Municipality and is situated on the Farm: Upper Tugela No. 4794 approximately 26Km west from Bergville next to the Woodstock Dam. The towering steep Okhahlamba Drakensberg escapement dominates the area with the Mnweni River Valley dissecting the area from west to east eventually flowing into the Woodstock Dam.

The area is a rural area with little formal development that has taken place, except for approximately 5 schools and clinics as well as a police station and army base. Approximately 1 500 rural homesteads are scattered on the lower, moderate hill slopes of the Mnweni River Valley over an area of about 6 000Ha. The low laying valley floors is used for cultivated subsistence farming with grasslands on the higher steeper slopes.

The following environmental and social issues were identified to be considered during the design and effectually construction phases: (i) The topography (steep slopes) and potential shallow bedrock of the Tarkastad Formation can be limiting factors for the housing development. (ii) The ecological sensitive areas such as the small streams and drainage channels, small wetlands and sheltered indigenous thickets in small valleys will have a higher biodiversity. As a result no development is proposed within 50m from the edge of the streams and small wetlands.

The following will have to be investigated further during the Authorisation process:

- 1) An application may need to be made to the KZN Department of Economical Development, Tourism and Environmental Affairs for exemption of Environmental Authorisation(s) if the project is an in situ development.
- 2) An Environmental Management Plan must be developed for the construction phase of the development.
- 3) An Archaeological and Palaeontological Phase 1 investigation must be done to assess the potential for encountering any cultural significant heritage.
- 4) Contact AMAFA Heritage KZN for comments and further guidance regarding further investigations.

DECLARATION OF INDEPENDENCE

I, Thomas Arnoldus Hugo, ID 620720 5033 082, declare that I:

- am the owner of EnviroMatrix;
- act as an independent specialist consultant in the field of environmental management;
- am assigned as specialist consultant by Plan Centre Town Planners for this proposed project;
- I do not have or will not have any financial interest in the undertaking of the activity other than remuneration for work as stipulated in the terms of reference;
- have or will not have any vested interest in the proposed activity proceeding;
- have no and will not engage in conflicting interests in the undertaking of the activity;
- undertake to disclose to the client and the competent authority any material, information that have or may have the potential to influence the decision of the competent authority required in terms of the Environmental Impact Assessment Regulations 2014;
- will provide the client and competent authority with access to all information at my disposal, regarding this project, whether favourable or not.



TA Hugo, MEM

PriSciNat No: 400124/96

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1 INTRODUCTION

The Okhahlamba Local Municipality in KwaZulu Natal is proposing the upgrading of rural homesteads through the construction of Low Income Houses within the area called Sandlwana situated approximately 26Km west of Bergville. The development may consist of the construction of additional houses and the upgrading of buildings at the existing homesteads.

EnviroMatrix Environmental Services was appointed by Plan Centre Town Planners to gain a preliminary understanding of the environmental status quo of the site. For this a desktop-level assessment was conducted using the following (i) aerial imagery from Google Earth and SANBI BGIS associated mapping and (ii) literature that is available in the public domain. The Desktop survey was followed by a site investigation on 14 July 2017 to assess the current environmental conditions and to identify areas which will have potential environmental issues in terms of the physical, social and heritage environment.

2 SITE LOCATION

The proposed Sandlwana development area is know as Ward 5 of Okhahlamba Local Municipality and is situated on the Farm: Upper Tugela No. 4794 approximately 26Km west from Bergville next to the Woodstock Dam, as can be seen in Figure 2.1. The Lesotho boundary and the Okhahlamba Drakensberg escapement is approximately 4Km towards the west of the development area.



Figure 2.1 Locality of the proposed housing development at Sandlwana

3 SITE DESCRIPTION

The towering steep Okhahlamba Drakensberg escapement dominates the area with the Mnweni River Valley dissecting the area from west to east eventually flowing into the Woodstock Dam (Figure 3.1). The area is situated within a rural area with little formal development that has taken place, except for approximately 5 schools and clinics as well as a police station and army base.

Approximately 1 500 rural homesteads are scattered on the lower, moderate hill slopes of the Mnweni River Valley over an area of about 6 000Ha. The homesteads form six small villages namely; Sigodini, Sandlwana, Manzana, Mableseni, Bikibiki and Qalabeni, as can be seen in Figure 3.1.



Figure 3.1 Villages in the development area

The area consists of river valleys with lower moderate hill slopes that become very steep forming the Okhahlamba Drakensberg escapement (Figure 3.2).



Figure 3.2 Typical landscape at the development area.

3.1 Land Use and Cover

The following land cover and uses were recorded by SANBI (Figure 3.3). Low density settlements (yellow areas) on the middle slopes, cultivated subsistence (pink areas) on the river valley floors (Figure 3.4), grasslands (kaki areas) on the higher steeper slopes, small woodlots (orange areas) next to the homesteads (Figure 3.5), indigenous forest (green areas) in the narrow sheltered valleys (Figure 3.6) and erosion (white areas) on the river banks (Figure 3.7).

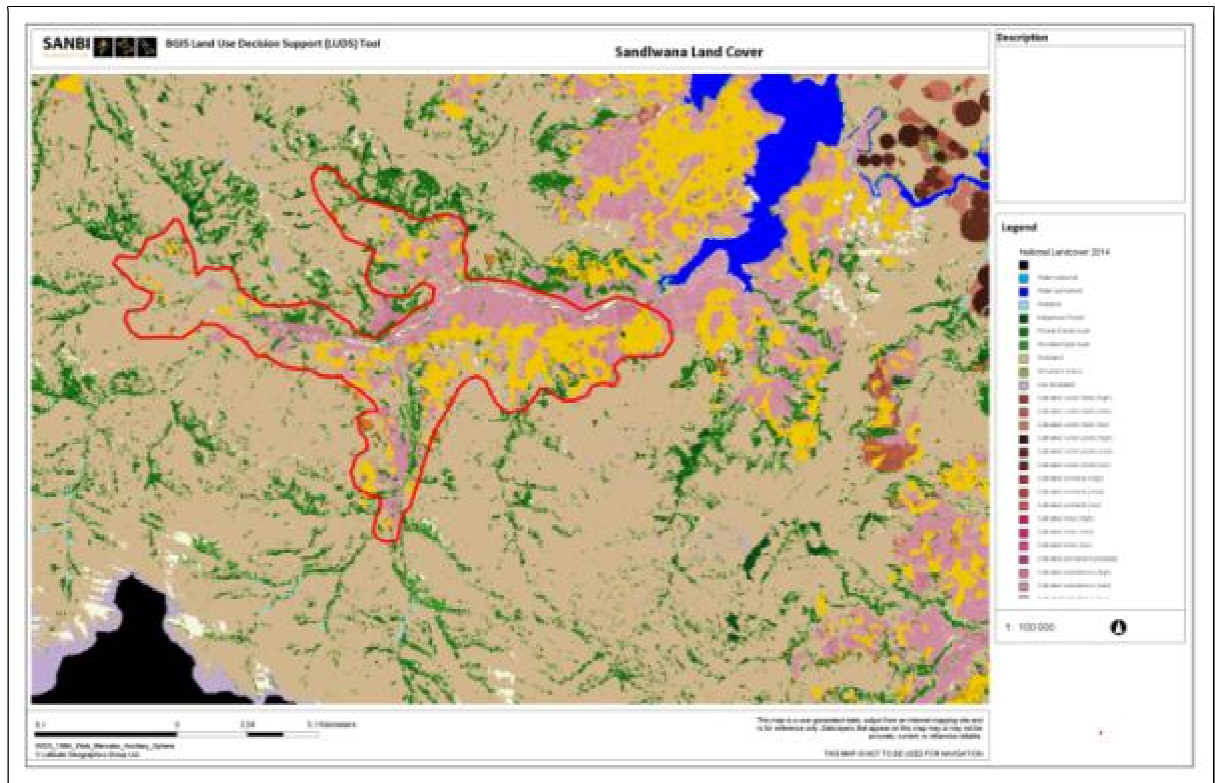


Figure 3.3 SANBI Land Cover Map, of the Sandlwana housing development area



Figure 3.4 Cultivated subsistence



Figure 3.5 Woodlots at homesteads



Figure 3.6 Indigenous forests in sheltered valleys



Figure 3.7 Erosion on river banks

3.2 Bio-Physical Environment

3.2.1 Topography

Sandlwana topography, as illustrated in Figure 3.9, is characterised by narrow flat valley floors in the higher laying areas next to the drainage channels, becoming wider towards the west. In the north, steep slopes rises from the valley floors to form mountain ridges and peaks that are over 2 000m high. In the west these mountain ridges and peaks are rising to approximately 3 100m. In the south steep slopes rises from the valley floor going over into more moderate middle slope where most of the current home steads are situated. The area drains towards the west with moderate slopes going into flat lands at Wood Stock Dam

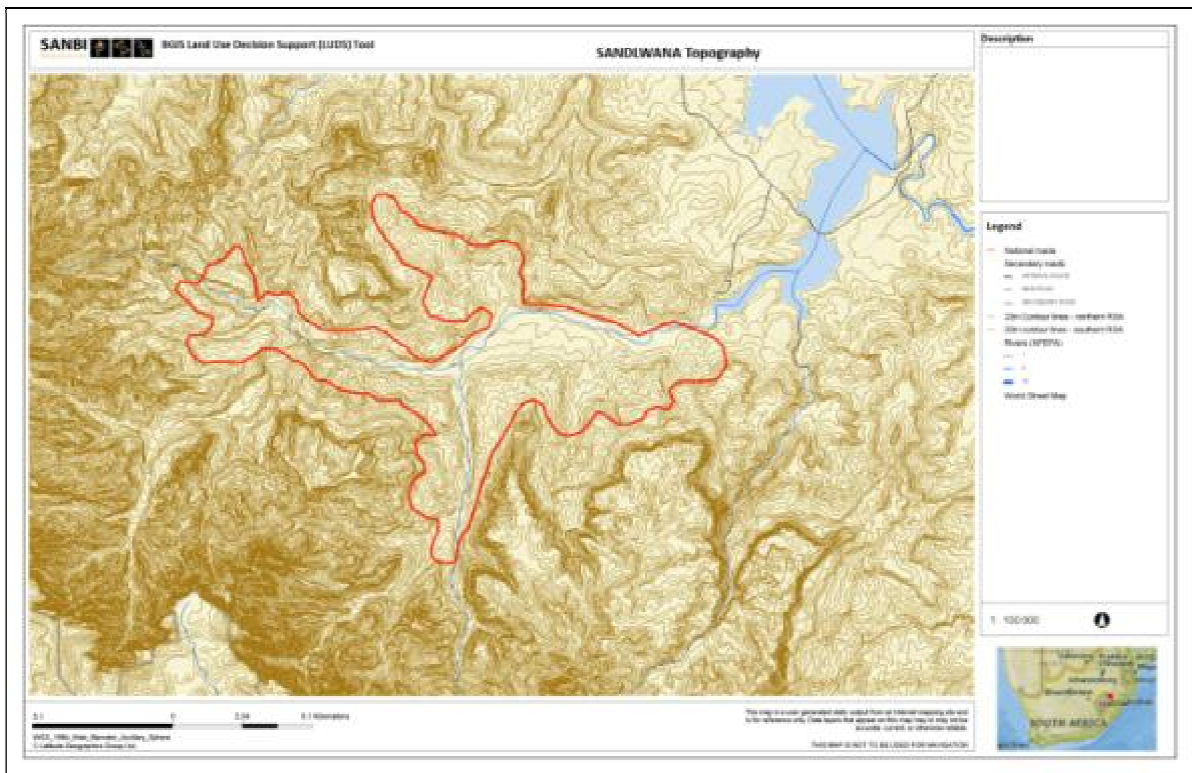


Figure 3.8 SANBI Topography Map, of the Sandlwana housing development area

3.2.2 Geology

The entire development area, as illustrated in Figure 3.10, is underlain by Triassic aged sandstone and mudstones of the Tarkastad Subgroup (Trt) that forms part of the Beaufort Group of the Karoo Supergroup. The Tarkastad Subgroup (Trt) consists of a thick bed of sandstone at the base, followed by alternation of sandstone, and brownish-red and green mudstones. Jurassic aged Dolerite (Jd) occur over the entire study area in the form of large, thick sills, in the east and thin dykes in the west, that intruded the sedimentary Tarkastad Subgroup. Quaternary aged sediments occur on the valley floors following the drainage lines and consisting of layered claye sand material.

The higher laying areas around the development is a sequence of various of sandstones and shales of the Molteno Formation (Trm), the Clarens Formation (Trc) and the Elliot Formation (Tre) capped by the basalts of the Drakensberg Formation (Jdb) that occupies the Drakensberg Plateau en Lesotho.

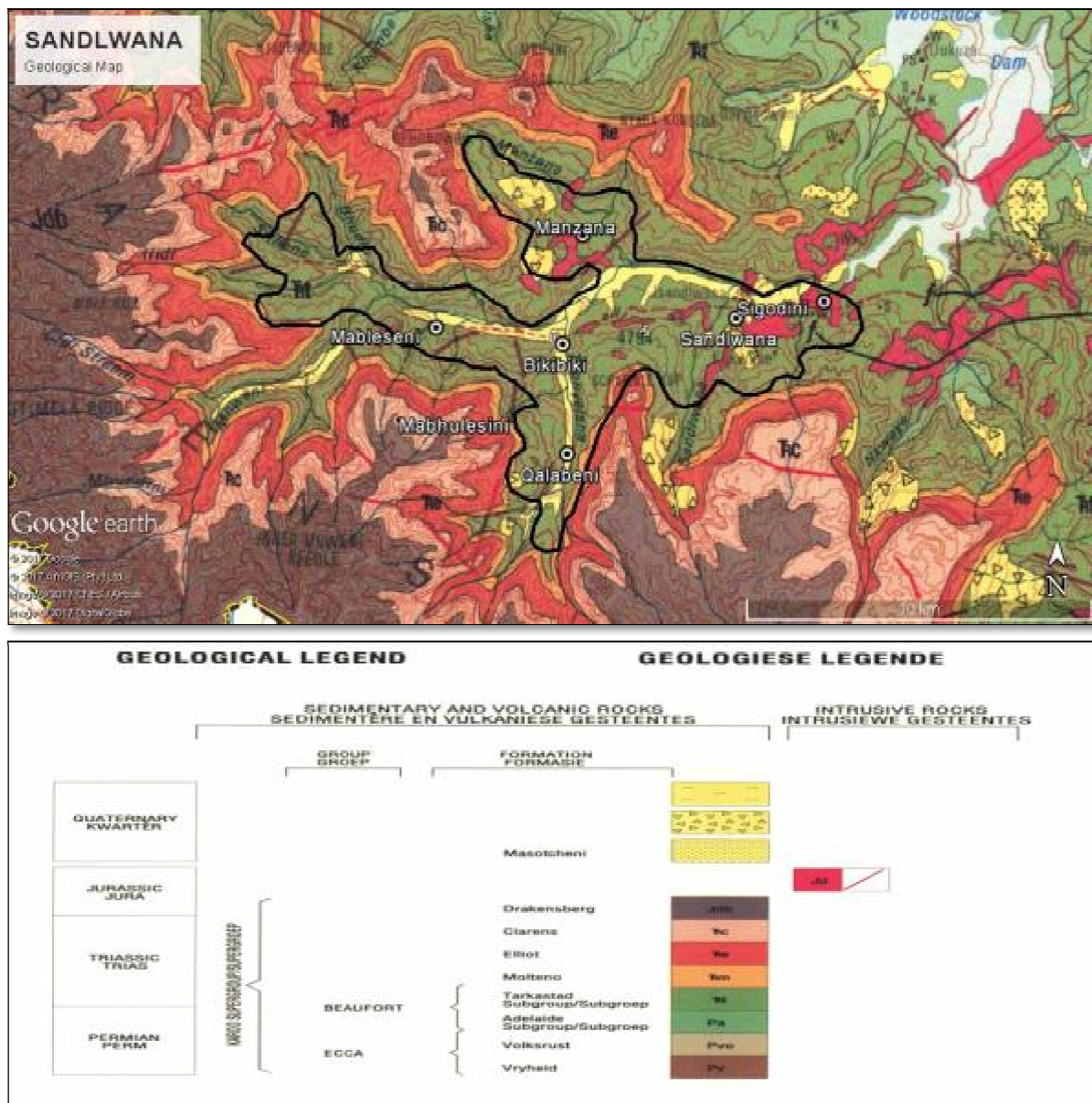


Figure 3.9 Geology of the Sandlwana housing project (GeoMap 2828 Harrismith)

3.2.3 Soils

The soils in the development area consist of freely drained, structureless soils of medium depth. The bordering lower mountain slopes have shallow soils on hard or weathered rock. The higher mountain slopes and peaks are classified as non-soils (Figure 3.11). For the Tarkastad Subgroup on the moderate slopes of the development area (Figure 3.10) the following can be expected:

- **Terrain Properties:** - Level middle slope with medium depth slightly moist, yellow/brown, firm, intact, slightly clayey sand, residual soils on Tarkastad Subgroup.
- **Geotechnical Constraints:** - Difficulty of excavations due to expected bedrock from about 1m depth.
- **Engineering Requirements:** - Very little engineering requirements, except for excavation difficulties due to shallow sandstone (0,5-1,5m) expected.

For the alluvial sediments of the Quaternary Deposits in the valley floors (Figure 4.9) the following can be expected

- **Terrain Properties:** - Level foot slope with deep slightly moist, yellow/brown, firm, intact, slightly claye sand, alluvial soils.
- **Geotechnical Constraints** - Moderate collapsible soil properties expected for alluvial deposits. There is a potential for seepage especially during the raining season. No excavations difficulty as expected bedrock from >1,5m depth.
- **Engineering Requirements:** - Very little engineering restriction except to counter collapsible soils and the potential of a high water table during the raining season that might lead to wet conditions during the installation of infrastructure

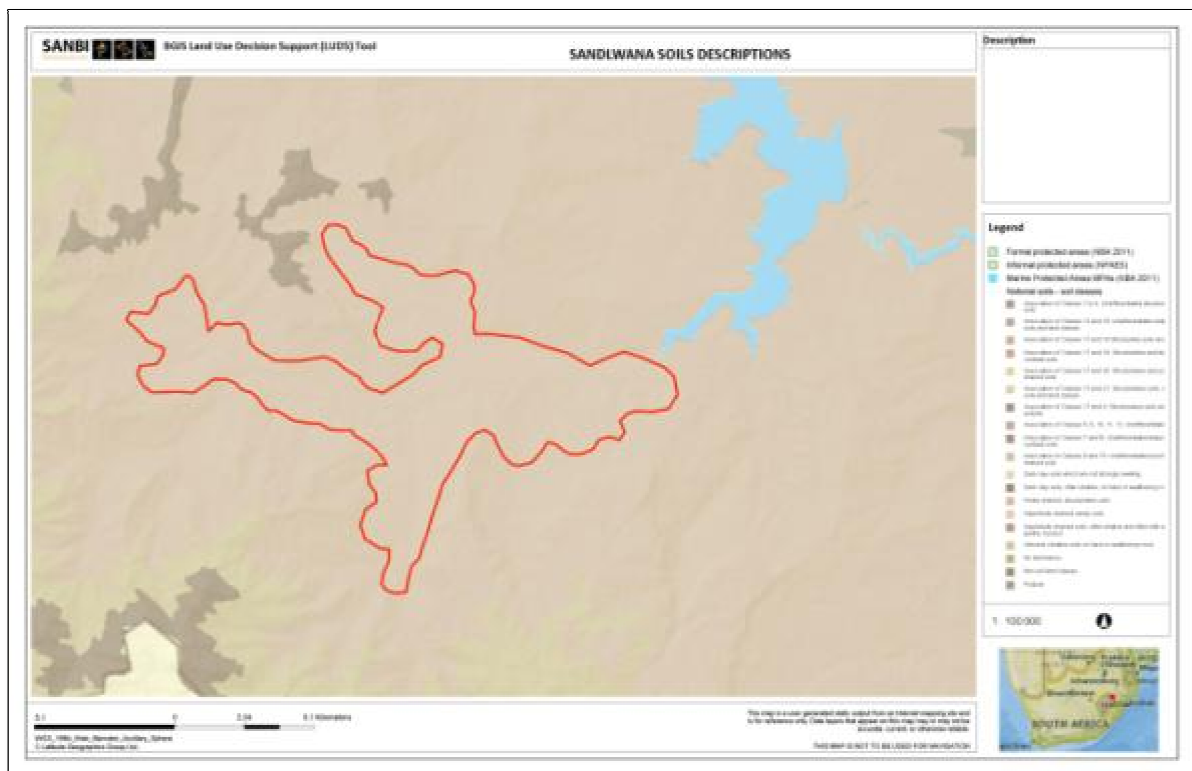


Figure 3.10 SANBI Soil Map of the Sandlwana rural housing project

3.2.4 Surface Water

The Thonyelana stream drains the development area from the south into the Mnweni stream. The Manzana stream drain the northern part of the development area into the Mnweni stream. The Mnweni stream drains the Sandlwana area from east to west into the Wood Stock Dam, as illustrated in Figure 3.11. These stream and dam is part of the Upper Tugela sub water management area that is part of the Thukela water management area.

Various small wetlands are identified within the development area (Figures 3.11 & 3.12). All these are situated in the area use for cultivation on the banks of drainage channels and not within 150m of any home steads.

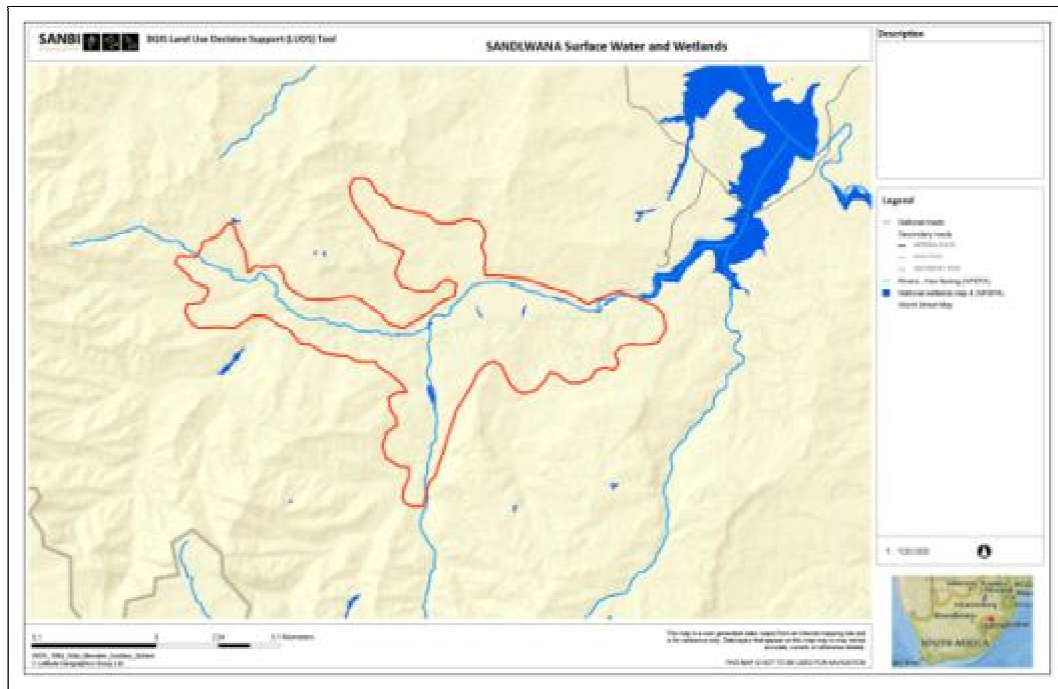


Figure 3.11 SANBI Surface Water and Wetlands Map of the Sandlwana rural housing project



Figure 3.12 A small wetland in the Mnweni River Valley

3.2.5 Flora

The lower laying areas of the Sandlwana development area falls within the Northern KwaZulu Natal Most Grassland (Light Green, Figure 3.13). This vegetation type occurs on hilly and rolling landscapes supporting tall tussock grassland usually dominated by *Themeda triandra* and *Hyparrhenia hirta*. Open *Accacia sieberiana* woodland encroaches up the valleys, usually on disturbed areas. The conservation status of this vegetation type is classified as vulnerable due to habitat transformation such as plantations and cultivated lands.

The higher laying middle slopes of the development area falls within the Drakensberg Foothill Moist Grassland (Lime Green, Figure 3.13). This vegetation type occurs on moderately rolling and mountainous landscapes, much incised by river gorges of drier vegetation types and by forest. The vegetation is covered in forb-rich grassland dominated by short bunch grasses including *Themeda triandra* and *Tristachya leucothrix*. The conservation status of this vegetation type is classified as least threatened due to minimum habitat loss and large areas within proclaimed nature reserves.

The vegetation type bordering the development area is the Northern Drakensberg Highland Grassland (Darker Green, Figure 3.13). This vegetation type occurs in mountainous region characterised by steep slopes of broad valleys and supporting mainly short, sour grasslands, rich in forbs. So-called 'Protea savannas'—grasslands that contain widely scattered trees of *Protea caffra* and occasionally *P. roupelliae*—fall within this unit. The conservation status of this vegetation type is classified as least threatened due to large areas within proclaimed nature reserves

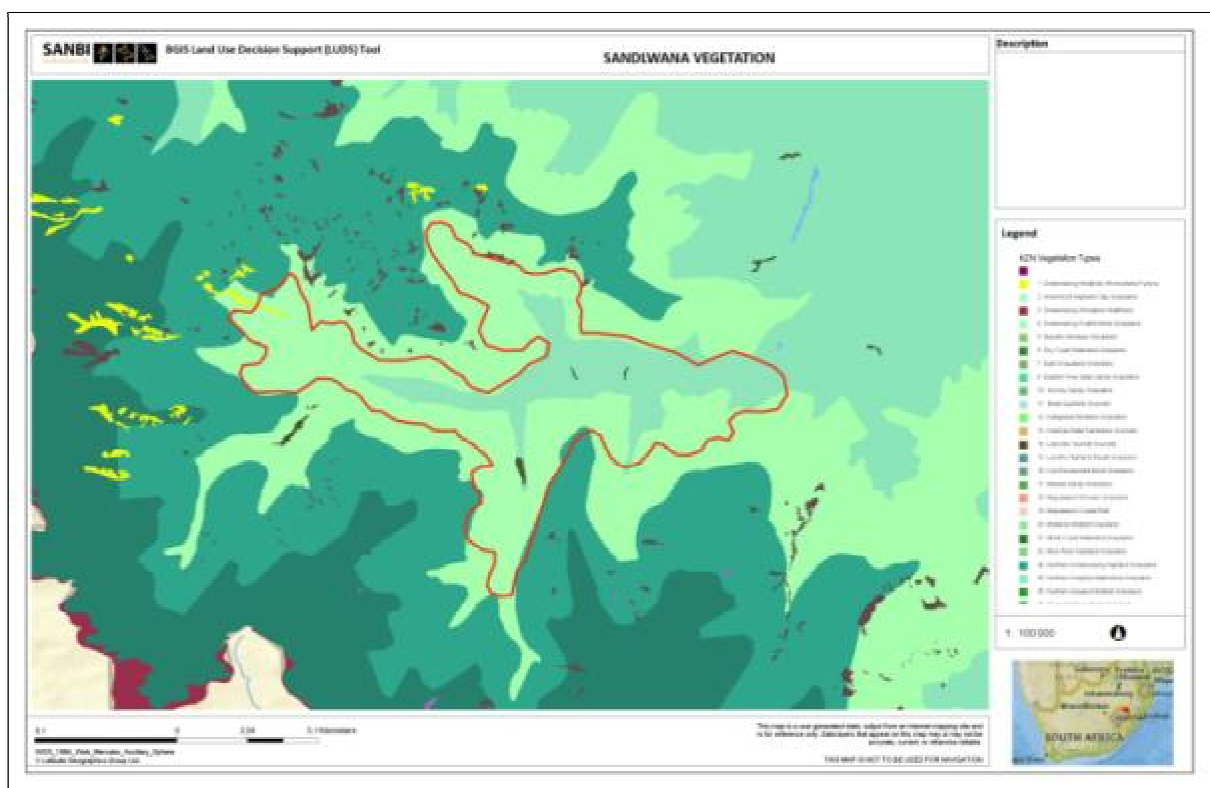


Figure 3.13 SANBI Vegetation Map of the Sandlwana housing project (Mucina & Rutherford, 2006)

3.2.6 Fauna

During the site investigation no wild animals were observed in the study area, but it can be assumed that wild animals do occur within the area, especially in areas where development has not taken place. No Red Data species were observed during the site investigation.

3.3 Social Aspects

3.3.1 Local Economy

The upgrading / construction of new low income houses at the Sandlwana area will have an overall positive impact on the local community. During the construction phase of the project some localised economic stimulation may be observed through short term job creation.

Some negative impacts on the local community can also be encountered during the planning construction phases of the low income houses. The area earmarked for development may impact on communal grazing areas and skilled construction labour need to be imported.

3.3.1 Visual impact

Visual impact and “sense of place” is primarily a subjective concern. The aesthetic amenity must be considered in any land use change, especially in the more rural areas or where landscape management is of prime concern. The visual impact is a function of the visual landscape, receptors and the magnitude of change (IEMA United Kingdom).

The local residents are considered to be the primary receptors in this area, living and working in the rural environment. Secondary receptors include the users of the roads which runs through the site, any change in land use or construction activities will be noticeable from the road.

The landscape consists of open wooded grasslands. Near the rural dwellings the natural environment has been disturbed by over grazing followed by exotic plant growth and wood gathering (Figure 3.14 & 15), while the environment further away from the residential areas is in more pristine condition and any development in these pristine areas will have a bigger visual effect than in the areas already disturbed.



Figure 3.14 Wood gathering



Figure 3.15 Exotic growth in small valleys

Any changes, such as improved housing, in the rural residential area will have a smaller visual impact than the construction of new houses in the more pristine areas as the magnitude of change is smaller in the already disturbed areas.

3.3.2 Noise

The proposed housing development area is situated within a rural area with very little noise emanating from the rural community. Some noise is generated from traffic moving along the internal access roads. During the construction phase an increase in noise levels will occur due to an increase in vehicles moving in and out of the area and machinery operating on the site to construct the houses. This increase in noise levels will be temporary, lasting only as long as the construction phase.

3.3.3 Solid waste

During the construction phase solid waste will be generated which will need to be disposed of. Waste will be in the form of building rubble, plastics and paper used in packaging and some organic waste. The cost factor for the removal of this waste from such a rural area is of concern. The following measures can be implemented to reduce the amount of waste that need to be removed:

- Sorting of waste into organic and inorganic materials. Organic waste can be buried or used as compost material.
- Recyclable waste must be reclaimed and can be a temporary source of income to the local residents.
- Plastics and building rubble must be removed from site and disposed of at a registered landfill site.
- Although no hazardous waste is expected, any such waste must be removed from site to a registered landfill site that can accept hazardous material.

3.3.4 Cultural Heritage

The cultural heritage of the proposed development site is divided between Archaeological significant areas and Palaeontological significant finds.

No Archaeological significant sites or artefacts were observed on or near the proposed development area. However, the foothill of the Drakensberg is well known for San Rock Art and it can be presumed these drawings will occur in the area. The underlying Tarkastad Formation is also known to produce well preserved Palaeontological important finds.

It is thus recommended that this must be handed in to AMAFA Heritage KZN for comments and further guidance regarding further investigations.

4 LEGISLATIVE REQUIREMENTS

During the review of the National Environmental Management Act (NEMA), Act 107 of 1998 and associated Environmental Impact Assessment (EIA) Regulations of 04 December 2014 as amended on 07 April 2017, Regulation R325, R326 and R327 certain listed activities could be triggered by this housing development

4.1 Spatial Area

If the construction of the low income houses is limited to the upgrading of the existing homesteads, then no listed activities will be triggered within the EIA regulations. If the construction of the houses however is done as a new development on currently undeveloped areas, then the following regulations will come into affect:

Regulation R327: No 28 (Requires Basic Assessment)

Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development:

- (i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or*
- (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;*

excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.

4.2 Storm Water

No mention is made for the construction of any storm water canals or pipes as part of the project development. If storm water management with associated infrastructure is planned the following regulations will come into effect.

Regulation R327: No 9 (Basic Assessment)

The development of infrastructure exceeding 1000 metres in length for the bulk transportation of water or storm water-

- (i) with an internal diameter of 0,36 metres or more; or*
- (ii) with a peak throughput of 120 litres per second or more;*

excluding where-

- (a) such infrastructure is for bulk transportation of water or storm water or storm water drainage inside a road reserve or railway line reserve; or*
- (b) where such development will occur within an urban area.*

If at all possible, any storm water infrastructure should be limited to the road reserve and / or below the internal diameter threshold of 0.36m.

4.3 Sewage Disposal

If the recommendations for the project are to install VIP latrines, no sewage will be treated, thus no authorisation is required. If the recommendations for the project are to install waterborne sewage systems and a sewage treatment facility it may trigger the following listed activities:

Regulation 327: No 10 (Basic Assessment)

The development and related operation of infrastructure exceeding 1000 metres in length for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes

- (i) with an internal diameter of 0,36 metres or more; or*
- (ii) with a peak throughput of 120 litres per second or more;*

excluding where-

- (a) such infrastructure is for bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes inside a road reserve or railway line reserve; or*
- (b) where such development will occur within an urban area.*

Regulation 327: No 25 (Basic Assessment)

The development and related operation of facilities or infrastructure for the treatment of effluent, wastewater or sewage with a daily throughput capacity of more than 2000 cubic metres but less than 15000 cubic metres.

Regulation 325: No 25 (Environmental Impact Assessment)

The development and related operation of facilities or infrastructure for the treatment of effluent, wastewater or sewage with a daily throughput capacity of more than 15000 cubic metres or more.

4.4 Roads

If the construction of roads is part of the proposed development it may trigger the following listed activities:

Regulation R327: No 24 (Requires Basic Assessment)

The development of a road-

- (i) for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Government Notice 545 of 2010; or*
- (ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres;*

but excluding a road-

- (a) which is identified and included in activity 27 in Listing Notice 2 of 2014; or*
- (b) where the entire road falls within an urban area or*
- (c) which is 1 kilometre or shorter.*

4.5 Vegetation

If during any stage the development requires the removal of large portions of indigenous vegetation the following listed activities will be triggered.

Regulation R327: No 27 (Requires Basic Assessment)

The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for-

- (i) the undertaking of a linear activity; or*
- (ii) maintenance purposes undertaken in accordance with a maintenance management plan.*

Regulation 325: No 15 (Environmental Impact Assessment)

The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for-

- (i) the undertaking of a linear activity; or*
- (ii) maintenance purposes undertaken in accordance with a maintenance management plan.*

4.6 Bulk Services

No mention was made regarding the provision of bulk services such as the provision of water and electricity for the development. If bulk services are to be provided, then the following activities may be triggered:

Regulation R327: No 9 (Basic Assessment)

The development of infrastructure exceeding 1000 metres in length for the bulk transportation of water or storm water-

- (i) with an internal diameter of 0,36 metres or more; or*
- (ii) with a peak throughput of 120 litres per second or more;*

excluding where-

- (a) such infrastructure is for bulk transportation of water or storm water or storm water drainage inside a road reserve or railway reserve; or*
- (b) where such development will occur within an urban area.*

Regulation 327: No 10 (Basic Assessment)

The development and related operation of infrastructure exceeding 1000 metres in length for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes

- (i) with an internal diameter of 0,36 metres or more; or*
- (ii) with a peak throughput of 120 litres per second or more;*

excluding where-

- (a) such infrastructure is for bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes inside a road reserve or railway reserve; or*
- (b) where such development will occur within an urban area.*

Regulation 327: No 11 (Basic Assessment)

The development of facilities or infrastructure for the transmission and distribution of electricity-

- (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts; or*
- (ii) inside urban areas or industrial complexes with a capacity of 275 kilovolts or more.*

excluding the development of bypass infrastructure for the transmission and distribution of electricity where such bypass infrastructure is —

- (a) temporarily required to allow for maintenance of existing infrastructure;*
- (b) 2 kilometres or shorter in length;*
- (c) within an existing transmission line servitude; and*
- (d) will be removed within 18 months of the commencement of development.*

Regulation 327: No 47 (Basic Assessment)

The expansion of facilities or infrastructure for the transmission and distribution of electricity where the expanded capacity will exceed 275 kilovolts and the development footprint will increase.

Regulation 325: No 9 (Environmental Impact Assessment)

The development of facilities or infrastructure for the transmission and distribution of electricity with a capacity of 275 kilovolts or more, outside an urban area or industrial complex excluding the development of bypass infrastructure for the transmission and distribution of electricity where such bypass infrastructure is —

- (a) temporarily required to allow for maintenance of existing infrastructure;*
- (b) 2 kilometres or shorter in length;*
- (c) within an existing transmission line servitude; and*
- (d) will be removed within 18 months of the commencement of development.*

4.7 Water Use Licensing

The National Water Act (NWA) guides the management of water in South Africa as a common resource. The Act aims to regulate the use of water and activities which may impact on water resources through the categorisation of ‘listed water uses’ encompassing water extraction, flow attenuation within catchments as well as the potential contamination of water resources, where the Department of Water Affairs (DWA) is the administering body in this regard. Should the proposed activities associated with the proposed project impact on water resources e.g. cross through rivers, the applicant would be responsible to obtain a WUL from the DWA.

Section 21 of the NWA defines various water uses, while Section 22 requires that a person may only use water if licensed in terms of the NWA. The use of water does not necessarily mean the consumptive use thereof, but covers any aspects that have or could have an impact on a watercourse. The water uses associated with the construction and operation of the proposed solar photovoltaic plant may triggers the following water uses:

- Section 21 (c) Impeding or diverting the flow of water in a watercourse
- Section 21(i): Altering the bed, banks, course or characteristics of a watercourse

4.8 Cultural Heritage

The National Heritage Resources Act protects South Africa’s unique and non-renewable archaeological and Palaeontological heritage sites that may not be disturbed at all without a permit from the relevant heritage resources authority. Categories of heritage resources recognised as part of the National Estate in Section 3 of the Heritage Resources Act, and which therefore fall under its protection, include:

- geological sites of scientific or cultural importance;

- objects recovered from the soil or waters of South Africa, including archaeological and Palaeontological objects and material, meteorites and rare geological specimens;
- objects with the potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage.

No archaeological or Palaeontological significant records were found during the study on or near the proposed development areas.

5 ENVIRONMENTAL MANAGEMENT

It is recommended that an Environmental Management Plan (EMP) be developed to control the construction phase activities and impacts. The EMP is a detailed plan of action to manage the implementation of specific measures to enhance positive impacts and minimise potential negative impacts during the construction phase of the proposed development.

The contractor appointed do to the construction of the houses must enter into a contractual agreement with the applicant to conform to all conditions set in the EMP. The contractor must also handle all notifications regarding any Environmental Authorisations, departmental communications, compliance reports and liaison with other government departments.

An Environmental Control Officer (ECO) must be appointed to oversee compliance by the contractor to the EMP and / or any Environmental Authorisations.

6 CONCLUSION

This Environmental Screening Report identified some environmental and social issues that would need consideration before the design and construction of low cost housing development can start.

The topography (steep slopes) and potential shallow bedrock of the Tarkastad Formation can be limiting factors for the housing development. The ecological sensitive areas such as the small streams and drainage channels, small wetlands and sheltered indigenous thickets in small valleys will have a higher biodiversity. As a result no development is proposed within 50m from the edge of the streams and small wetlands as illustrated in Figure 6.1.



Figure 6.1 Environmental Sensitive Area at Sandlwana development Area

The following will have to be investigated further during the Authorisation process:

- 5) An application may need to be made to the KZN Department of Economical Development, Tourism and Environmental Affairs for exemption of Environmental Authorisation(s) if the project is an in situ development.
- 6) An Environmental Management Plan must be developed for the construction phase of the development.
- 7) An Archaeological and Palaeontological Phase 1 investigation must be done to assess the potential for encountering any cultural significant heritage.
- 8) Contact AMAFA Heritage KZN for comments and further guidance regarding further investigations.