Newcastle Local Municipality

Environmental Impact Assessment for Drycut Housing Project

BASIC ASSESSMENT REPORT (DRAFT)

Prepared for

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Jan 2020

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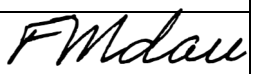
NEWCASTLE LOCAL MUNICIPALITY
KWAZULU-NATAL

EDTEA REF: *(To be added)*

REPORT CONTTROL				
Project Tittle	**Drycut Phase 2 Housing Project**			
Date	**Jan 2020**	**Report Status**	**Draft BAR**	
Quality Control Aspects	**Name**		**Capacity /Designation**	**Signature**
Authors	**Mr MacCarthy Honu-Siabi**		**Environmental Assessment Practitioner**	
	Mr Fhumulani Mudau		**Environmental scientist**	

DECLARATION BY THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

I, **HONU-SIABI, MACCARTHY (MR)** declare that I –

(a) act as the independent environmental practitioner in this application;
(b) do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2014;
(c) do not have and will not have a vested interest in the proposed activity proceeding;
(d) have no, and will not engage in, conflicting interests in the undertaking of the activity;
(e) undertake to disclose, to the competent authority, any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the Environmental Impact Assessment Regulations, 2006;
(f) will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
(g) will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the Department in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the Department may be attached to the report without further amendment to the report;
(h) will keep a register of all interested and affected parties that participated in a public participation process; and
(i) will provide the Department with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not.

Signature of the Environmental Assessment Practitioner:

Name of company: Bizycon Pty Ltd

Date 24th February 2020

DETAILS OF THE EAP

Name of representative of the EAP	Education qualifications	Professional affiliations	Experience at environmental assessments (yrs)
MacCarthy K Honu-Siabi	MSSC Development Studies (UKZN) Certs Environmental Impact Assessments (NWU) Cert: Post Decision Environmental Control (Auditing)(NWU)	IAIASA, SAMEA EAPSA (registration pending)	12 years in the field of Environmental management and Impact assessment
Fhumulani Mudau	BSc Environmental Science (UV)		4yrs in Environmental management

McCarthy Honu-Siabi

MSSc Development Studies: University of KwaZulu-Natal
Bachelor of Management Studies: University of Cape Coast
Cert: Environmental Impact Assessment & Management: North West University:
Certs: Environmental Control and Monitoring: North West University
Certs; Project Management: University of KwaZulu-Natal

McCarthy Honu-Siabi has been involved in projects relating to environmental impact assessment, social impact assessment and socio-economic planning, community developments, delivery of sanitation facilities, housing, planning; strategic and general service delivery. For the past five years he has been a project manager in teams of development professionals in the delivery and administration of several Housing Projects in both rural and urban areas of South Africa. He has worked on more than 65 Development projects, relating to environmental impact assessments, and strategic impact assessments. He therefore possesses vast experience which has assisted in the compilation of this report. MacCarthy currently work with Bizycon Pty Ltd, as a Senior EIA Consultant, working with many Government Agencies, and Municipalities and private sector developers and planners, on EIA related assessments, Strategic Development Planning, Environmental Management Frameworks and Strategic Development Frameworks (SDF) among others.

NAMES AND EXPERTISE OF SPECIALISTS

Names and details of the expertise of each specialist that has contributed to this report:

Name of specialist	Education qualifications	Field of expertise	Title of specialist report/ s as attached in Appendix D
Sundras Patha	Pr *Sci.Nat*. Eng.	Geotechnical Engineering	
Mr Mfaniseni Mpungose	Pr Techni Eng.	Civil Engineer	
Brian Mafela	BSc (Hon) Forest Resource and Wildlife Management SACNASP *Cand.Sci.Nat*. (Ecological Science: 100214/15)	Ecological and Aquatic Habitat Assessment	
Gavin Anderson	MSC	Heritage Impact Assessment	

Summary of where requirements of Section 22 of the 2014 NEMA EIA Regulations (GN R 983, as amended) are provided in this Basic Assessment Report

Section Requirements	YES/NO	SECTION IN BAR
Objective of the basic assessment process 1) The objective of the basic assessment process is to scope the issues in the environment through a consultative process- (a) Determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context; (b) Identify the alternatives considered, including the activity, location, and technology alternatives; (c) Describe the need and desirability of the proposed alternatives, (d) Through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic , heritage and cultural sensitivity of the sites and locations within sites and the risk impact of the proposed activity and technology alternatives on the these aspects to determine- (i) The nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and (ii) The degree to which these impacts- (aa) Can be reversed (bb) May cause irreplaceable loss of resources; and (cc) Can be avoided, managed or mitigated; (e) Through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to- i. Identify and motivate a preferred site, activity and technology alternatives;	YES	

ii. Identify suitable measures to avoid, manage or mitigate identified impacts; and iii. Identify residual risks that need to be managed and monitored.		
Scope of assessment and content of basic assessment reports 2) (1) A basic assessment report must contain the information that is necessary for the competent authority to consider and come to a decision on the application , and must include : (a) Details of: i. The EAP who prepared the report ii. The expertise of the EAP, including a curriculum vitae:	YES	
(b) The location of the activity , including: i. The 21 digit surveyor general code of ach cadastral land parcel; ii. Where available, the physical address and farm name; iii. Where the required information items i and ii is not available , the coordinates of the boundary of the property or properties;	YES	
(c) A plan which locates the proposed activity or activities applied for as well as associated structures and infrastructure at an appropriate scale; or if it is- i. A linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or on land where the property has not been defined , the coordinates within which the activity is to be undertaken;	YES	
(d) A description of the scope of the proposed activity, including all listed and specified activities triggered and being applied for; and a description of the activities to be undertaken associated structures and infrastructure;	YES	
(e) A description of the policy and legislative context within which the development is proposed including-		

I. An identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to this activity and have been considered in the preparation of the report ; and II. How the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks, and instruments;	YES	
(f) A motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;	YES	
(g) A motivation for the preferred site, activity and technology alternative;	YES	
(h) A full description of the process followed to reach the proposed preferred alternative within the site, including: i. Details of all the alternatives considered;	YES	
ii. Details of the public participation process undertaken in terms of regulation 41 of the regulations, including copies of the supporting documents and inputs	YES	
iii. A summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;	YES	
iv. The environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	YES	
v. The impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts (aa) and (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated	YES	

vi. The methodology used in determining and ranking the nature, significance, consequences, extent, duration, and probability of potential environmental impacts and risks associated with the alternatives;	YES	
vii. Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	YES	
viii. The possible mitigation measures that could be applied and level of residual risk	YES	
ix. The outcomes of the site selection matrix;	YES	
x. If no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and	YES	
xi. A concluding statement indicating the preferred alternatives, including preferred location of the activity.	YES	
(i) A full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity, including- i. A description of all environmental issues and risks that were identified during the environmental impacts assessment process; and ii. An assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;	YES	

(J) An assessment of each identified potentially significant impact and risk, including- (i) Cumulative impacts; (ii) The nature, significance and consequences of the impact and risk; (iii) The extent and duration of the impact and risk; (iv) The probability of the impact and risk occurring; (v) The degree to which the impact and risk can be reversed; (vi) The degree to which impact and risk may cause irreplaceable loss of resources; and (vii) The degree to which the impact and risk can be avoided, managed or mitigated;	YES	
(k) Where applicable, a summary of the findings and impacts managements measures identified in any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final report;	YES	
(I) An environmental impact statement which contains- (i) A summary of the key findings of the environmental impact assessment; (ii) A map at an appropriate scale which superimpose the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and (iii) A summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;	YES	
(m) based on the assessment, and where applicable, impact management measures from specialist reports, the recording of the proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr;	YES	
(n) any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation;	YES	

(o) a description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed;	YES	
(p) a reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;	YES	
(q) where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required, the date on which the activity will be concluded, and the post construction monitoring requirements finalised;	×	
(r) an undertaking under oath or affirmation by the EAP in relation to: (i) the correctness of the information provided in the reports; (ii)the inclusion of comments and inputs from stakeholders and I&APs; (iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and (iv) any information provided by the EAP to interested and affected parties any responses by the EAP to comments or inputs made by interested and affected parties; and	YES	
(s) where applicable, details of any financial provisions for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts	×	
(t) any specific information that may be required by the competent authority; and	×	
(u) any other matters required in terms of section 24(4)(a) and (b) of the act.	×	

TABLE OF CONTENTS

LIST OF FIGURES

LIST IF TABLES

1. BACKGROUND

1.1 INTRODUCTION

The improvement of the living conditions of the rural poor is one of the main priorities of government, towards a broader goal of poverty reduction. A major intervention geared towards this end is the provision of housing infrastructure to needy communities. As part of this initiative, Newcastle Local Municipality in collaboration the Department of Human Settlement, intend to undertake the construction of about 1000 Low Income Houses, for beneficiaries within the Drycut community near Madadeni in Newcastle Municipality of KwaZulu-Natal. It also will include formalisation of the existing informally settled community. As part of the feasibility assessment and planning of the proposed development, Bizycon Ltd has been engaged through Maseko Hlongwa and Associates (the development planners) to conduct an environmental assessment for the proposed development. The development initially was planned as rural housing development. This has since changed to include bulk infrastructure and requires d different environmental process all together.

As per the provisions of the Environmental Impact Assessment (EIA) Regulations, December 2014, , consisting of GNR 982, 983, 984, 985, under the National Environmental Management Act- NEMA (Act 107 of 1998 as amended) an environmental impact assessment is required for the proposed developments prior to commencing any physical activities that fall within any of the listings within the notices. As determined in the preliminary study undertaken 2018/2019 on Drycut, in terms of Chapter 4 of Regulation 982, Basic Assessment (BA) process is required to be followed. This EIA is to identify the potential impacts of proposed activities on the biophysical and social environment (and *vice versa*) and to facilitate any necessary authorisation for such activity which may be triggered in terms of the regulations. This having provided adequate measures to address such impacts.

1.2 PROJECT LOCATION

The Drycut settlement is a semi-clustered settlement located along the provincial road from Newcastle town towards Osizweni Township. The site is located south of Madadeni-H and west of Osizweni. The locality map of the project area is attached as Map 1a. Also, an Aerial photograph of the site including the GPS coordinates is attached as Map in. Figure 1 is a photograph depicting the settlement nature of the area.

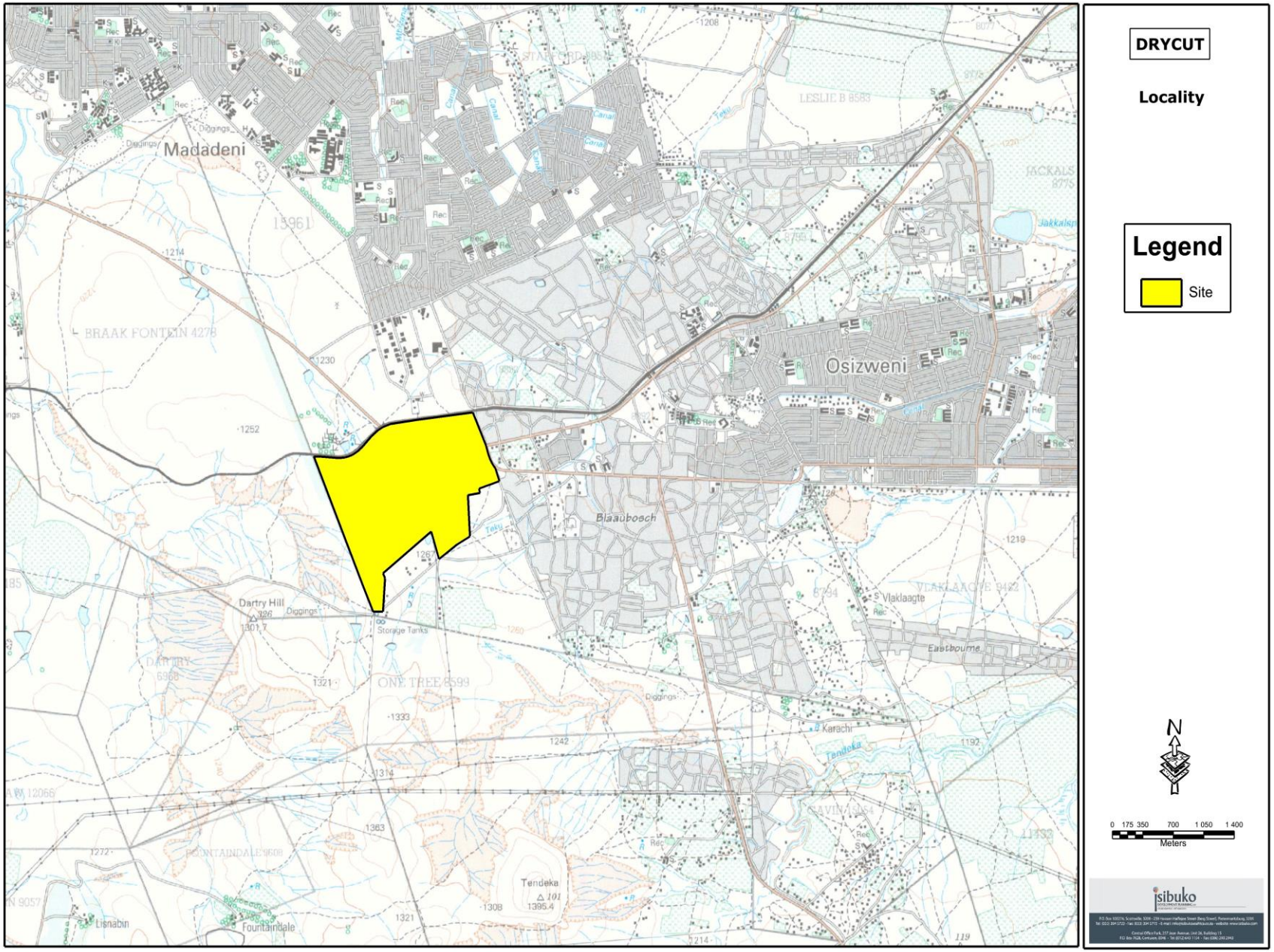
Property Details as per the Cadastral of the Proposed Site

Table 1 Property details

No	Farm Name	Farm/ Erf No	Portion	Latitude	Longitude	Property Type
1	BLAUWBOSCH LAAGTE A	8892	0	27°47'29.77S	30°5'31.7E	Farm
2	DRYCUT A	8198	0	27°48'0.42S	30°3'53.32E	Farm
3	BRAAK FONTEIN	4278	0	27°47'8.39S	30°1'59.57E	Farm
4	LOT NGR OF DRY CUT	11938	0	27°47'28.47S	30°3'38.63E	Farm
5	BRAAK FONTEIN	4278	0	27°47'9.52S	30°1'59.39E	Farm Portion
6	DRYCUT A	8198	0	27°48'1.03S	30°3'53.43E	Farm Portion
7	DRYCUT A	8198	4	27°48'19.96S	30°3'40.63E	Farm Portion
8	BLAUWBOSCH LAAGTE A	8892	126	27°47'5.38S	30°5'4.34E	Farm Portion
9	DRYCUT A	8198	18	27°48'12.43S	30°4'10.55E	Farm Portion
10	DRYCUT A	8198	5	27°48'32.83S	30°3'43.81E	Farm Portion
11	LOT NGR OF DRY CUT	11938	0	27°47'28.57S	30°3'38.03E	Farm Portion
12	DRYCUT A	8198	0	27°48'0.27S	30°3'50.28E	Farm Portion
13	BLAUWBOSCH LAAGTE A	8892	0	27°47'33.93S	30°5'14.22E	Farm Portion
14	BLAUWBOSCH LAAGTE A	8892	0	27°47'30.33S	30°5'31.31E	Farm Portion
15	BLAUWBOSCH LAAGTE A	8892	18	27°47'40.13S	30°4'28.36E	Farm Portion
16	BLAUWBOSCH LAAGTE A	8892	32	27°47'29.5S	30°4'19.6E	Farm Portion

(Source: National Environmental screening tool)

Figure 1 Drycut Locality



8 PROJECT & ACTIVITY DESCRIPTION

The proposed development will be a formalisation of the existing informal settlement of Drycut into a well-established settlement as per the layout in figure 1. Housing interventions provide decent accommodation for households in need of better accommodation in such a manner that contributes to an improvement in their living conditions. A key part of government's theory of change on human settlement programme is to use housing as a vehicle to drive social and integrated settlement developments which allow for the provision of major services and access to urban amenities to communities in which such developments are implemented. In line with this purpose, the Drycut development will entail a holistic upgrade of the existing community. The proposed development is being packaged in line with the Integrated Residential Development Programme which will consist of construction of better housing infrastructure, upgrade of the internal infrastructure or bulk services such as roads and water reticulation.

- Internal roads will be upgraded into tarred surface. Expected width of the roads is to be 4-4.5m, usually with a reserve of about 3-5m in most cases.
- Pipes to be used will range between 160mm - 250mm internal diameter PVC pipes for water and stormwater drainage.
- Bulk main pipes might differ in length but are likely to be about 200-650m in length.
- The layout also made provision for some socio economic infrastructure. The layout in Figure 2 portrays the conceptual plan of the proposed development.
- A serviced empty area is included for commercial activities. Investors will procure and ply their commercial activities.

The National Environmental Management Act 107 of 1998 is the legislative instrument that governs environmental implications in relation to development vis-à-vis sustainability and environmental management. Regulations have been developed to guide the implementation of the National Environmental Management Act, under which, are lists of activities that may require authorization from the relevant Environmental Department prior to implementation.

The implications of various aspects of the proposed development in terms of the regulations are discussed in the ensuing sections of this report. Particularly, it is noted that activities such as the formalization of the roads and the additional installation of pipes needs careful scrutiny in relation to the environmental regulation. Determination of possible adverse impacts and mitigation would be an advantage to both the receiving environment and the beneficiaries. This report is also prepared in accordance with the environmental assessment requirements for housing projects as prescribed by the KZN Department of Human Settlement.

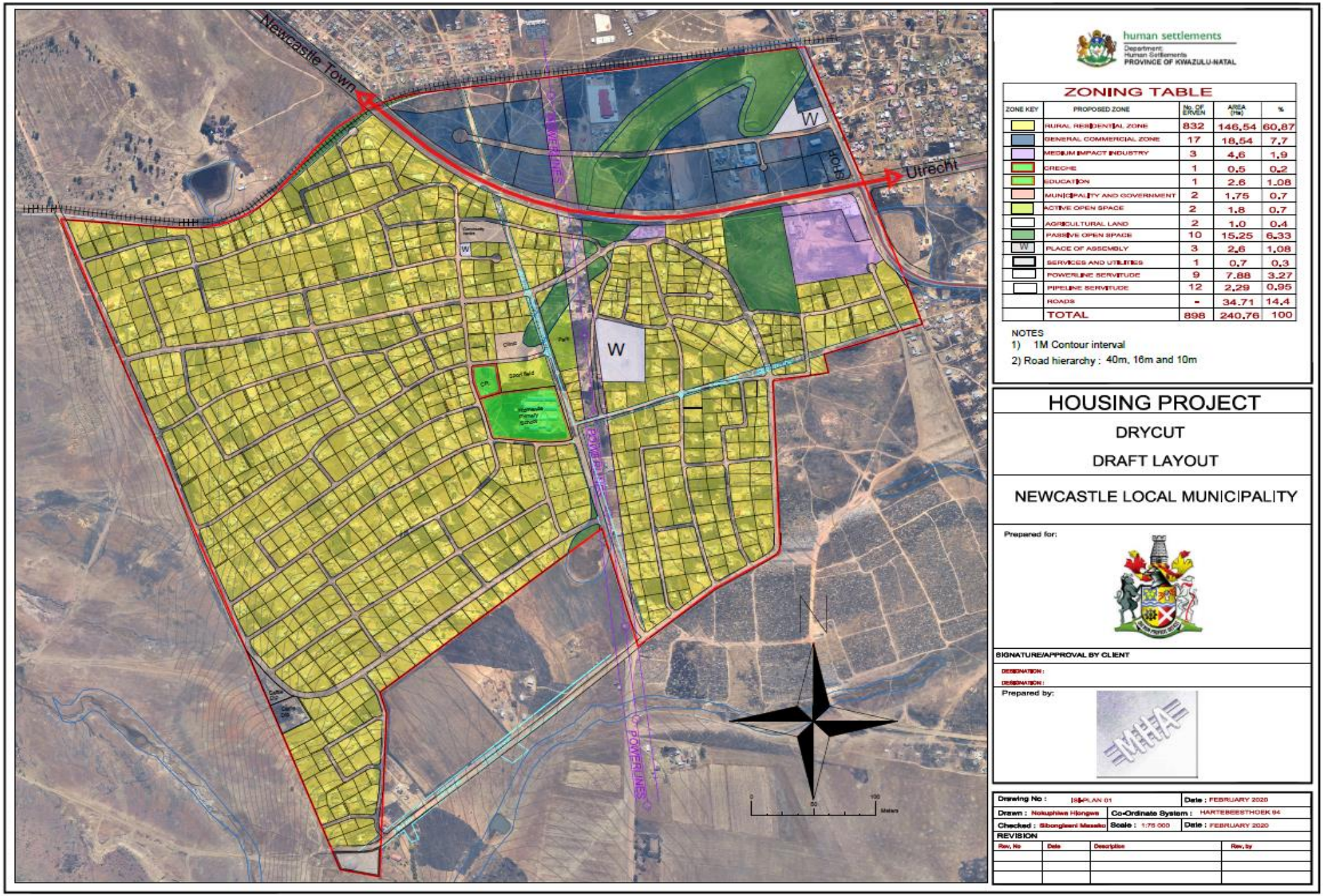


Figure 2: Proposed Layout with wetland areas now zoned as open spaces

8.1 LISTED ACTIVITIES IN TERMS OF NEMA REGULATIONS DEC 2014 AS AMENDED

As per Chapter 3 and 4 of the Environmental impact Assessment Regulations 2014, as promulgated under the National Environmental Management Act (NEMA), Act 107 of 1998, a developer, upon crossing specified thresholds, must conduct environmental impacts assessment processes to obtain authorisation from a competent authority prior to the commencement of such activities. It is the duty of the EAP to determine if proposed activities fall within such schedule. Depending on the magnitude of the proposed activities, a Basic Assessment Process (under regulations 983) or a full scoping and EIA (under regulations 984) may be undertaken in terms of Section 24D .

From the screening of the activities proposed by the developer as detailed in the attached Preliminary Engineering report and layout, and as confirmed by the specialist studies undertaken, the following listed activities are noted, for which a Basic Assessment Process for authorisation is being undertaken. (Table 2).

Table 2 Listed Activities)

Indicate the Activity Number:	Provide the relevant **Activity (ies)** as set out in **Listing Notice 1, 2 & 3** (GN R327, GNR325 & GNR324)	**Describe each listed activity as per the project description (and not as per wording of the relevant Government Notice)[1]:**
NEMA (Act 107 of 1998)		
GNR 983, (8 Dec 2014 as amended)	19	The Drycut development involves the upgrade of residential and bulk infrastructure. Given that there are a few drainage lines identified within the development footprint, it is likely that some of the soils within these drains will be removed which may individually or cumulatively amount to more than $10m^{3.}$. It is estimated that at least about 40 to 50m3 of soils may be removed cumulatively in the upgrading of roads, installation of pipes and other infrastructure in the community.
	27	The clearance of more than 1ha of indigenous vegetation is listed. Drycut has isolated pockets on vegetation within the site especially the portion to be used for commercial activities. These cumulatively will be more than 1 ha, threshold, during the installation of the bulk infrastructure such as roads and in the case of some of the new houses. Cumulatively, indigenous vegetation patches within the Drycut area, may amount to more than 5ha from various parts of the site. These are likely to be removed during the development. The area earmarked for commercial zone, has open spaces which may be cleared, for putting services, and subdivisions and then finally by the individuals who acquire such plots. Thus, cumulatively, vegetation removal is likely to be more than 5ha, but less than 20ha.

[1]Please note that this description should not be a repetition of the listed activity as contained in the relevant Government Notice, but should be a brief description of activities to be undertaken as per the project description, i.e. describe the components of the desired development.

9 THE BASIC ASSESSMENT PROCESS

The environmental impact assessment process as a whole is intended to provide information on the affected project area, to determine whether there are any fatal flaws that may militate against proposed development, to access any positive factors that the development may take advantage of, identify alternatives at an early stage, facilitate consultation with all Interested and Affected Parties (I&APs) and key stakeholders, including specialists and to address the concerns of I&Aps that may arise regarding the proposed development, thereby ensuring full public participation. This is to ensure a holistic planning approach that promotes full community engagement. A schematic representation of the basic Assessment (EIA) process is depicted in Figure 2.

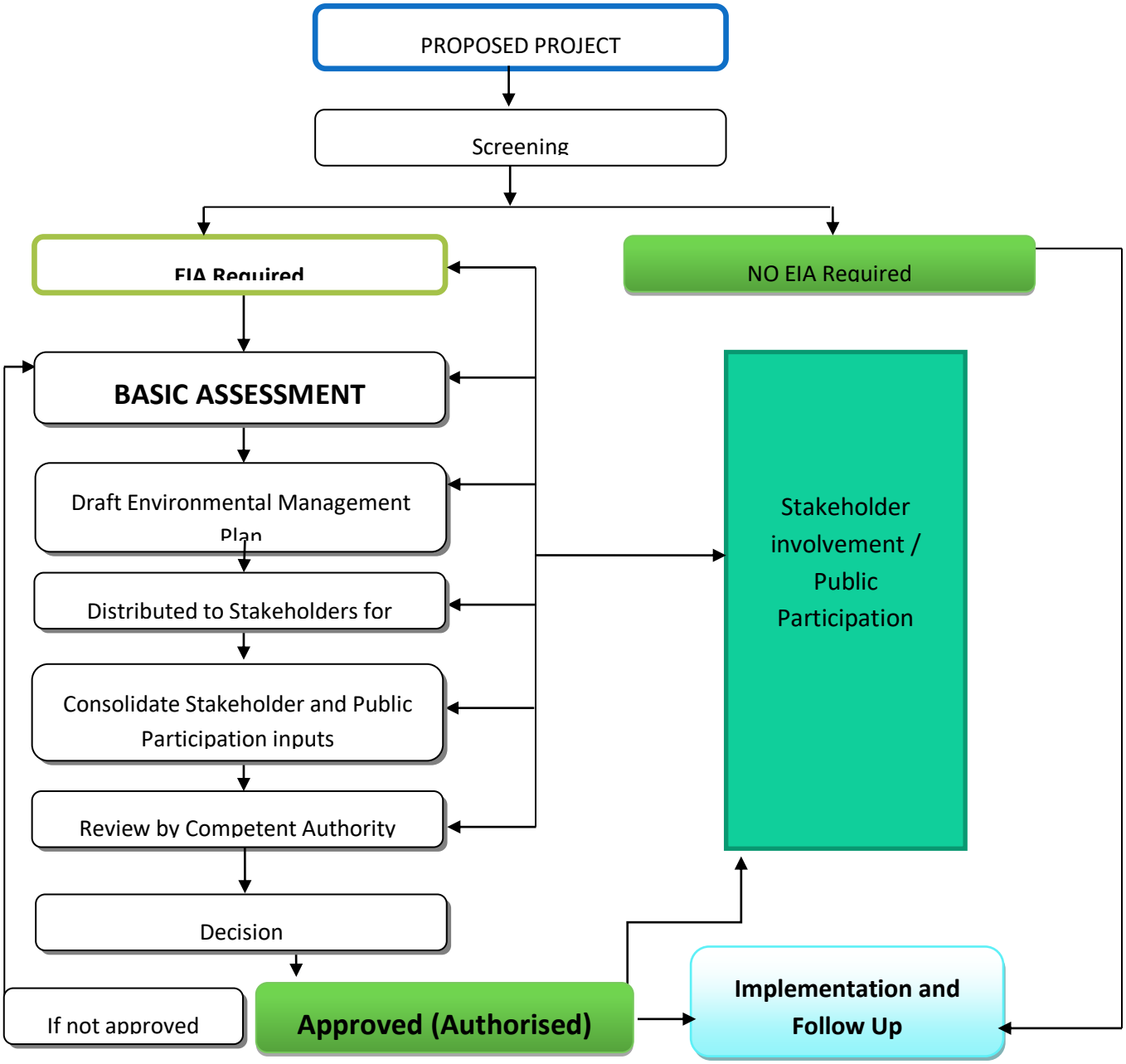


Figure 2 An illustration of the EIA Process flow (Source: Adapted from Aucamp J.P., 2010).

3.1 THE DETAI L SITE ANALSYSIS (BASIC ASSESSMENT)

The project is currently at the environmental scoping or issue identification and assessment phase of the environmental assessment process. Public participation is fundamental at this stage phase because it assists the Environmental Assessment Practitioner (EAP) to identify, categorize, and recommend issues that are significant and what impacts they may have on the proposed development and Vise-versa in accordance with the guidelines contained in Regulation 982 and 984 of the National Environmental Management Act 107 of 1998.

3.2 FIELD VISITS AND DATA COLLECTION

Field visits were conducted for two broad purposes namely collection of data for public participation and environmental assessment. Issues were identified using professional judgment, experience of similar projects, and previous knowledge of the study area, a review of available literature, public consultation, specialist input and consultation with relevant decision making authorities. Additionally, specialist duties were conducted to identify and confirm the significance of some of the issues identified. Wetland and heritage studies were undertaken. Reports on these are attached in appendix to this report.

3.3 PUBLIC PARTICIPATION REQUIREMENTS

The public participation process involved consultations with stakeholders, and the general public, neighbouring businesses, and stakeholders such as, South African National Biodiversity Institute (SANBI), The South African Heritage Resources Agency (SAHRA), and AMAFA Kwazulu-Natal, Department of Water and Sanitation (DWS) and all regional and local stakeholders. This draft report will be circulated for further comments and these will be attached and integrated when received.

10 CONSIDERATION OF LEGAL AND REGULATORY REQUIREMENTS

The following are some of the key legislations relevant to this development:

4.1 NATIONAL ENVIRONMENTAL MANAGEMENT ACT (NEMA) ACT 107 OF 1998

The National Environmental Management Act 107 of 1998 has in terms of section 24 and 24D of the Act established regulations regarding the conduct of EIA processes made under section 24 (5) of the Act and published in Government Gazette 38282 of December 2014, as amended. These regulations published lists of activities (982, 983, 984 and 985) that require various levels of applications of EIA process. The section of the regulation that bears relevance to this project is R982, R983 and 984.

Under this regulation an environmental impact assessment, in this case, a basic assessment process is required, the elements of which are stipulated in relevant sections of the National Environmental Management Act 107 of 1998.

4.2 OCCUPATIONAL HEALTH AND SAFETY ACT (ACT 85 OF 1993)

The specific requirements under this Act that are relevant to the proposed project are the regulations on Major Hazardous Installations (MHI) and their potential health and safety impacts. Section 9 of the MHI regulation, which came into force in 1999, requires that where

practicable the developer shall prevent the establishment of developments adjacent to sites or areas that the MHI would potentially pose a hazard.

This Act also bears relevance to the National Environmental Management Act, which requires proponents of development to ensure a 'risk averse' approach where there is adequate information that a given development is associated with potential for health and safety risks to beneficiary and neighbouring communities. Where a given development affects settlements, the requirement of this Act needs to be carefully and adequately integrated in the planning process.

4.3 DEVELOPMENT FACILITATION ACT (ACT 67 OF 1995)

The Development Facilitation Act was established to facilitate the speedy delivery of services and facilities to previously disadvantaged groups. However, enshrined in this Act is the provision that developers are to ensure that adequate provision is made for the assessment of the potential impacts that the development project is likely to have on the receiving environment, and provision made for the management of these impacts. The EIA process is therefore being undertaken in fulfillment of the requirements of this Act.

4.4 CONSERVATION OF AGRICULTURAL RESOURCES ACT (ACT 43 OF 1983)

The objective of this Act is to provide for the conservation of natural resources by maintaining the production potential of land, combating and preventing erosion, preventing the weakening or destruction of water resources, protecting natural vegetation, and preventing and/or combating invader plants and weeds. The planning and implementation processes of the proposed project therefore will take cognizance of relevant provisions of this Act.

4.5 NATIONAL WATER ACT (ACT 36 OF 1998)

Current regulations regarding discharge of surface water requires that surface water is handled with care both in terms of quality and quantity before being discharged into any natural water course, so that the quality and flow rate of natural systems are not significantly disrupted.

The development under investigation is expected to generate large quantities of stormwater, consequently an accelerated run off at the discharge points. This Act requires that stormwater control measures are satisfactorily addressed, and a maintenance programme developed to ensure that stormwater discharge points and downstream impacts are effectively mitigated.

In addition, Section 21 the act National Water Act (Act 36 of 1998) also requires that a water-use license be obtained from the competent authority prior to undertaking certain activities for developments that are within 500m of a watercourse. In this case the project site accommodates a wetland and hence a Water Use License Application may need to be made with the Department of Water and Sanitation.

4.6 NATIONAL FOREST ACT (ACT 84 OF 1998)

The National Forest Act dictates the procedures and processes required for the protection of natural forests and forest trees. The relevance of this Act to the development under investigation is that the impact of the development on trees in the riparian vegetation on the

site should be minimized as much as possible. Any removal of indigenous trees has to be authorized by the Department of Forestry.

4.7 NATIONAL HERITAGE RESOURCES ACT (ACT 25 OF 1999)

The National Heritage Resources Act (NHRA), Act No. 25 of 1999) defines a heritage resource as any place or object of cultural significance i.e. of aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance.

Reports in fulfilment of Section 38(3) of the NHRA must include the following information:

- the identification and mapping of all heritage resources in the area affected;
- an assessment of the significance of such resources in terms of the heritage assessment criteria set out in regulations;
- an assessment of the impact of the development on such heritage resources;
- an evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;
- the results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;
- if heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and
- plans for mitigation of any adverse effects during and after completion of the proposed development.

The Heritage Impact Assessment (HIA) is limited to the actions described above, i.e. identification of heritage resources and recommendations for their management, and does not include mitigation costs. The final report will be submitted to the relevant authorities responsible for heritage for assessment and approval.

11 NEED AND DESIRABILITY

The provision of services to local communities is part of government's initiative to improve service delivery and improve the livelihoods of such communities. This is being done through many means, from improving residential infrastructure, improving of roads infrastructure and extension of other vital services such as water, electricity, sanitation and accessibility by emergency services. The Drycut community is currently informal, with poor roads infrastructure leading to poor access to services such as water and sanitation, and police patrols and emergency services to some aspects of the community, especially in rainy seasons.

The community has the basic services such as electricity and water in some parts. What is lacking is a harmonious formalization of the community which will include vital services such as roads. Once roads are improved and properly formalized, there will be access to various parts of the community. Other positive spillover developmental effects are expected to occur with the provision of these foundational infrastructure.

For this reason, the local municipality in conjunction with various state development agencies, such as the department of human settlement and the district municipality intend to formalize the settlement through an integrated development approach. The expected long term outcome is to improve livelihood of the community through the provision of basic services. This will also to be in alignment of the broader Madadeni, JVC and Blauboshe Development Plan.

12 MOTIVATION FOR THE PROPOSED SITE, ACTIVITY AND TECHNOLOGICAL ALTERNATIVES

The EIA Regulations in the specification of the EIA process requires suitable and feasible alternatives to be provided if possible to the proposed activity as part of holistic planning. Chapter 1 of NGR 982 defines alternatives to the proposed activity to mean a different means of meeting the general purpose of the requirements of the activity. These include alternatives in terms of:

a) Property or location at which the proposed development is to occur,
b) Type of activity to be undertaken
c) Design or layout of the activity
d) Technology to be used in the activity or
e) Operational aspects of the activity

The alternatives are also to include the option of not carrying out the proposed activity, which is popularly referred to as the "no-go alternative". The impact assessment then is to include not only the desired alternative but also impacts of the identified alternatives. A summary is then provided of these alternatives to have an idea which will yield the most benefits with less undesirable impacts. It is also acknowledged that in some cases, where not suitable alternatives are feasible, then the proposed activity becomes the only alternative to the no-go alternative.

SITE ALTERNATIVE

Currently, the site proposed for the development is the area covered by the existing settlement. This means that the houses will be constructed on the yards of the homesteads, as per the formalization plan. The roads will also be upgraded on the existing internal roads or as per the proposed layout. Due to the complicated nature of coming out with the layout of such communities, unless any significant issues are incurred, the most conducive sites are chosen in order to have the minimum negative impacts in terms of bulk infrastructure such as roads and reticulation pipes. According to the town planner's layout, the proposed layout is the only alternative so far. So far this current layout is the only alternative considered and deemed suitable and takes into consideration the sensitive areas within the project site as identified by the wetland assessment studies undertaken.

ACTIVITY ALTERNATIVE

The purpose of the development is to formalize the community by providing internal roads and other services. Currently due to budget and time constraints and the developmental needs of the community, it is indicated that the proposed activity is the most suitable means of improving the community's current outlook. In view of this no other activity alternative is considered as this is already an integrated service delivery project.

TECHNOLOGICAL ALTERNATIVE

Technological alternatives include the current ways of constructing houses by manually laying of bricks and using human labour in digging trenches laying pipes and covering them up. Roads construction will

also be according to the current technological standards as per the transport sector regulations and budget parameters. No special technologies have been considered other than the current accepted technological ways of doing things as per the accepted standards. It is noted however that details of each technology employed will be approved by the project engineer prior to use.

NO-GO ALTERNATIVE

The no-go alternative to this development implies that the settlement upgrade does not take place. The areas where access and internal roads are in poor condition will remain as such, if not deteriorate. No water installations or additions will be made to the households. The status quo will simply remain, coupled with current community unsatisfaction with the state of services, leading to potential social unrests and protests. That is the current nature of the no-go alternative. This also implies that potential disturbance to wetlands and drainage lines may not occur due to this project (even though they may still be degraded by other developments, natural erosion phenomena or informal encroachment).

13 DESCRIPTION OF THE RECEIVING ENVIRONMENT

13.1 PHYSICAL CHARACTERISTICS

13.1.1 TOPOGRAPHY

The Drycut area is located on a generally gently sloping to flattish terrain. The area is devoid of steep areas that may be considered undevelopable. Most of the households are located on flattish to gentle sloping portions of the landscape (see Figure 3).

Figure 3 The topographical character of the proposed site.

IT is noted that development cannot be undertaken on slopes greater than 1:3. Since it appears that there are no households located on steeper slopes than 1:3, it is likely that each household area is potentially developable as far as slope is concerned. However, it was observed that majority of households are located on land that is within the permissible slope limits of not steeper than 1:3. It appears that slope is not likely to be an issue for the proposed development.

13.1.2 CLIMATE

The climatic conditions are noticeably between summer and winter months ranging between very cold temperature during the winter and high summer temperatures. The minimum temperature is below 0□c during the winter months and often higher than 30□c in the summer months. The average rainfall is between 600mm to 1000mm per year. Annual precipitation ranges from about 640mm to 1300mm per annum.

The impacts of climate change are noted in Newcastle Municipality, the topography of the municipal jurisdiction, flooding in some portions and air pollution and other physical elements of neighbouring municipalities contribute to major variations in weather patterns. There are extreme conditions of heat, cold and high rainfall stormy weathers which result in floods and erosion. Due to the intermittent flooding noted in some parts of the larger area, it is there all important to keep roads in good condition, and equipped with proper stormwater drainage systems and associated infrastructure.

13.2 FLORA & FAUNA AND GENERAL BIODIVERSITY

13.2.1 FLORA

The vegetation type of the proposed development site consists of The KwaZulu-Natal Highland Thornville. This consist of woody grasslands interspersed with acacia trees.

Vegetation in the area is quite degraded due to the fact that most parts of the site are settled. The original vegetation left are found on the open spaces within the settlement, and on the vacant spaces on the outskirts of the development boundary. There are isolated patches of shrubs on various portions of the site, especially along the hills and in some of the valley systems. The Map in Figure 6 shows the vegetation transformation or degradation on the site.

13.2.2 FAUNA

Attempts were made during this assessment to identify animal species in the project area, especially within the vicinity of the site. Identification methods such as animal droppings, foot prints, nesting areas, sound, and trails were employed. However, no traces of the presence of wildlife were found perhaps owning to the fact that the site is been used as a farming area and located within the settled community. The presence of birdlife however could not be ruled out within the trees on isolates portions on the outskirts of the site.

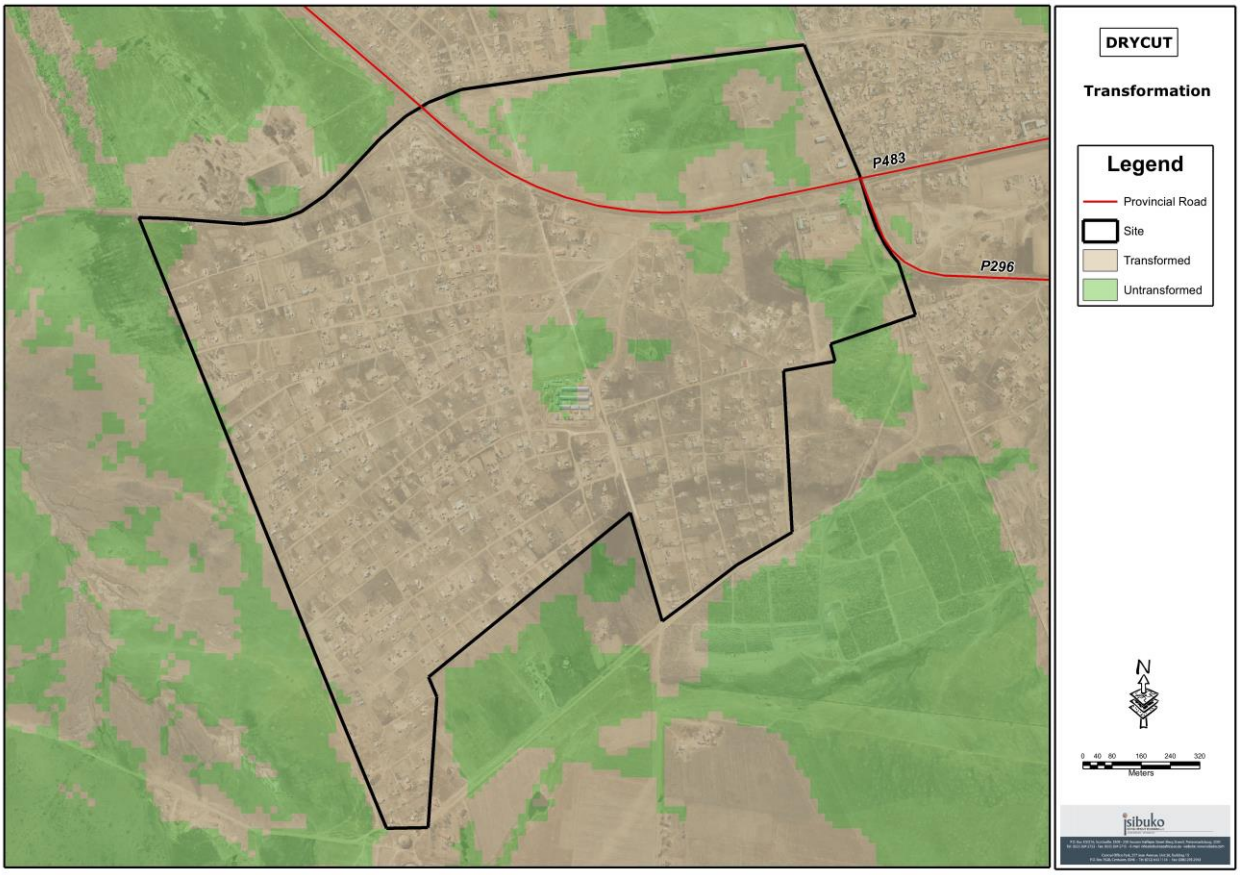


Figure 4 Vegetation transformation

13.2.3 GENERAL BIODIVERSITY

Biodiversity of a given environment goes beyond the vegetation alone. Biodiversity refers to the diversity of plants and animals (living things) that occur in a given area. These plants and animals interact with the physical elements of the area such as the soils, water, and atmospheric conditions (non-living things) in such a manner that the various living and non-living components of that area maintain a suitable living environment for all the components of that environment. The resulting suitable environment provides various benefits for people and communities that live in the area.

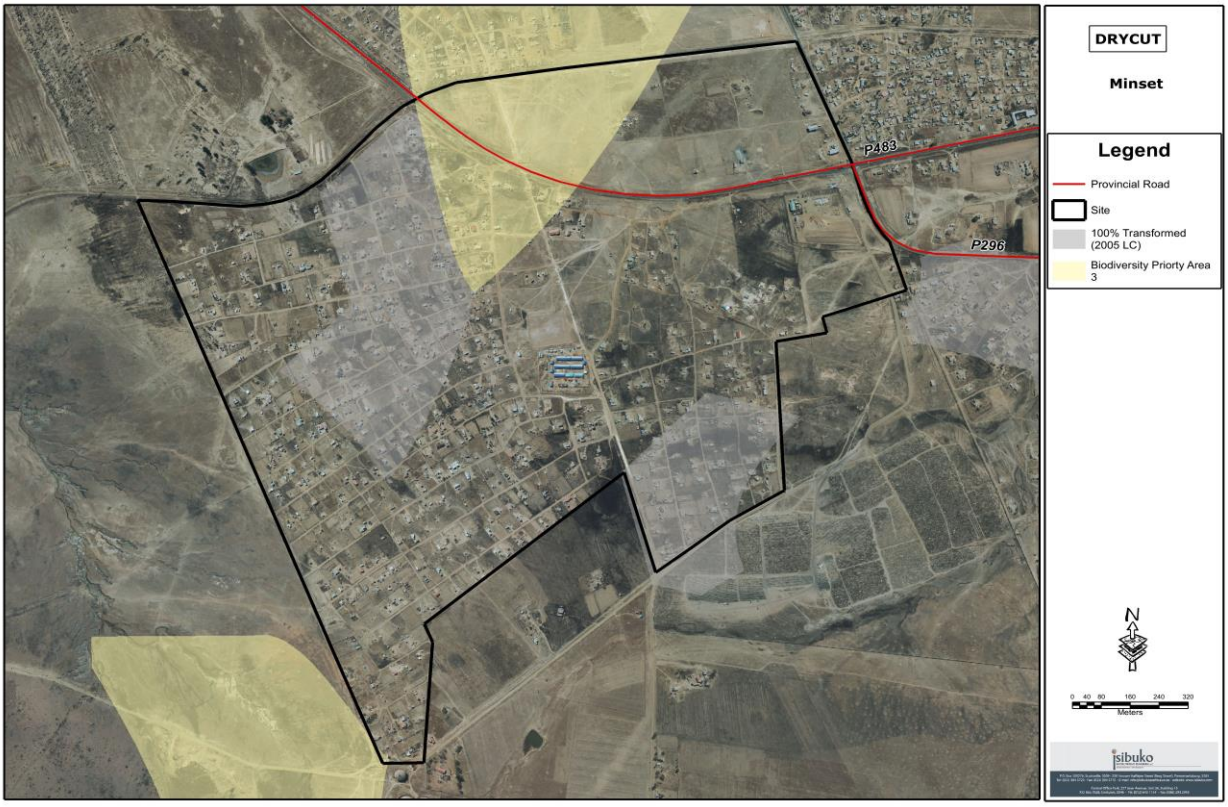
The Ezemvelo KZN CBA map the Critical Biodiversity Areas (CBAs) and protected areas, are the core areas, and the Ecological Support Areas (ESAs) provide for linkages/ corridors between the core areas, as well as buffering the core areas. The Ezemvelo Provincial and District CBA

plans (as per District Biodiversity Sector plans)provide this bigger picture and need to be utilised to give the framework for this required incorporation of regional, provincial and national biodiversity networks.

- Critical Biodiversity Areas (CBA) areas considered critical for meeting biodiversity targets and thresholds, and which are required to ensure the persistence of viable populations of species and functionality of ecosystems (EKZN Wildlife, 2016)
- Ecological Support Areas (ESA) are areas required for the persistence of specific species. Although these areas are frequently modified, a change in current land use, to anything other than rehabilitated land, would most likely result in the loss of that feature from the area identified (EKZN Wildlife, 2016). ESAs are required to support and sustain the ecological functioning of CBAs

These include in addition to officially protected areas, *Irreplaceable Areas*, *Highly Significant Areas*, *Important and Necessary Areas*, *Ecological Corridors*, *Areas of Least Concern* and lastly areas with no *Natural Habitats Remaining*.

Protected Areas are areas that are formally marked and conserved as mandatory reserves. These are usually under institutional management usually in the form of game reserves. The most important of the six categories is the ***Irreplaceable Areas.*** These are those areas where there are no other alternatives available to achieving the conservation targets. This makes their conservation very crucial. Areas marked as ***Highly Significant Areas*** are those that have very limited alternatives or options available elsewhere for meeting the conservation targets. These areas also require conservation or protection from further degradation. ***Important and Necessary Areas*** are those areas that require protection, but have greater choices available in other areas for meeting the biodiversity targets. The ***Ecological Corridors*** have a mixture of both natural and transformed areas which are noted for long term connectivity and biological movements. ***Areas of Least Concern*** are also natural areas but with most choices available for meeting biodiversity targets hence can be used for other activities including developments. And then there are those areas that have ***No Natural Habitats Remaining***. These areas are the transformed lands that do not contribute anything to achieving the biodiversity targets of the province. The detailed ecological functionality of the site will be undertaken and included in the final report. The impact of this will then be fully assessed.



Map 4 shows Minset categories or classifications of the project area. A larger portion of the project footprint is not required for biodiversity conservation. This could be due to the level of transformation that the area has undergone. Only a small portion on the northern boundary falls within a Biodiversity Priority Area 3 classification. Given the level of transformation on the site, and the fact that most of the areas are not required for biodiversity conservation, no significant detrimental impacts are envisaged from the proposed development. Given that the project area is marked as not required the development of this area is not likely to impact significantly on the biodiversity conservation targets set for the province. A no-development option in terms of biodiversity may also not be necessary.

13.3 HYDROLOGICAL CHARACTERISTICS

13.3.1 RIVERS

The proposed Drycut development footprint is situated on a gently sloping terrain with a few flattish areas, and is mostly devoid of any significant or clear drainage lines. The only drainage line observed is the channelled drainage open valley system [2] located along the southern outskirts of the site Figure 5

[2] The detailed assessment of the drainage is done in the attached Wetland Assessment Report by Afzelia Wetland specialists (Dec 2019).

and Figure 6). No major rivers are observed within the development boundary. The small patches of seepage wet areas within the north eastern sections of the site on the area earmarked for the commercial zone (see Figure 6). Two small dams are located on the on the north western outskirts, about 50m from the site boundary.

Figure 5 Photograph of a section of the shallow and open valley system at the southern outskirts of the site

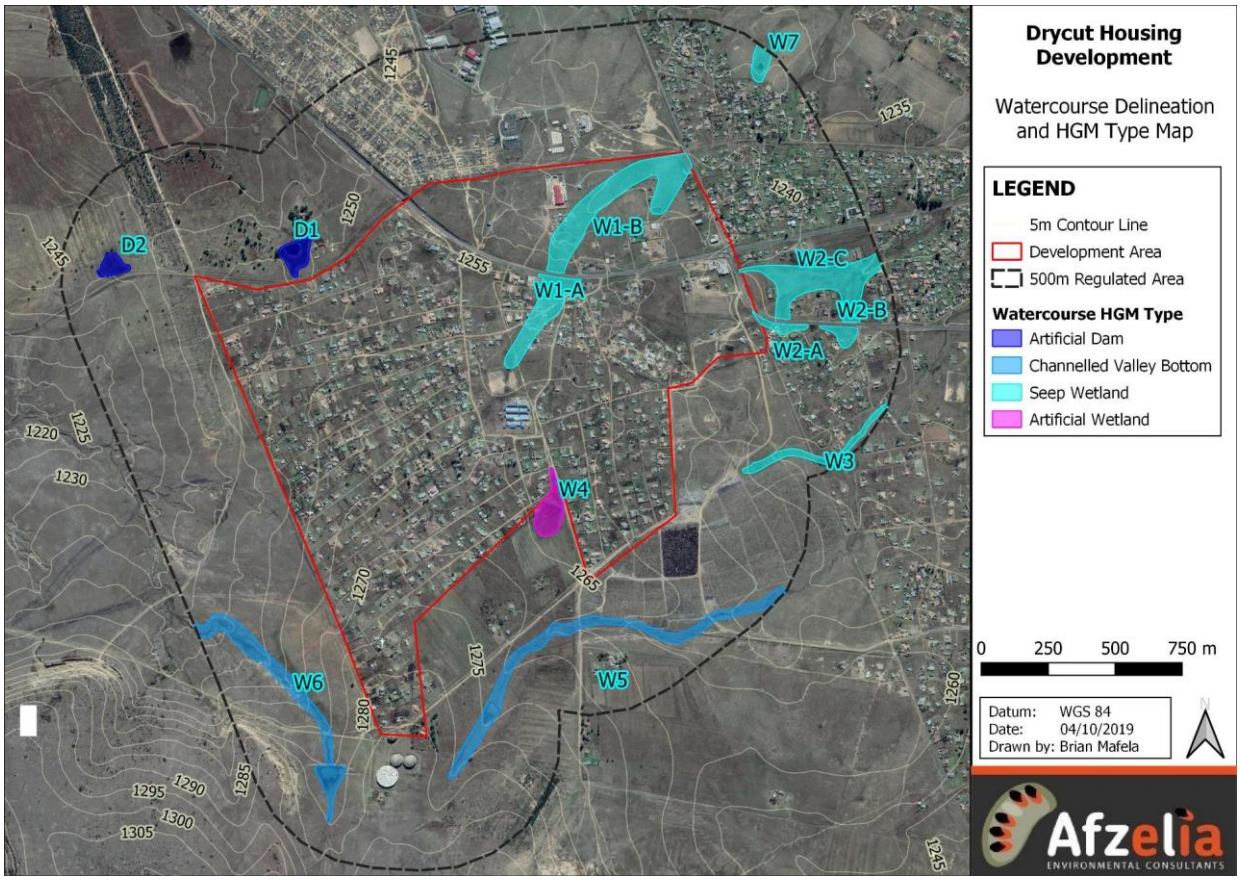


Figure 6 Hydrological Features within the site and surroundings

It was also observed that the settlements are located on relatively higher areas of the terrain and are not likely to be within any hydrological sensitive zones. Additionally, a small pond located outside the north western outskirts of the area was noted. This was noted to be at least 50m away from the development boundary.

Implication for the proposed Drycut Housing development

The proposed development area is one without any major rivers or drainage lines apart from the shallow open valley system that traverse the southern outskirts of the area (Figure 6) and the ponds described. These areas need to be excluded from the proposed development and thus may not be available for active development, especially one that requires vegetation removal. However, given that the existing houses are mostly located at more than 32 meters from these areas and also on the higher parts of the terrains, they are potentially developable, The road upgrades however have the potential to result in further removal of vegetation, and likely to remove land cover leading to more hardened surfaces. Other than these, the proposed development is thus not likely to have any significant issues in terms of sensitive areas such as watercourses if the necessary precautions are taken.

13.4 CURRENT AND COMPETING LAND USES

The current land use pattern in Drycut has evolved in response to the settlements pattern, the natural environment and the regional access routes. The main land use categories in the area include settlements, backyard farming mostly. No other alternative land use was put forward as at the time of conducting this study as this involves the upgrade of the existing settlement where they are.

13.5 CURRENT ZONING

The site has been planned for residential establishment. It was then referred to as a medium to low density residential establishment site.

13.6 EXISTING INFRASTRUCTURE AND SERVICES

13.6.1 ROADS ENERGY AND WATER

Currently the community is be provided with basic infrastructure and services, such as, water and electricity. Given the intention is to upgrade the existing community, the upgrade of the proposed services may adequately address the water needs of the community.

13.6.2 Water supply

Bulk water supply is available in the community. Both bulk and reticulation infrastructure is provided. This development however noted the inadequacy of the supply to some areas. It is therefore proposed that more reticulation will be provided to extend the service to all households.

13.6.3 SANITATION FACILITIES

The community is currently provided with lined pit latrines, provided as part of the Zululand Municipality's sanitation development project (Engineering Report). The adequacy of this however requires further investigation, given the topographical and hydrological sensitive nature of some of the areas. An appropriate sanitation infrastructure is thus required and this development offers an

opportunity for investigation of more options. It is envisaged that the reticulation system will also address the sanitation needs of the community adequately.

13.7 THE SOCIO-ECONOMIC ENVIRONMENT

13.7.1 EDUCATION, HEALTH AND EMPLOYMENT

The proposed site is situated within the existing urban community of Drycut which has been provided with basic services such as educational facilities and clinic. It is unlikely that there would be a significant change in the demand for educational facilities in the area than it is now.

13.7.2 WASTE MANAGEMENT AND DISPOSAL

2.10 Levels of Present and Possible Pollution

2.10.1 Litter

The present level of pollution in the project area is moderate to low. It was reported that many households tend to depend largely on materials of organic origin and waste disposed of and controlled at household level. However, a few pile-ups of litter of non-degradable materials were observed in some of the open spaces in the community. Also household refuse dumps and burning were observed in some parts of the community. These practices are not the best practices due to their environmental flaws, such as pollution, reduction in air quality and irritation of the neighbours during burning of waste.

This implies that an appropriate waste collection and management has to be investigated and integrated into the planning of this development. Also, upgrading of settlements is often associated with increase pollution potential and therefore, it is likely that the proposed development may increase the current level of littering in the area. Suitable waste disposal mechanisms need to be investigated and provided for the area. Environmental education needs to be undertaken as part of the implementation process.

2.10.2 Atmospheric pollution

Air quality in the area appears to be good, apart from the intermittent burning of household refuse. Current air quality may be reduced considerably at development nodes during project implementation as a result of construction activities. However, this effect is likely to be limited to the construction period only and thus temporal.

Possible air pollution during project implementation does pose environmental concern in the area. The significance of this issue may be considerably reduced since mitigation of this impact is possible.

It is noted that the onus of waste removal lies with the local municipality. This service was noted to be impeded due to the fact that the phase one of the development was lodged as “rural” housing development, without the formalisation and improvement of the road network. Now that internal roads and the entire roads network are to be improved, it should be possible for the local municipality to include waste removal services in its plans, whether to be done within the municipal resources or to the outsourced is to be decided. The improvement of the roads network will form a foundation for such other services to be provided.

2.10.3 Noise

Owing to the relatively low commercial and industrial activity in the area, noise level is probably within acceptable levels for residential settlements. It is likely that noise levels may increase during project

implementation. However, the potential increase in noise levels is likely to be temporal and limited to the construction period only.

Implications/ recommendations for the proposed development

Members of the communities need to be consulted and informed about potential increase of noise in the area during project implementation. However, variation of noise from the current levels may not be a significant issue should appropriate mitigation be implemented

13.8 HERITAGE AND ARCHAELOGICAL CHARACTERISTICS

Site assessment did not indicate that there are any significant heritage resources in the area. However, a few open-area-religious-activities were observed, such as worship areas of the Shembe Church, which if not properly consulted during the development stage may result in social conflicts. It is noted also that the community is situated near a dedicated cemetery.

A heritage study undertaken by Umlando Heritage specialists (appendix 2) noted the presence of a historical juvenile grave (DCUT01) at GPS Location 27 47'32.4s and 30 3'38 30 E. this is noted to be more than 60 years. This requires preservation, hence could either be relocated, or demarcated and fenced off. This also stresses the need that planning and implementation of the proposed development should be done in consultation with the leaders of key groups within the community. The impacts are further assessed in the Impact Assessment section in this report. Also refer to the Heritage report attached for further details. The implications of each option is further discussed in the Impact assessment stage and in the heritage studies.

Option 1: Fencing off the gravesite with recommended 15-2m buffer: this appears the simple and less costly option if done properly. This is premised on the fact that this grave has been in the community all these years and likely to remain so. However, being a growing community, and if people are unaware encroachment may happen. Fencing off the place and properly lading will ensure this protection and create awareness of its existence. Cost involve depends on the material used (wire mesh, or metals etc).

Option 2: Relocation of the juvenile grave: this will entail appointing of a licenced undertaker or service provider to undertake the relocation of the grave for re-burial at a licensed cemetery. The family concerned will also be to be identified and consulted priori to such process. According to the heritage study, this process will equally effectively ensure the safety of the remains, by putting it in the cemetery. However, this is likely to be more costly, in hiring the undertakers and involve relatively more complicated process as this has to be done according to the procedures of the national heritage Act. An application will need to be submitted to AMAFA KwaZulu-Natal and approved prior to commencing such process. This is noted to take minimum of about 6 months to complete the application process with AMAFA, provided consultations with the community goes smoothly. The process will need to be costed and budgeted for by the municipality, if this option is chosen.

OPTION	S	W	O	T
Fencing	Protects the site from encroachment and disturbance Grave have existed in	Fence Could be broken if improper materials are used May take up space for	Preserve the grave in its original form Offers opportunity to	Damage from community any reason

	the community all these while, so likely to be familiar to the community	other land uses	the community to	
Relocation	Effectively ensure protection of the grave in cemetery	Remains may be distorted in relocation process	Makes land available for any other uses	Family may dispute or disagree May be costly May involve complicated processes May take more time and further delay the project

Generally, the location of the new houses should be done with consultation with the heads of households who will invariably know the presence of any sites valuable to them. Amafa KwaZulku Natali is regarded as a key stakeholder in the proposed development. Other than the identified cultural and religious sites, any additional heritage resources encountered during the implementation of the proposed development should be brought to the attention of Amafa with immediate effect.

IMPACT IDENTIFICATION AND ASSESSMENT

13.9 IMPACT ASSESSMENT AND RATING CRITERIA /FRAMEWORK

The impacts identified have been assessed and rated based on the rating criteria outlined by the Department of Environmental Affairs, as per the guideline documents to the EIA regulations (1998) as amended. This took into consideration the extent, duration, magnitude and probability of the impact occurring, in arriving at the overall significance of the identified impact. Below is a description the methodology utilized in ranking the identified impacts.

ASPECT	SCORE/DESCRIPTION	IMPLICATION
(a) Status		Negative impact i.e. at cost to the environment)
		Positive impact i.e. at benefit to the environment
		Neutral effect
(b) Extent	1 Site	Within the boundaries of the site
	2 Local area	Within 10km of the site
	3 Municipal Area	Within the Waterberg District Municipality and areas less than 100km
	4 Regional	Within the Province of Limpopo (or neighbouring Mpumalanga)
	5 National	South Africa
	6 international	Southern Africa
(c) Duration	1 Immediate / temporal	- < 1 year
	2 Short Term	1 – 5 years

	3 Medium term	6 -15 years
	4 Long term	The impact will cease when the operation stops
	5 Permanent	No mitigation measure will reduce the impact after construction
(d) Magnitude	0 None	Where the aspect will have no impact on the environment
	2 Minor	Where the effects of the environment is in such a way that natural, cultural and social functions or processes are not affected
	4 Low	Where the effects of the environment in such a way that natural, cultural and social functions or processes are slightly affected
	6 Moderate	Where the effects of the environment in such a way that natural, cultural and social functions or processes continue but in a modified way
	8 High	natural, cultural and social functions or processes are altered in such a way that they will temporarily cease or operate in a different ways from usual for the duration of the activity
	10 Very high	natural, cultural and social functions or processes will cease or be altered permanently
(e) Possibility of resulting in Irreplaceable loss of resources	0 Very Low	Will not result in any irreversible or irreplaceable loss in resources
	1 Low	Likely to result is preventable and localized loss to resources
	2 Moderate	Most likely to cause loss if the project is implemented but can be moderately mitigated or avoided.

	3 High	Highly likely to cause long term loss as long as the project remains but can be reverted after decommissioning
	4 Very High	Will result in Permanent loss to resources
	6 Extremely High	Southern Africa and beyond (international)
(f) Probability of occurrence	0 None	Impact will not occur
	0.1 Improbable	Possibility of the impact materializing is very low as a result of design, historic experience or by virtue of implementation of adequate mitigation measures.
	0.25 Possible but unlikely	The is moderate chance that the impact will occur
	0.5 Probable	Impact may occur
	0.75 Highly probable	Occurrence is most likely
	1 Definite / unknown	The impact will occur regardless of the implementation of preventive or corrective actions, or where the probability that the impact will occur is unknown due to lack of information

(g) Significance weighting of the impact (S)

From the above descriptions, the potential impacts are assigned a significance weighting (S). This weighting is arrived at by adding the assigned scores of the extent (E), duration (D), possibility to cause Irreplaceable Loss of Resources (I) and magnitude (M) and multiplying the sum by the probability score (P).

Thus: S = (E+D+M+I) x P

The overall significance weightings scores are categorized below:

SCORE	Description	Interpretation	Colour Code
≤ 2	Very Low		
2-5	Low		
5-10	Medium		

11 - ≤16	High		
	Positive		
	Negative		
	Positively High		

13.10 DESCRIPTION OF IMPACTS IDENTIFIED

IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES

In terms of the criteria for identifying potential project impacts, it is important to list the potential direct, indirect and cumulative property/activity/design/technology/operational alternative related impacts (as appropriate) that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed.

For this proposed residential development at Drycut, the anticipated impacts associated with the proposed development have been identified and analysed using the mixed method approach. This includes site visits, consultation or interaction with key stakeholders, consultation of secondary information or literature, and independent assessment by the project environmental personnel and project officials. Direct impacts that may result from the proposed development include impacts on the biophysical environment, from construction activities such as site clearing, digging, building and installations of reticulation infrastructure.

Social impacts include, employment and business opportunities that may open up to the local and neighbouring communities as well as satisfaction that may be derived from the upgrade in the community's outlook. Other impacts may result from the operational stages of the development. The list below includes the potential identified impacts of the proposed development.

Some of these impacts may occur at the various stages but with different intensities and extent, and significance. These are assessed in relation to the various stages of the development, specifically construction and operational stages. It is noted that no decommissioning is envisaged in the proposed activities of this development. From this context, no decommissioning impacts are identified.

Construction stage Impacts

Direct impacts

1) Potential loss of biodiversity during construction stage, due to vegetation removal
2) The loss of indigenous vegetation due to the removal of land cover
3) Impacts on Hydrological and watercourses
4) Noise impacts
5) Dust generation and Air pollution
6) Possible water pollution / Surface runoff /Stormwater pollution
7) Soil disturbance and possible erosion activities
8) Heritage/Cultural /historical surface sites
9) Visual /aesthetic view disruption
10) Hydrocarbon (oil) Spills
11) Traffic generation and disruption in normal community life
12) Health and Safety issues
13) Job Creation

Indirect / cumulative Impacts

14) Improvement in the livelihood of local community members

15) Potential impacts on local services
16) Assistance in the stimulation of local economy
17) Potential contamination from improper waste management

Operational Stage Impacts

1) Noise
2) Water pollution watercourses /
3) Soil disturbance and erosion activities
4) Dust and air pollution issues
5) Stormwater Management
6) Job creation
7) Visual and aesthetic impacts
8) Traffic issues
9) Health & Safety Issues
10) Impacts on local services
11) Benefits to the community

13.11 CONSTRUCTIONAL STAGE

13.11.1 SUMMARY RATING OF POTENTIAL IMPACTS AND THEIR RATINGS ALTERNATIVE A (PREFERRED ALTERNATIVE)

	Impact	Mitigation Required	Nature of Impact	Extent	Duration	Magnitude	Irreplaceable Loss of resources	Probability	Significance Score	
	CONSTRUCTION STAGE									
1	Potential Loss of Biodiversity	Yes		1	5	4	4	0,25	**3,5**	
2	Loss of indigenous vegetation (Flora Impacts)	Yes		1	5	5	4	0,5	**7,5**	
3	Impact on fauna	Yes		2	5	4	0	0,25	**2,75**	
4	Impact on Hydrological Resources	Yes		2	4	4	0	0,5	**8**	
5	Noise Impacts	Yes		2	1	6	0	0,75	**6,75**	
6	Dust / Air Pollution	Yes		3	2	4	0	0,75	**6,75**	
7	Water Pollution/Surface runoff/Stormwater pollution	Yes		1	2	8	4	1	**15**	
8	Soil disturbances and possible degradation	None Required		3	2	6	0	1	**11**	
9	Cultural or historical surface sites	Yes		1	4	5	0	0,25	**2,5**	
10	Visual / Aesthetic impact	Yes		1	2	2	2	0,5	**3,5**	
11	Hydrocarbon Spills	Yes		2	1	8	2	0,5	**6,5**	
12	Traffic	Yes		2	2	4	0	0,5	**4**	
13	Health & Safety issues	Yes		2	2	6	0	0,5	**5**	
14	Job Creation	None required		3	2	6	0	0,75	**8,25**	
15	Improvement in livelihood of local community	None		3	2	6	0	0,75	**8,25**	

		required								
16	Impact on Local services	Yes		3	2	4	0	0,5	**4,5**	
17	Benefits to local economy stimulation	None required		2	2	6	0	0,5	**5**	
17	Potential contamination from improper waste management	None required		2	2	6	1	0,5	**5,5**	
									93,5	
	Mean Significance Rating								**5,84375**	0

13.11.2 DETAIL SIGNIFICANCE RATING OF IDENTIFIED IMPACTS

POTENTIAL IMPACTS	**SIGNIFICANCE RATING OF IMPACTS (POSITIVE OR NEGATIVE)**	**PROPOSED MITIGATION:**	**SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:**	**RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED**
Loss of critical biodiversity/habitat The community to be upgraded is an existing settlement. The existence of areas of high biodiversity integrity to accommodate critical habitats is very limited. Possibilities of aquatic micro-organisms is largely limited to the along the drainage lines and streams within the area and on northern and southern outskirts of the community. These areas may be home to several, (including microscopic aquatic)	**3.5 =Low**	Though site does not constitute a high biodiversity zone, most of the vacant portions especially along the riparian areas have relatively good land cover and sensitive corridors. Vegetation removal should be restricted to only what is necessary to accommodate the proposed development. These areas need to be incorporated in the open space plan of the community	**Low**	Should the vegetation removal be extended to areas not covered by the additional infrastructure, these areas might be left bare and become susceptible to erosion activities and land degradation. Unnecessary encroachment on the riparian zones may lead to degradation of wetlands, and

POTENTIAL IMPACTS	SIGNIFICANCE RATING OF IMPACTS (POSITIVE OR NEGATIVE)	PROPOSED MITIGATION:	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
organisms.		and considered no-development zones. During construction period, it is important to demarcate these areas off, to reduce any incidents of encroachment		disturbance of aquatic life in those areas.
Loss of indigenous vegetation Most of the areas of indigenous vegetation in the community have been severely degraded. The most significant indigenous vegetation remains along the riparian corridors an on few of the open spaces, especially on the north-eastern area. Disturbance of these surface cover, may pave the ways for alien vegetation encroachment and hardened surfaces as result of loos of landcover. Given the limited indigenous vegetation in the area, the impact is rated as	**7,5=Medium**	Vegetation removal should be restricted to only the development footprint. It is important that all the areas identified as riparian zones be excluded from active development to maintain the integrity of such areas. All areas that may be left bare during construction should be rehabilitated immediately with suitable vegetation (and approved by ECO and site	**Low**	Should the vegetation removal be undertaken in areas other than the development footprint, more land cover will be lost leading to accelerated surface runoff. If all recommendations are adhered to, and monitoring of construction is strictly done, these issues should be avoided, bringing the potential impact to moderate to low. Vegetation in natural form is quite low in extend due to degradation,

POTENTIAL IMPACTS	SIGNIFICANCE RATING OF IMPACTS (POSITIVE OR NEGATIVE)	PROPOSED MITIGATION:	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
moderate/medium.		Engineer) to avoid any alien species encroachment. This must be monitored during construction and post construction.		but the few areas of good grassland for domestic grazing could be lost or reduced.
Impact on fauna The area is settled community, hence the presence of any significant fauna, other than domestic animals and few birds are present in the area. In view of this, impact on fauna is expected to be very minimal. Limited impacts may occur in the form of noise from machinery but this is not expected to significantly disturb any fauna in the area.	**2.75 = Low**	Machinery with low noise levels to be used. Site activities should be conducted during daytime hours to avoid night time noise disturbances when people come home and want to rest. .	**Low**	This impact is expected to be limited, given that the community is an existing one, and with the current density, so significant fauna is expected other than riparian organisms. If the riparian areas are not preserved, disturbances may occur. Excessively laud noises from machines, may be nuisance to the environment.

POTENTIAL IMPACTS	SIGNIFICANCE RATING OF IMPACTS (POSITIVE OR NEGATIVE)	PROPOSED MITIGATION:	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
Noise Construction stage noise will consist of noise and vibrations by vehicles moving materials and also construction workers. This is likely to cause some irritation to nearby households. This is likely to last during the construction stage and day time if all activities are restricted to day working hours	**6,75 = Medium**	Machinery should be kept in good working order to reduce noise emission. Noise reduction mechanisms should be equipped if necessary. The construction activities should be restricted to normal working hours and during the day, between 8 to 5pm.	**Low**	Should the mitigation not be implemented, for instance where work is carried out into the night, then the nearby households may get irritated. This may be a source of nuisance to the community itself.
Dust / Air pollution Air pollution during the construction stage is likely to stem from dust and perhaps fumes and noise from vehicles. The air pollution will affect the employees and surrounding community. However this can be controlled or mitigated	**6.75 = medium**	Clearance of the site vegetation should be kept to a minimum, and uncovered soil should be kept moist to avoid dust generation. Construction vehicles and machinery utilised on site should be maintained and always be kept in good working order. Protective construction gears should be worn by workers on dusty days,	**Low**	Polluted air, from dust and fumes or other sources is likely to be a nuisance to the community members. This may also pose a health risk if not mitigated.

POTENTIAL IMPACTS	SIGNIFICANCE RATING OF IMPACTS (POSITIVE OR NEGATIVE)	PROPOSED MITIGATION:	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
		and watering should be applied where necessary keep the ground moist.		
Possible disturbance to hydrological resources: The side is largely devoid of rivers and major wetlands. However, some artificial wetlands and seepage areas have been identified. These have become the main channels for drainage and aquatic corridor into the river systems outside the site boundary. It is equally important to protect these areas from degradation.	**8**	Wetlands and watercourses are major hydrological systems that perform functions of flood attenuation and also server as habitat for some aquatic microorganisms. Appropriate protection is necessary for all valley systems and water-logged areas in the catchment. It is therefore recommended that a buffer of 30m be established along the open valley system identified along the southern boundary of the proposed site. • It is further recommended that in order to augment the catchment efficiency of the area, at detailed planning	**Low to moderate**	Only the seepage areas within the community may suffer direct degradation should the recommendations not be adhered to. Cumulative impacts on these may be localized flooding, as these systems have become good channels for surface water management.

POTENTIAL IMPACTS	SIGNIFICANCE RATING OF IMPACTS (POSITIVE OR NEGATIVE)	PROPOSED MITIGATION:	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
		level, buffers of between 20 m and 15 m be established along the other drainage lines to protect important or sensitive natural communities that are specific to certain localities. No development should be allowed within the valley not go areas. • All recommendations in the wetland ecological report should be adhered to also.		
Underground water There is also the Possibility of contamination of underground water as a results of soil pollution due to the usage of hazardous substance on the site. Mixing of cement and striped soils may pave the ways for siltation into underground water,	**15 = High**	Equipment or tools with oil or grease is not allowed to be placed on bare ground. These must always be placed on a lined surface. Cement mixing will take place on a lined surface. No Cement should be mixed on a bare surface.	**Low**	Inappropriate handling of waste and hazardous substance on the site can reduce the quality of underground water

POTENTIAL IMPACTS	SIGNIFICANCE RATING OF IMPACTS (POSITIVE OR NEGATIVE)	PROPOSED MITIGATION:	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
especially on rainy days during the construction phase. **Surface runoff pollution** Impact on surface water may be as a result of uncontrolled waste handling, including stockpiles. **Storm water management** Given the proposed development regards the removal of land cover in some cases, the potential to create more hardened surfaces is eminent. Storm water acceleration and localised ponding/flooding is likely to occur. In addition, spillage and waste could be other sources of pollution of storm water. This may lead to contamination of water bodies and underground water.				
		Stockpiles of rubble and topsoil should not be left piled for more than a reasonable time, as may be stipulated in the EMP, but generally not more than 14 days on site. These should be recycled where possible.	**Low**	Should there be no mitigation measures, possibility of storm water pollution during constructionism likely to result. This however, is likely to be localized.
		A storm water management system, in terms of the National Building regulations needs to be implemented by the contracture in the building of the structures. Onsite, drainage systems to be provided. In addition, a stormwater management plan be designed and approved by the engineer prior to the commencement of construction works on the site.	**Very Low**	Should no mitigation be implemented, this may constitute poor stormwater management which may result in Issues such as localized ponding, sedimentation, erosion and pollution among other things.
Soil disturbance/erosion	**11=High**	Cleared areas will be mostly occupied	**medium**	Should the mitigation measures not be implemented, and then there is

POTENTIAL IMPACTS	SIGNIFICANCE RATING OF IMPACTS (POSITIVE OR NEGATIVE)	PROPOSED MITIGATION:	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
The proposed activity will result in the vegetation clearance, soil removal, which decreases soil stability and lead to loss of soil resources by erosion, contamination and Soil degradation will also cause an indirect impact on the loss of micro habitats. Soils that are left bare and rehabilitated, may become susceptible to erosion activities. It is noted that some areas within the drainage already shows signs of severe erosion occurring. Further removal of land cover without any		by residential units. In the case of areas cleared for pipes and other reticulation work, these need to be revegetated with indigenous vegetation following construction activities, and all excavations will be backfilled with sub soil and top soil in the reverse order to which the soil profiles were removed. All visible weeds should be removed from top soil and placement area before replacing top soil. Contaminated soil by spills should be removed and disposed of as hazardous waste at a licensed hazardous landfill facility.		possibility of the impacts discussed occurring. There will also be additional impacts including air pollution by dust as results of diggings and top soil removal, and soil erosion will be high given the fact that soil will be left bare exposed to wind and rain.
Cultural and Historical surface sites	**8=Low**	Communication with the community leaders such as local councillors and	**Very low**	Sites could be damaged and social conflicts could result if not properly

POTENTIAL IMPACTS	SIGNIFICANCE RATING OF IMPACTS (POSITIVE OR NEGATIVE)	PROPOSED MITIGATION:	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
The Heritage Impact Study identified two sites of cultural and religious significance. One is a juvenile grave site and Shembe worship centre. The Heritage study identified two options to mitigating the impacts of the Juvenile grave site. First Option is to leave the site as it is and fence it off, to keep it protected, during construction and operation phases. Given that the community actually lived with this site for all these years, possibility of it continuing to remain is high, if properly managed Second Option is to relocate the grave. This will call for professional undertakers to be engage. A complete management programme on this is attached in the HIA report. This provides guidance, and should be applied should relocation be the option decided on. This can prevent any damage by the construction.		Ndunas/Chiefs is needed as part of the development to come to socially acceptable solutions that will be owned by the community for suitability. Grave site should be fenced off with proper and clear demarcation to avoid encroachment. IF removal is decided on, then a licensed undertaker should conduct the process, with the permission of AMAFA. The Shembe centre is clearly demarcated an community members are quite aware. The Shembe leaders should be consulted If any additional cultural or historical features discovered during the construction, the construction must stop immediately and the remaining		managed. However given that these have stayed in the community for long, care can be taken by the construction team to avoid these sites being disturbed.

POTENTIAL IMPACTS	SIGNIFICANCE RATING OF IMPACTS (POSITIVE OR NEGATIVE)	PROPOSED MITIGATION:	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
Relocation however may take about 6 or more months to complete and with additional cost implications for the applicant. These are socially sensitive and also archaeologically significance according to the HIA assessment as the grave site is more than 60years. This may require AMAFA permit if to be touched. Possible disturbance may result from movement of construction vehicles, and grading of the for the roads and reticulation		must be reported to the AMAFA KwaZulu-Natali		
Visual / Aesthetic Impacts Visual impacts are likely to emanate from construction activities such as storage of materials, and neglected excavations. Construction of roads may also result in considerable altering of the current looks of the areas along such footprints.	**3.5=Medium**	Material storage during operations should be done at designated areas, in order not to constitute any aesthetic nuisance. Soil stockpiling and excavations should be worked on and the areas restored within reasonable time frames, to reduce the length of visual impacts. Roadworks should be undertaken according to construction standards,	**low**	Visual Impacts is most likely to occur if mitigations are not considered which will disturb the eyes and mind of the community. This may cause nuisance also to road users etc.

POTENTIAL IMPACTS	SIGNIFICANCE RATING OF IMPACTS (POSITIVE OR NEGATIVE)	PROPOSED MITIGATION:	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
		and no unnecessary blockings and erecting of structures should occur. Where such are necessary, they should be removed as soon as work is complete in that area. Visual friendly materials should be used in all cases.		
Hydrocarbon spill/fuel Oil and fuel leaks and spills from construction vehicles is highly possible during construction phase. This is likely to contaminate storm water and also source possible contamination or pollution of the soil, if not properly managed or prevented.	**6.5 = medium**	Mitigation measures for this kind of risk includes prevention and management. Ideally, the spillage of such oils and fuels should be prevented at all cost. But where any of such incidents occur, prompt remedial actions should be taken. Examples of which include cutting the site and disposing appropriately, say in a registered landfill. Where necessary all vehicles suspected with leakages should be	**low**	If all the mitigation measures are implemented, the impact should remain low. However should this not be the case the risk of potential contamination is high. This may lead to contamination of underground water, soil pollution and disturbance of the bio-equilibrium among other negative effects

POTENTIAL IMPACTS	SIGNIFICANCE RATING OF IMPACTS (POSITIVE OR NEGATIVE)	PROPOSED MITIGATION:	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
		undersealed with drip pans. Fuels and petroleum product storage should be undertaken and sealed hard surfaces, which are possibly lined, to prevent any dripping into the soil and grass. All foremen of operators of such vehicles should be educated on this, and the vehicles should be well maintained and checked regularly for any such leakages. The health and safety rules as stipulated by the department of health should be well enforced during the construction and operational faces.		
Traffic Traffic during construction stage is likely to stem from the construction vehicles moving materials to and from the site, via the existing road networks and also the blocking of some	**4=Low**	Traffic control officers should be appointed to control the flow of traffic on the road to avoid such inconvenience. This kind of inconvenience can also be	**Very low**	If the mitigation measures are not implemented, there will be a high chance of unnecessary traffic disruption.

POTENTIAL IMPACTS	SIGNIFICANCE RATING OF IMPACTS (POSITIVE OR NEGATIVE)	PROPOSED MITIGATION:	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
roads, of lanes for construction work on such roads. This may cause some inconvenience to local residents. However, this is likely to be minimal given that the site can be accessed via different routes.		avoided by using alternative routes and proper planning of road diversions is necessary. Road closures and diversions and traffic disruption should be avoided as much as possible, and where such are necessary, should be within minimal durations to allow normal flow of traffic. Proper signage should company any planned roadworks, and disruption of traffic		
Health & Safety The movement of machinery, storage of materials, and excavations are possible sources of safety issues during construction stage. Neglect to any health and safety measures may result in injury to both workers and any	**5 =Low**	The risks of accidents and injury can be minimized by the implementation of safety procedures. Proper health and safety measures should be put in place during the implementation of the proposed development. Health and safety plan should be prepared and approved by the	**Very low**	Should these mitigation measures not put in place, these may constitute violation of the health and safety regulations. This may also leave workers exposed to all kinds of risks. Should any incident occur, this may leady to prolonged waiting for help, which may lead to loss of

POTENTIAL IMPACTS	SIGNIFICANCE RATING OF IMPACTS (POSITIVE OR NEGATIVE)	PROPOSED MITIGATION:	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
other persons who may find themselves on this site. This requires a strict enforcement of the national health and safety regulations pertaining to construction sites.		engineer prior to construction. The Occupational health and safety procedures as outlined by the department of Health should be put in place prior to the commencement of work. Safety equipment such as fire extinguishers, First Aid boxes, and other safety appliances should be readily available and administered by a trained safety officer. Proper safety measures also need to be implemented with areas of dug trenches barricaded off.		property for, instance in the case of fire.
Job creation The construction phase of the proposed development is likely to create temporary additional jobs for the local area. Jobs will be created during construction as labours,	**8.5 =medium**	No mitigation is required	**High**	N/A

POTENTIAL IMPACTS	SIGNIFICANCE RATING OF IMPACTS (POSITIVE OR NEGATIVE)	PROPOSED MITIGATION:	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
masons and other workers may be required. This is likely to impact positively on the local economy as more people getting employment may spiral some level of livelihood improvement				
Improvement in livelihood of local community The temporal income generated may contribute to household life improvement in the short term. In the long term however, local people will gain skills that will help them on their future and they will stand a better chance of being hired when the development of this kind happens again.	**8,5=Medium**	None required	**Medium**	N/A

POTENTIAL IMPACTS	SIGNIFICANCE RATING OF IMPACTS (POSITIVE OR NEGATIVE)	PROPOSED MITIGATION:	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
Impact on Local services Given that the development includes an upgrade of the existing community, most of the local services such as water and electricity resources are expected to aid the development process. Also some services such as road usage and water connections may be disrupted temporarily during construction.	**4.5 = Low**	Given the proposed technology that involve mostly manual or human labour and auto-powered machines and construction vehicles, the impact is expected to be low. Any disruption in services, should be preceded with ample and adequate notifications of the affected areas. Services should be restored within the shortest possible time.	**Low**	Disruption in services without adequate notification may be a source of irritation for affected community. However, with proper mitigation measures, these should be mitigated.
Benefits to local Economy The spill over of the construction stage employment and sourcing of materials from local suppliers will go a long way in providing socio-economic benefit to the community as a whole. More income in the pocket of community	**5=Medium**	None required	**Medium**	N/A

POTENTIAL IMPACTS	SIGNIFICANCE RATING OF IMPACTS (POSITIVE OR NEGATIVE)	PROPOSED MITIGATION:	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
members means, more purchasing power, leading to the stirring of economic acidity in the local economy. In addition, access and improvement of bus routes will also empower easy movements within the community making people go about their daily business with much ease, thereby improving efficiency of any existing economic activities.				
Potential Contamination from improper waste management	5 = medium			

13.12 OPERATIONAL STAGE

13.12.1 SUMMARY OF POTENTIAL IMPACTS AND THEIR RATINGS

	OPERATIONAL STAGE								
	Impact	Mitigation Required	Nature of Impact	Extent	Duration	Magnitude	Irreplaceable Loss of resources	Probability	Significance Score
1	Noise	Yes		1	1	2	0	0,25	1
2	Water pollution (water courses)	Yes		3	4	4	1	0,25	3
3	Soil disturbance /Erosion	Yes		1	1	4	1	0,5	3,5
4	Air Pollution	Yes		2	3	2	1	0,5	4
5	Stormwater management	Yes		3	2	6	1	0,25	3
6	Job Creation	None Required		3	4	6	0	0,5	6,5
7	Visual / Aesthetic impact	Yes		1	4	0	0	0,5	2,5
8	Traffic	Yes		2	1	4	0	0,5	3,5
9	Safety	Yes		1	2	4	0	0,5	3,5
10	Impact on Local services	Yes		3	4	4	0	0,5	5,5
11	Benefits to local economy	None Required		4	4	6	0	0,5	7
									43
	Mean impact rating								**3,909090909**

13.12.2 DETAILS OF IMPACT ASSESSMENTS AT OPERATIONAL PHASE PROPOSAL (PREFFERED ALTERNATIVE)

POTENTIAL IMPACTS:	**SIGNIFICANCE RATING OF IMPACTS (POSITIVE OR NEGATIVE):**	**PROPOSED MITIGATION:**	**SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:**	**RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED**
1. Noise Noise levels are likely to be back to normal during the operational stage. Given that no additional people from outside the existing community will be moved into the community, and also that not noisy installations are expected as part of this development, noise levels are expected to be at normal levels for the community.	**Score 1 = Low**	No mitigation required for noise during operational stage as life would have returned to normal as construction machines would have been withdrawn.	**Low**	None mitigation hence required.
2. Water pollution (water courses) • During operational stage, the handling of waste and other chemicals such as disinfectants could be possible sources of surface water pollutions. • Improper stormwater management may result in contamination of surface water and siltation and	**Score 3** **Low**	• Waste management should be included in the responsibilities of the local authority and carried out regularly to avoid any contamination of the	Low	Should there be no mitigation measures; possibility of stormwater pollution during the operation is likely to result. This is likely to be localized. Local water systems and drainage systems may be contaminated if not properly managed.

POTENTIAL IMPACTS:	SIGNIFICANCE RATING OF IMPACTS (POSITIVE OR NEGATIVE):	PROPOSED MITIGATION:	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
subsequent blocking of drains and disturbances of watercourses.		environment. . • Given the improvement in road network, it is expected that waste management services will also improve.		
3. Soil disturbance /Erosion At operational stages, potential disturbances to the soil are likely to stem from the areas left bare from construction stage, not rehabilitated. These if not properly monitored and attended to may be prone to erosion activities. Soil erosion activities may cause degradation in the land if not checked in time.	**Moderate 3.5**	Striped surfaces should be utilized immediately. Stormwater management mechanisms need to be put in place to reduce or attenuate the possible effects of surface runoff. Land cover within the open spaces an riparian zones should be maintained to serve as a reduction mechanism for surface runoff.	Low	Should the mitigation measures not be implemented, and then there is possibility of the impacts discussed occurring. What could happen will be ponding and also or stagnation if the bare land is left for a longer time without any mitigation measures. Erosion may also occur as a result of improper discharge of stormwater.

POTENTIAL IMPACTS:	SIGNIFICANCE RATING OF IMPACTS (POSITIVE OR NEGATIVE):	PROPOSED MITIGATION:	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
4. Air Pollution Possible pollution sources during the operational phase may stem from waste left uncollected and on any unpaved roads within the area, generating dust.	**Low 4**	Speed regulating mechanisms should be applied on any unpaved roads, in such a way that reduces any potential dust generation. Waste collection as emphasised in the previous sections, should be regularly carried out by the local authority.	Low 5	The identified impacts may occur, should no long term mitigation measures not be put in place. People may have unrests and discomfort from such impacts.
5. Storm water management • Given the proposed development regards the removal the land cover, the potential to create more hardened surfaces is eminent. Stormwater acceleration and localised ponding is likely to occur. In addition, spillage and waste could be other sources of pollution of storm water. This may lead to contamination of water surface bodies and	**Score 3** **Medium**	• A stormwater management system, in terms of the National Building regulations needs to be implemented. Onsite, drainage systems will be provided. • In addition, a stormwater	**Low 6**	• Should no mitigation be implemented, this may constitute poor stormwater management which may result in Issus such as localized ponding, sedimentation, erosion and pollution among other things.

POTENTIAL IMPACTS:	SIGNIFICANCE RATING OF IMPACTS (POSITIVE OR NEGATIVE):	PROPOSED MITIGATION:	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
underground water.		management plan should be designed and approved by the engineer prior to the commencement of construction works on the site. • Proper stormwater discharge points should be identified and implemented as part of the stormwater channelling mechanism.		
6. Job Creation Both the construction and operational phases of the proposed development are likely to create additional jobs for the local community. Jobs will be created during construction as labours, masons and other workers may be required.	**6.5Medium**	**N/A**		Should the development no be implemented, then the iterated or envisaged positive impacts are not likely to occur.

POTENTIAL IMPACTS:	SIGNIFICANCE RATING OF IMPACTS (POSITIVE OR NEGATIVE):	PROPOSED MITIGATION:	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
Operational phase of the development may however see fewer jobs. Potential jobs may include maintenance staff and skilled labour work such as engineers overseeing and monitoring operation of services. Waste collection is also likely to generate some form of job avenues for some local community members.				
7. Visual impact At operational stage, visual impacts are expected to normalise. The new structures should have interested into the new view of the area and become the new reality. • Aesthetic view or the new view of the community is rather expected to improve, as new residential structures are put in, and roads are well structured and well formalised.	**2.5 = Low**	Any materials left during construction should be cleared, as part of site closure, before contractors leave site. Waste should be organised in such a way to reduce any aesthetic nuisance. Waste storage sites should be properly designated during operation to ensure minimal	**Very low**	Aesthetic or visual impacts are expected to normalize drastically during operation if all care is taken during stockpiling of materials and waste.

POTENTIAL IMPACTS:	SIGNIFICANCE RATING OF IMPACTS (POSITIVE OR NEGATIVE):	PROPOSED MITIGATION:	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
		aesthetic discomfort to community members.		
8. Traffic • Traffic during operation may be from vehicles moving goods to and fro the farm. Traffic should return to normal and rather improved, with additional and improved road network systems.	**3.5 = Moderate**	• Proper signage should be applied, to ensure most efficient traffic situation during operational stage of eh development.	•	• Improper signage and traffic control measures such as speed limits may result in traffic situations, inconvenience and in some cases possible accidents**.**
9. Safety Safety during operation should improve significantly, now that services are improved, and houses are well demarcated, people can fence their houses and put in other safety measures. Improvement in the road network should improve safety in terms of traffic issues and accidents, if proper and traffic calming measures are implemented.	**3.5 Low**	Traffic calming measures should be implemented on road networks, accompanied by proper signage.	4 Very Low	
10. Impact on Local services Local services, should improve significantly during	**5.5 = Medium**	Potential impacts on local services during operation are		

POTENTIAL IMPACTS:	SIGNIFICANCE RATING OF IMPACTS (POSITIVE OR NEGATIVE):	PROPOSED MITIGATION:	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
operational stages. Residential unites would've been upgraded, and water and sanitation services provided. Road networks would have improved also. Also as more parts of the community are accessible, other additional services such as emergency and security services such as police, services can now access the various parts of the community to deliver valuable services.		expected to be rather positive, if services such as waste and stormwater management are handled efficiently.		
11. Improvement in livelihood of local Economy • At operational stage, the improvement in the local economy would stem from the improvement in services to the community. for instance, water connection will be readily available for domestic and commercial activities. • Improvement in road networks, mean people can go about their daily duties with much easy. Cumulative effect of all these improvements is expected to stimulate the local economy, though indirectly.	**6 = Medium**	None required	**NA**	**NA**

POTENTIAL IMPACTS:	**SIGNIFICANCE RATING OF IMPACTS (POSITIVE OR NEGATIVE):**	**PROPOSED MITIGATION:**	**SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:**	**RISK OF THE IMPACT** AND **MITIGATION NOT BEING IMPLEMENTED**

13.13 NO GO ALTERNATIVE

Potential impacts:	**Significance rating of impacts (positive or negative):**	**Proposed mitigation:**	**Significance rating of impacts after mitigation:**	**Risk of the impact** and **mitigation not being implemented**
The impacts of no go alternative are most likely to be felt from a socio economic development perspective.	**Moderately High**	Mitigation for this impact, is to find ways of implementing this development as planned,	Low	Should the mitigation not be implemented, then the issues described in the impacts section will continue as

POTENTIAL IMPACTS:	**SIGNIFICANCE RATING OF IMPACTS (POSITIVE OR NEGATIVE):**	**PROPOSED MITIGATION:**	**SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:**	**RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED**
No go alternative, may imply that the community remain with the current issues of poor services. The envisaged job creations and economic stimulation may also not occur. All possible employment opportunities that are likely to arise from the proposed development construction and operational stages will be lost, or at least stunted. Socio economic benefits of the proposed development to the community are also likely to be lost. A no go alternative however; will keep the environment the way it currently is. Possible construction stage impacts as well may be avoided. Production levels will remain same, or increase gradually.		in an environmentally friendly and responsible manner, adhering to all legislations and guidelines as well as recommendations of this assessment.		they currently are. More service delivery protests may rather occur. Also there may be dissatisfaction and conflict within the community as some residential unit hopefuls would have been denied houses, leading to social conflicts.

The purpose of this is to provide an overview of the assessment undertaken, taking the assessment of potential impacts into account, to give an environmental impact statement that summarises the impact that the proposed activity and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

The impact assessment and significance rating shows that the construction state impacts and operational stage impacts are of medium significance. Construction stage impacts at an overall mean of 6.64, which is Medium, while operational stage impacts have a mean of 3.9, which are considered low. If all the proposed mitigation are implemented, these impacts should be reduced further.

Alternative A (preferred alternative) _ The Proposal

Biophysical environment

It is noted that this is an in-situ upgrade of within the existing community. Most of the vegetation on the site is already largely degraded. Only patches of grasslands remain on the open spaces and at along the valley lines. These however, act as flood attenuation mechanisms and protection against erosion. The proposed development will result in the clearing of vegetation on the proposed site for the construction of houses and service infrastructure such as roads, and water reticulation. The clearing of vegetation is likely to result in the exposing the land and possible surface runoff pollution. This can be mitigated by implementing appropriate stormwater management strategies, including proper channelling of the stormwater during construction and operational phases.

Other impacts that were identified, for the construction phase are noted to be mitigatable. Noise and dust, and oil spillage can be mitigated by avoiding and managing the occurrences. Impacts during the construction stage may be short term and may end when construction is completed.

Potential impact on juvenile grave identified is also mitigatable, by fencing off the site with a min of 20m buffer, or by completely relocating with the permission of AMAFA. The disturbances to the Shembe site can be limited or avoided completely, if planning is done around it, and integrate the site into the layout.

Operational stage impacts on the natural environment can also be mitigated if proper strategies are put in place. The possibility of mitigating these impacts reduces their significant levels considerably, to low significance. The neglect of mitigation measures, such as waste management could result in severe health hazards. This therefore infers the need to take the recommendations made herein and in all applicable regulations and guidelines seriously.

A synoptic view of the environment in terms of biodiversity, on the physical site and relevant biodiversity literature and databases and as assessed herein, indicated the critical biodiversity features are located within the outskirts of the site, but the potential impacts on these are rated to be low (refer to wetland report) within the development boundaries or within the immediate environments. It is therefore concluded that the development as proposed, may not impact significantly on these biodiversity resources, given the type of development proposed being in-situ-upgrade of the already disturbed areas of houses and internal roads.

Socio economic impacts during the construction stage will include employment opportunities, for both labours and suppliers of construction materials. The spiral effect of these will contribute to the improvement of economic activities during this period.

During operational stage, few people are likely to be employed on permanent basis, like in waste collection and maintenance services of the municipality. This may reduce the unemployment in the area further, and also bring improvement in livelihoods of the local community.

From this assessment, it is observed that most of the negative impacts can be readily mitigated. Also, the positive impacts from the proposed development outweigh the identified negatives (if properly mitigated). A no go alternative may therefore be unwarranted, given the absence of fatal flaws with the proposed upgrade of Drycut community and infrastructure.

No-go alternative (compulsory)

The No-development option will mean that the anticipated effects of impacts of the development will not occur. All the envisaged construction stage impacts, such as dust, noise and so forth will not occur as a result of the proposed development. Given that portions of the farm are being ploughed for crop production, the activities of noise and dust may still occur at those times where these activities are being carried out.

In addition, even though the removal of land cover may not occur as a result of development, if a no-go alternation is the case, some form of degradation may still occur, as the community expands in an uncontrolled manner, without proper infrastructure to management potential impacts.

Road networks may still be improperly designed, and some parts of the community may not have proper access. Emergency services may not have access to vital areas of the community.

From a socio-economic perspective, the no-development option may rather avert the potential economic benefits that were envisaged. From this perspective, it can be asserted that the potential positive impact far outweigh the envisaged negative impacts, hence a no-go alternative may not be necessary.

15 RECOMMENDATIONS

From this assessment of the biophysical environment, given that there are no fatal flaws that will hinder the proposed development it is concluded that the proposed development is feasible. The specialist studies undertaken to assess the potential impacts on wetlands and sensitive ecological areas also concludes that the potential impacts are low (refer to wetland and HIA report). The proposed development is possible as long as all impacts are duly mitigated as proposed. In addition the following recommendations are provided:

- It is recommended that the mitigation measures suggested in this report herein be taken seriously and considered during the implementation of the proposed development to minimize the effects of the identified impacts.
- It is important that an independent environmental control officer be appointed to monitor the construction activities, in terms of the EIA regulations requirements.
- The grave site can be maintained, and fenced off, to notify the community of its existence, if relocation is not possible. Either options should be collaboration with community leaders. For now it also depends on the availability of further resources for relocation and this should be properly budgeted for in terms of finance and time, should this option be considered by the applicant. It is our opinion that, in order to proceed with the development, fencing should be done with the recommended buffer. This will save time and money. However awareness need to be made to the community of the importance of preserving such Historical sites
- Project implementation audit report should be regularly submitted to the competent authority to ensure all conditions and mitigation measures and proper due diligence is being applied.
- The development may be allowed to proceed given the socio-economic benefits it may yield to the community and the environment as a whole.

REFERENCES

Aucamp, P J. (2010). *Environmental Impact Assessment: a practical guide for the discerning practitioner*. Van Shaik Publishers.

Mucina, L., & Rutherford, M. C. (2006). The Vegetation of South Africa, Lsotho and Swaziland. *Strelizia, South African National Biodiversity Institute*, *19*.

SANBI. (2016). KwaZulu-Natal Systmatic Conservation Plan (KZNSCP) : KZNSCP Vegetation types. Retrieved April 30, 2016, from http://bgis.sanbi.org/Projects/Detail/39

Shaw, C. S., & Escott, B. (2011). KwaZulu–Natal Vegetation Type Description Document for Vegetation Map 2011: kznveg05v2_1_11_wll. shp. Retrieved from http://cpu.uwc.ac.za/KZN/KZN_vegetationtypes_descriptionsVer2_1.pdf

16 APPENDIXES

I. **Appendix 1**: Facility Illustration (Further details) and Maps

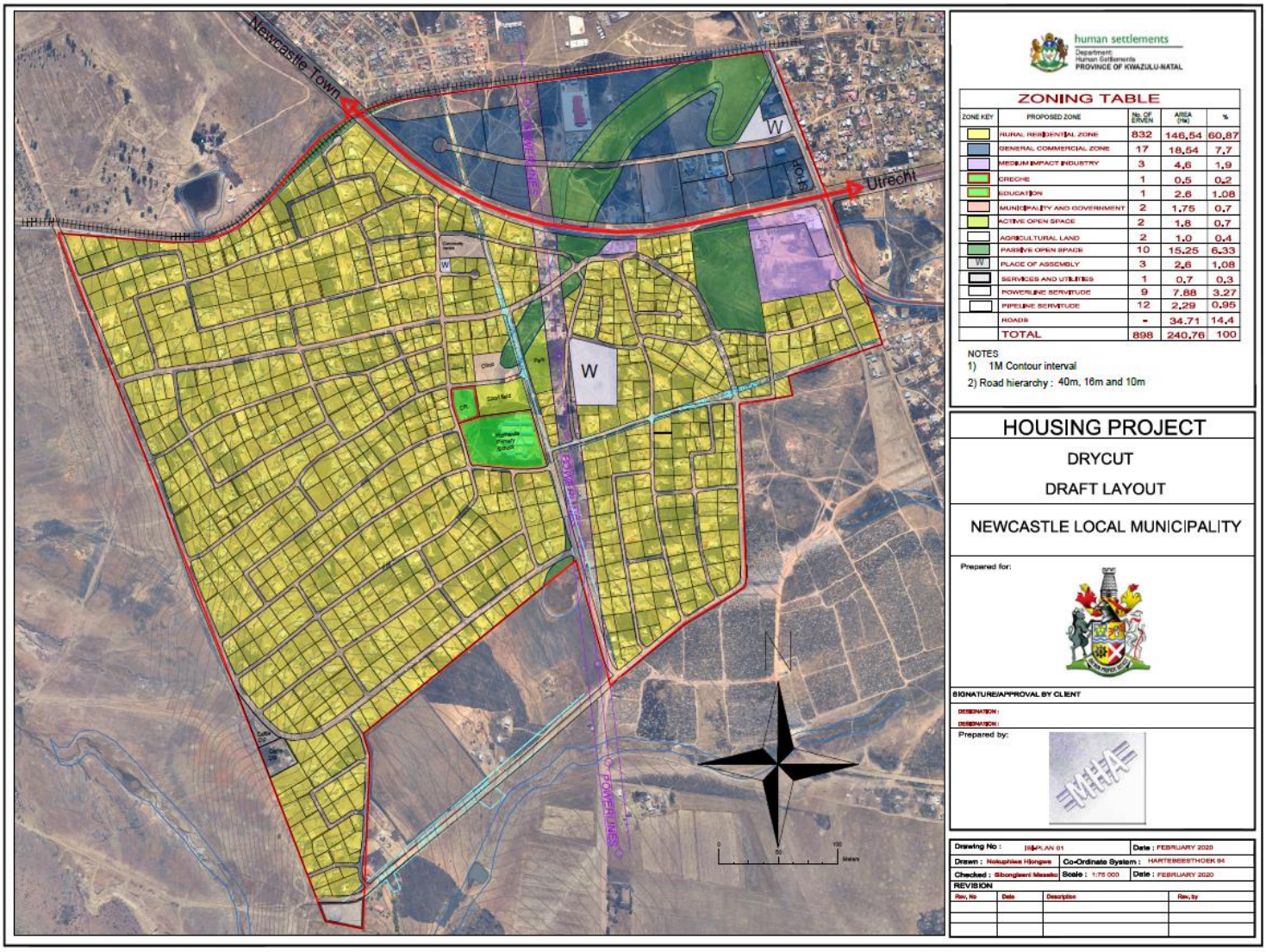
II. Appendix 2: Public Participation report

III. 3 1. Wetland Habitat assessment report

3.2 Heritage and Paleontological Studies

IV. **Appendix:** 4 Environmental Management Programme (EMPr)t

APPENDIX 1 FACILITY ILLUSTRATION (FURTHER DETIALS)



: PUBLIC PARTICIPATION REPORT

Public Participation Report

Basic Assessment Process for
Drycut Housing Project

BIZYCON PTY LTD

KZN: 15 Eugene Marais Road, Napierville, Pietermaritzburg 3200P O Box 1978 Pietermaritzburg 3200
GAUTENG: Unit 77, Block 4, Riversands Business Hub, Ext4 Fourways, Midrand
Tel +27 (0)776 ♦ Cell +27 (0) 719212618 ♦ Fax+27- 86 776 33 25 ♦
Email maccarthy@developmentimpact.co.za www.developmentimpact.co.za

CONTENTS

1. INTRODUCTION

This report is a summary of the public participation process and activities undertaken so far for the assessment process curried out for the Drucyt Housing Development in Drycut, near Madadeni. The Public participation is done with the assistance of the Ward Councillors and also Unit committee members within the community. This report details the activities carried out and outcomes to date.

2. PUBLIC ADVERTISEMENT

2.1 Site notices

Site notices where laced within the community in places that are mostly assessable by the community members, under the guidance of the Unit committee member. Photographs of some of the Site Notices are attached in Appendix E (i).

2.2 Newspaper advertisement

A newspaper advertisement will be placed, to further give notice to the public and also invite comments on the Basic assessment report. Copy of the advert will be included in this public participation report for the final submission.

3. BACKGROUND INFORMATION DOCUMENT (BID)

Background Information was prepared and distributed within the community of Drycut. This was done with the assistance of the local councillor and ward committee members. All those who received such information were encouraged to register as interested and affected parties if they so wish. A copy of the BID and list of people to whom it was distributed are attached in Appendix E (iii). Few verbal responses were received from Interested and Affected Parties (IAP). From the comments received, almost all community members support the proposed development. So far, no written comments and objections were received. This process is still on-going until the end of the month, and any further comments received will be attended to or inculcated into the planning of the development.

4. PUBLIC MEETINGS

From the interactions with the public so far, it didn't appear that there were any critical issues for which public meetings would be called for. Should this become necessary, it will be planned with the municipality and community leaders.

5. COMMENTS FROM STAKEHOLDERS

The draft basic assessment report (BAR) is being distributed to key stakeholders (relevant government departments and municipalities) for comments. Any comments received will be inculcated into the final report to be competent authority.

6. APPENDIX E PUBLIC PARTICIPATION ATTACHMENTS

I. SITE NOTICE

PUBLIC NOTICE

BASIC ASSESSMENT PROCESS

DRYCUT HOUSING PROJECT, MADADENI AMAJUBA DISTRICT

Notice is hereby given in terms of the regulations published in Government Notice No. GNR 38282 of December 2014 under the National Environmental Management Act (Act No. 107 of 1998) as amended, of the intent to carry out the following activity:

> **The Newcastle Local Municipality in collaboration with the KZN Department of Human Settlements proposed to formalise the Drycut settlement near Madadeni, Newcastle within the Amajuba District of KZN. In all about 1000 residential units are envisaged to be constructed. It is expected that houses will be constructed on the compounds of qualifying beneficiary. This will also include the upgrade of internal roads and also pipelines for water reticulation.**

This triggers activities within Listing Notice 1 of GNR 983, of the National Environmental Management Act (Act 107 of 1998) for which environmental authorisation is required. Key triggered activities, relate to removal of vegetation, potential crossing of watercourses by roads and pipelines.

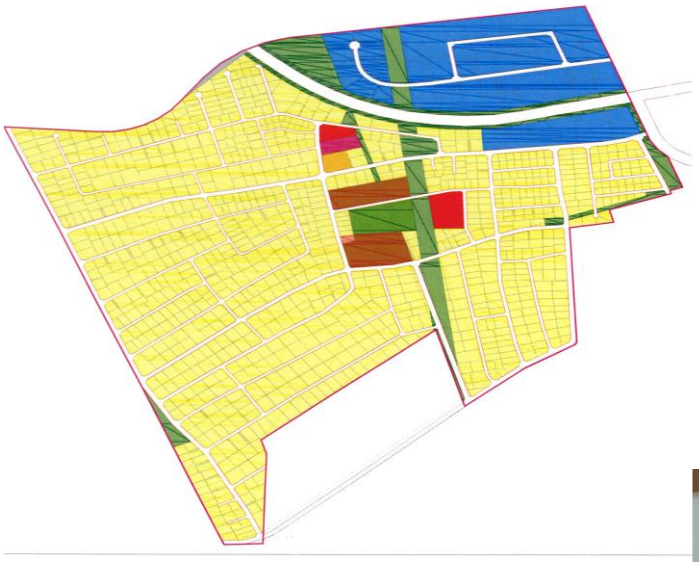
A Basic Assessment (EIA) process is being undertaken by Bizycon (PTY) LTD and an application for authorisation for this project will be submitted to the KZN Department of Economic Development, Tourism & Environmental Affairs (EDTEA). Further details of the proposed activity may be obtained from the contact person below.

All Interested and Affected Parties (I&APs) are encouraged to submit their names, contact details and written interest or comments relating to the above development to the contact persons given below within 30 days of the date of publication of this advertisement: 11 July, 2019.

CONTACT DETAILS:

BIZYCON PTY LTD

Mr MacCarthy Siabi: **Tel:** 081 047 0096 **Fax** 086 776 3325, Email: bizycon@live.co.za



Site notice placed in the
Community accessible place
(with consent of the centre manager
and councillor)

II. NEWSPAPER ADVERTISEMENT (TO BE INCLUDED)

(to be added)

III. BACKGROUND INFORMATION DOCUMENT (BID), AND DISTRIBUTION LIST

DRYCUT HOUSING PROJECT, AMAJUBA DISTRICT

BASIC ASSESSMENT PROCESS

BACKGROUND INFORMATION DOCUMENT (BID)

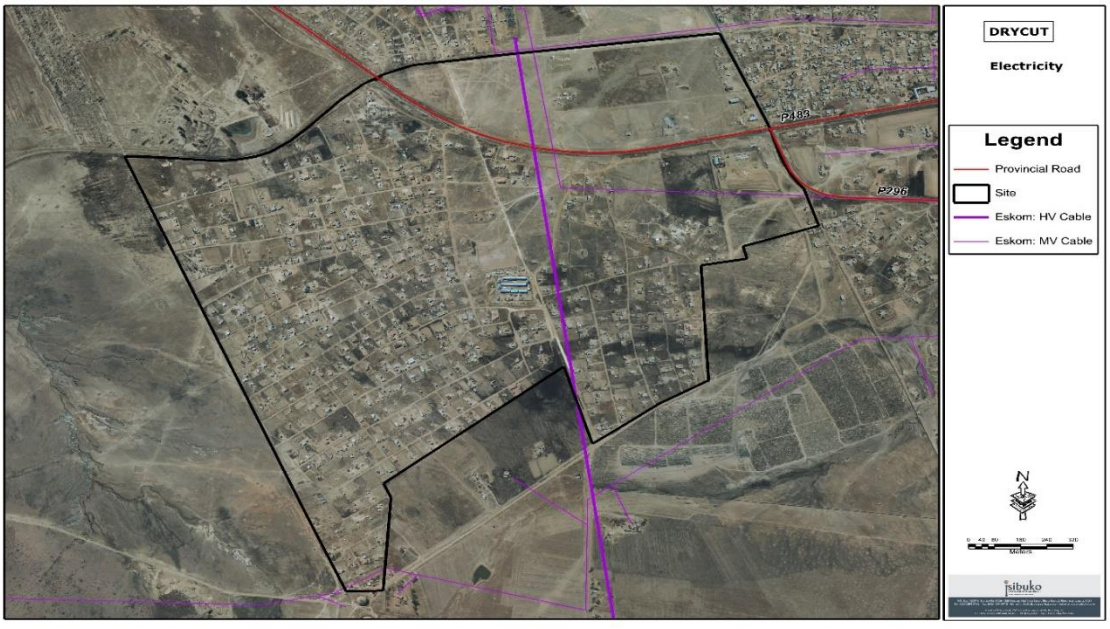
BACKGROUND

Newcastle Local Municipality in collaboration with the KZN Department of Human Settlements proposed to formalise the Drycut settlement near Madadeni, in Newcastle within the Amajuba District. In all, about 1000 residential units are envisaged to be constructed. It is expected that houses will be constructed on the compounds of qualifying beneficiary. This will also include the upgrade of internal roads and also pipelines for water reticulation.

There patches of undeveloped grasslands within the community which may be removed for the proposed development. This triggers activities within Listing Notice 1 of GNR 983, of the National Environmental Management Act (Act 107 of 1998). This implies that environmental authorisation is required. Key triggered activities, relate to removal of vegetation of more than 1 ha, potential crossing of watercourses by roads and pipelines.

DESCRIPTION OF THE PROPOSED PROJECT SITE

The site currently consists of the informal community of Drycut and adjacent open spaces as indicated on the



attached areal photograph, as per the proposed project boundary.

Environmental Process & Considerations

This triggers activities within Listing Notice 1 of GNR 983, of the National Environmental Management Act (Act 107 of 1998) for which environmental authorisation is required.

As part of the planning process being undertaken by Maseko Hlongwa and Associates, an environmental impact assessment is being conducted. A Basic Assessment (EIA) process is being undertaken by Bizycon (PTY) LTD and an application for authorisation for this project will be submitted to the KZN Department of Economic Development, Tourism & Environmental Affairs (EDTEA).

All Interested and Affected Parties (I&APs) are may submit their names, contact details and written interest or comments relating to the above development to the contact persons given below within 30 days of the date of publication of this advertisement: 11 July, 2019.

Your involvement

Environmental Assessment plays a vital role to ensure that it provides the necessary and adequate information on which to base the decision of whether to grant environmental authorisation on the anticipated project. This environmental approval will also give information on whether or not and if yes under which conditions the authorisation will be granted. There are numerous stakeholders that are involved from entirely different sectors and each contributes towards a desirable conclusion. Your remarks, if any will enhance all appropriate concerns or appraisals that are assessed in the EIA. You are therefore encouraged to fill in the enclosed registration/comment form or write a letter, call, and email or send a fax the EAP on the following contacts in case you want to comment on the proposed development.

REGISTRATION AND COMMENT FORM

Accompanying Background Information Document for Drucyt Housing Project)

Should you have any comments regarding the proposed project, you may please complete and send the attached comments sheet to the following contact person:

Mr MacCarthy Honu-Siabi

Tel: Cell: 0724641197, Fax: 086 776 33 25

Email: bizycon@live.co.za

TITLE		**FIRST NAME**	
INITIALS		**SURNAME**	
ORGANISATION/TOWN		**E MAIL**	
POSTAL ADDRESS			
TEL NO.		**POSTAL CODE**	
CELL		**FAX NO.**	

REGISTRATION AS AN INTERESTED OR AFFECTED PARTY (I&AP) (Please circle applicable box)

Please formally register me as an interested and affected party so that I may receive further information and notifications during the EIA process	YES	NO
I would like my notification by	Letter (mail)	
	E Mail	
	Fax	
	Telephone	
In terms of the **GNR 982 (EIA process regulations)** I disclose below any direct business,		

financial, personal or other interest that I may have in the approval or refusal of the application.

+

COMMENTS (you may use a separate sheet if you so wish)

I have no objections to the proposed development. My reasons are

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I support the proposed development. My reasons are:

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I object to the proposed development. My reasons are:

……
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……
……

Other I&APs to be contacted are:

……
……
……

DRYCUT HOUSING PROJECT, AMAJUBA DISTRICT

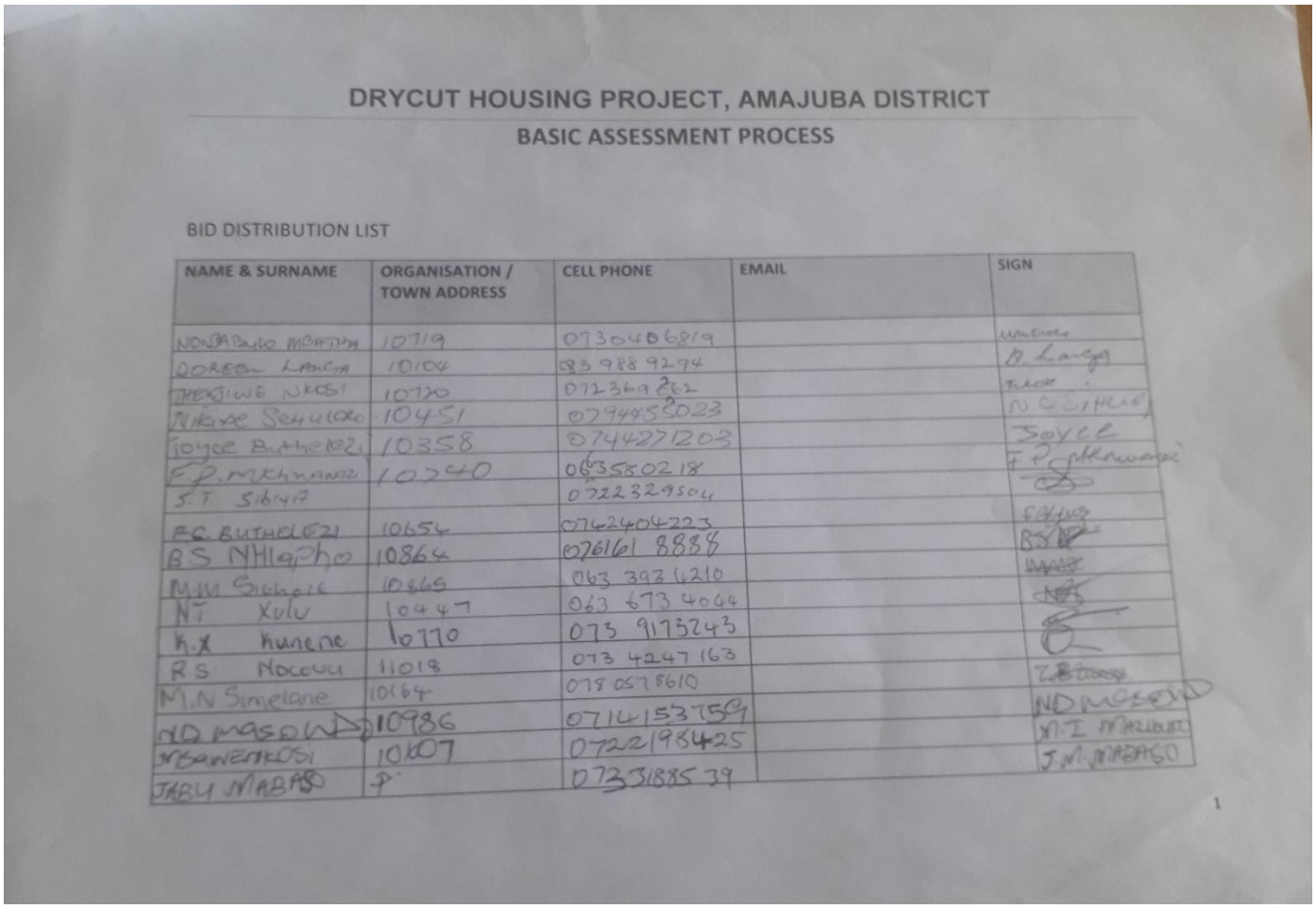
BASIC ASSESSMENT PROCESS

BID DISTRIBUTION LIST

NAME & SURNAME	ORGANISATION / TOWN ADDRESS	CELL PHONE	EMAIL	SIGN
MANDLA RADEBE	N/A	078787 9990	mandlaheadman@gmail.com	
Shelby Mgwenya	N/A	0780823705333		
Thabsile Maseko	10807	0661163859		
Thulesizwe Yaba	10212	071415375?		T Xaba
T.E Msimanga	10633	0723418441?	Z.bshabalala3@gmail.com	T.E
Nosipho Luma	10144	0769315905		N.
Phila Mbata	10814	078 418 6417	P.P Mbata	P.P. Mbata
Tobs Nkomi	10723	0632214128		X
Nkosiwe Sitole	10865	0783441906		N.P. Sitole
Sbongile Nyandeni	10723	0710109233		
Sbongile Buthelezi	10723	0828051615		S Buthelezi
Bayiswe Madondo	10960	0797944388		B Madondo
Londiwe Mlambo	10303	0619913213		
ZINZI TSWAYI	10801	066 125 2266	ZINDZIE9@gmail.com	
NOMCEBO MSIWAKO	10815	076 952 4163	N/A	
Nompumelelo Shabalala	10423	078 500 2401		
Thabsile Mthethwa	10148	063 103 9950		

1

NAME & SURNAME	ORGANISATION / TOWN ADDRESS	CELL PHONE	EMAIL	SIGN
Mlengiwe Ndwandwe	10713	0729669755		
Phillisiwe Mathunjwa	10826	0869335210		Phillisiwe
Alpheus Nkosi	10635	0326468604		
Sizakele Mkhize		0813861250?		S.M. Khize
Shadrack Mbonane	N/A	0835839804		
Mlengiwe Gumbi	N/A	0826738515		
Khangelani Thusi	10619	0787211140		LM THUSI
Slindile Dubazane	N/A	0710393828		S Dubazane
Hlezi Radebe	1052	0790844153	5602208150?9	



DRYCUT HOUSING PROJECT, AMAJUBA DISTRICT

BASIC ASSESSMENT PROCESS

BID DISTRIBUTION LIST

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NONDABUKO MBATHA	10719	0730406819		
DOREEN LANGA	10104	083 988 9294		D. Langa
THEKISWE NKOSI	10720	072369262		
Nikiwe Sehlolo	10451	0794455023		N C Sithole
Joyce Buthelezi	10358	074427 1203		Joyce
F.P. Mkhwanazi	10240	0635802 18		F P Mkhwanazi
S.T Sibiya		0722329504		
EC. Buthelezi	10654	0762404223		
B.S Nhlapho	10864	076161 8884		
M.M Sithole	10865	063 393 6210		
NT Xulu	10447	063 673 4064		
K.X Khumalo	10770	073 9173243		
R.S Ndlovu	11018	073 4247 163		
M.N Simelane	10164	078 057 8610		
ND Masondo	10986	0714153759		ND Masondo
MBANENKOSI	10107	0722198425		M.I Mazibuko
JABU MABASO	P	073 318 85 39		J.M. Mabaso

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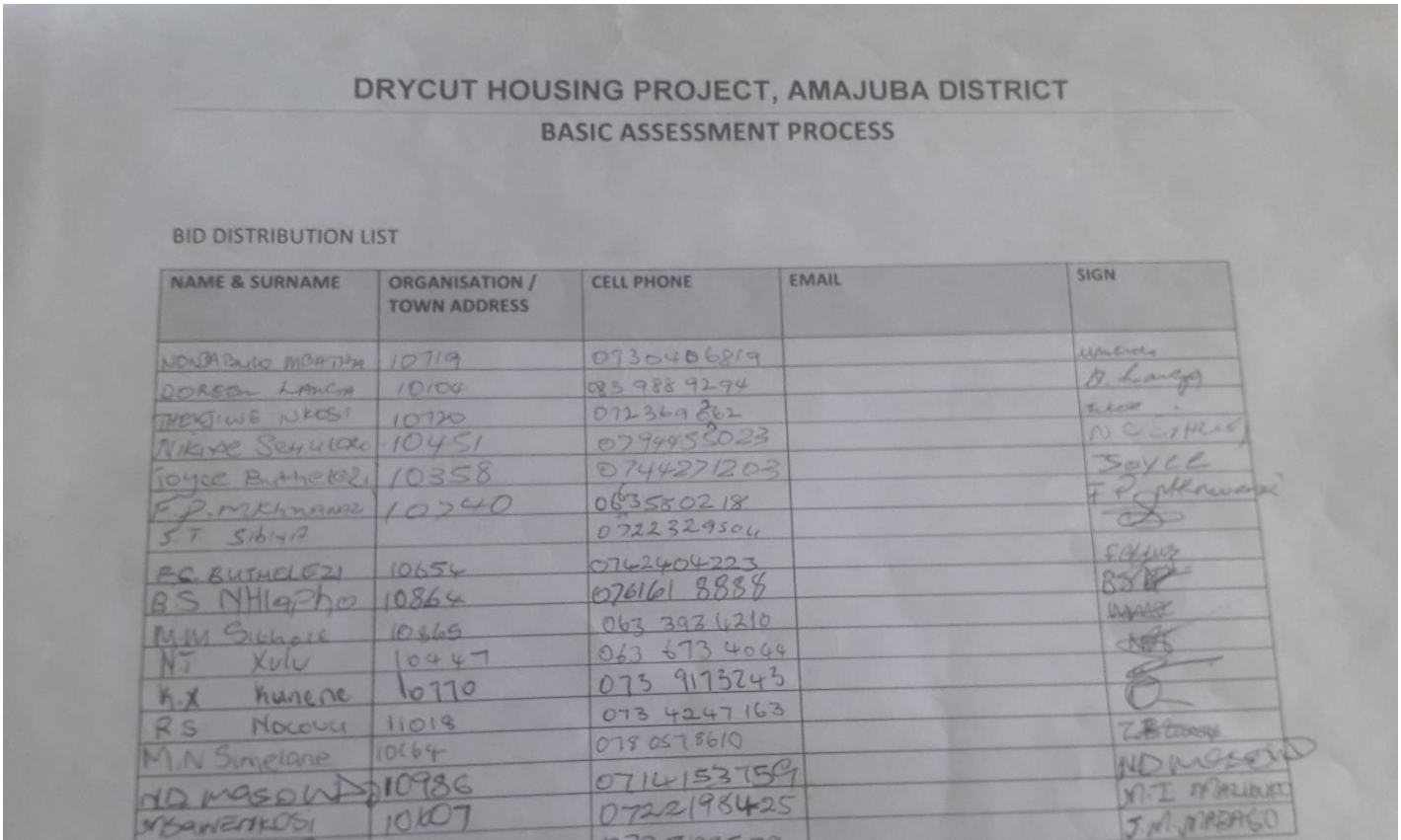

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JABU MABASO	P	073 318 85 39		J.M. Mabaso

DRYCUT HOUSING PROJECT, AMAJUBA DISTRICT

BASIC ASSESSMENT PROCESS

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NONJABULO MBATHA	10719	0730486819		
DOREEN KANGA	10104	083 988 9294		D. Kanga
THENJIWE NKOSI	10720	072369262		
NIKIWE SEHLOLO	10451	0794455023		
Joyce Buthelezi	10358	0744271203		Joyce
F.P. MKhwanazi	10240	0635802 18		F P MKhwanazi
S.T SIBIYA		0722329504		
P.C. BUTHELEZI	10654	0742404223		
B.S NHlapho	10864	076161 8888		
M.M Sithole	10865	063 393 6210		
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K.X Kunene	10770	073 9173243		
R S Ndovela	11018	073 4247 163		
M.N Simelane	10164	078 057 8610		
ND MASOMI	10986	0714153754		ND MASOMI
MBAWENKOSI	10607	0722198425		M.I MAZIBUKO
JABU MABASO		073 1885 39		J.M. MABASO

1

NAME & SURNAME	ORGANISATION / TOWN ADDRESS	CELL PHONE	EMAIL	SIGN
Mkhwanazi Prince	10913	0717628687		
K.S magubane	10732	0733037042		K.S.
Beli Khanye	11007	083 480 3847		D. Khanye
Sibisi Mavis	11009			S.M
Skhakhane D.J.	10911			D.J.S.
Nombuleto	10754	0764026890		ombuleto
ZANDILE	10660	0545095934		Z. Kubheka.
T.W SITHOLE	10432	0614393213		
Nomusa NKOSI	11025	0799149785		
Oudutile Mkhize	11001	0730453905		
Nondumiso KHUMALO	10084	0735893557	Nondumiso1994@gmail	
Z P MAGUBANE	10734	079828385		
Hlengi Mbatha	10942	0734797932		
Sbongile Ngwenya	10335	0660119433		
Bonisile Radebe	11018	0734964689		N.D Radebe
MUNIZA SHABARA	11011	071770345 7		
Thobile MANTOMBA	10	0603371094		
NTOMBENHLE MBATHA	10416	0715397527	NTOMBIMbatha91@gmail	
Mlungisi Zungu		0733859837		
Zintle Buthelezi	10654	0826808020		C.P. Buthelezi
Ntombi Ruth Mthembu	10802	0768777461		
Hlengiwe Sibiya	10643	0714468884		H. Sibiya
Lethile Shabalala	10463	0792436662		Shabalala
Khethiwe Khumalo	10410	063 633 7096		K.G.K
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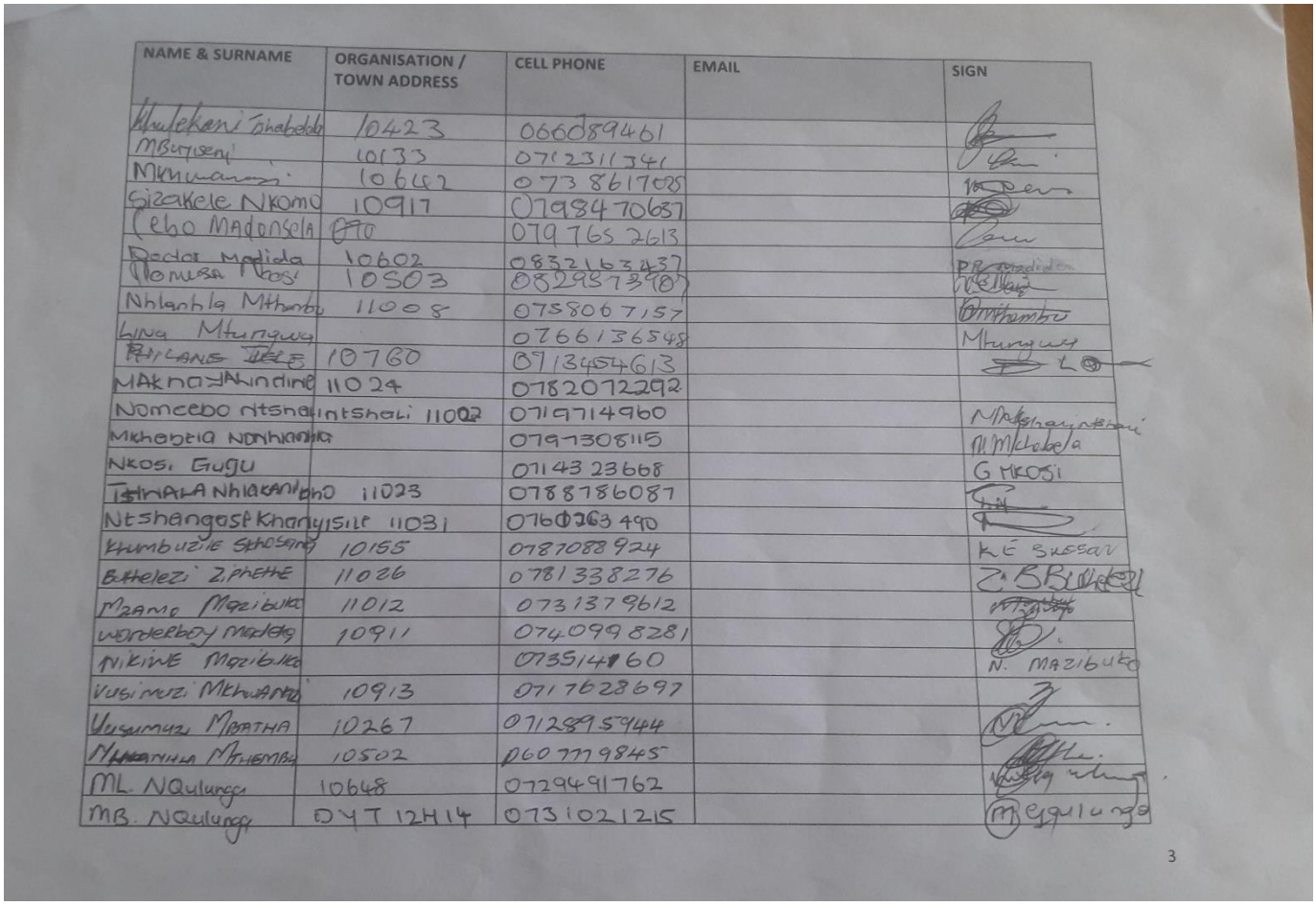

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Mulekani Shabalala	10423	0660894 61		
MBuyiseni	10133	0712311341		
Mkhwanazi	10662	0738617085		
Sizakele Nkomo	10917	0798470687		
Lebo Madonsela	090	079765 2613		
Dedan Madida	10602	0832163437		
Nomusa Mkosi	10503	0829573907		
Nhlanhla Mthembu	11008	0758067157		
Lina Mtunguja		0766136548		
Phillans Jele	10760	0713454613		
Maknazwindini	11024	0782072292		
Nomcebo Ntshangase	11022	0719714960		
Mkhabela Nonhlanhla		0797308115		
Nkosi Guju		07143 23668		
Thimala Nhlakanipho	11023	0788786087		
Ntshangase Khanyisile	11031	0760263490		
Khumbuzile Sithole	10155	0787088924		
Bathelezi Zipheth	11026	0781338276		
Mzamo Mazibuko	11012	0731379612		
Wonderboy Mazibuko	10911	0740998281		
Nikiwe Mazibuko		0735147160		
Vusumuzi Mkhwanazi	10913	0717628697		
Vusumuzi Mbatha	10267	0712895944		
Nhlanhla Mthembu	10502	0607779845		
ML. NQulunga	10648	0729491762		
MB. NQulunga	DYT 12H14	0731021215		

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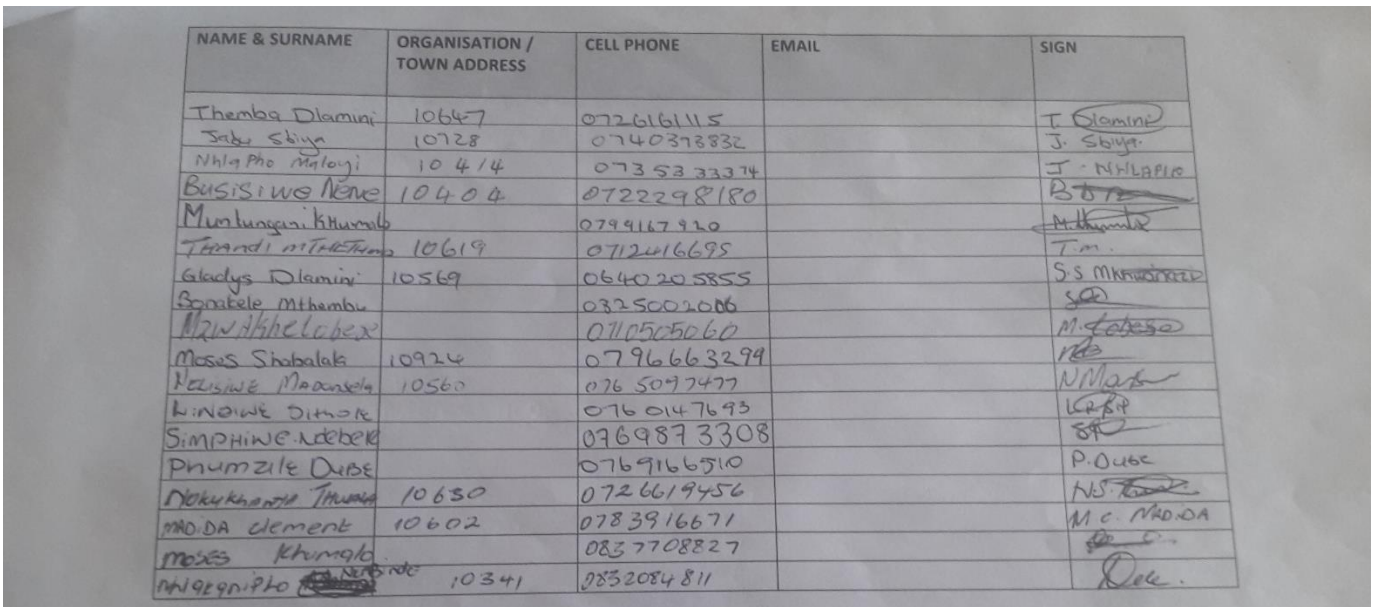

NAME & SURNAME	ORGANISATION / TOWN ADDRESS	CELL PHONE	EMAIL	SIGN
Themba Dlamini	10647	0726161115		
Jabu Sibiya	10728	0740378832		
Nhlapho Mafoyi	10414	073 53 33374		
Busisiwe Nene	10404	0722298180		
Muntungani Khumalo		0799167920		
Tsandi Mthembu	10619	0712416695		
Gladys Dlamini	10569	0640205855		
Sonakele Mthembu		0825002006		
Mziwakhe Cebekhe		0710505060		
Moses Shabalala	10924	0796663294		
Nelisiwe Maanzala	10560	076 5097477		
Nonhlanhla Dlamini		0760147693		
Simphiwe Ndebele		0769873308		
Phumzile Dube		0769166510		
Nokukhanya Thwala	10650	0726619456		
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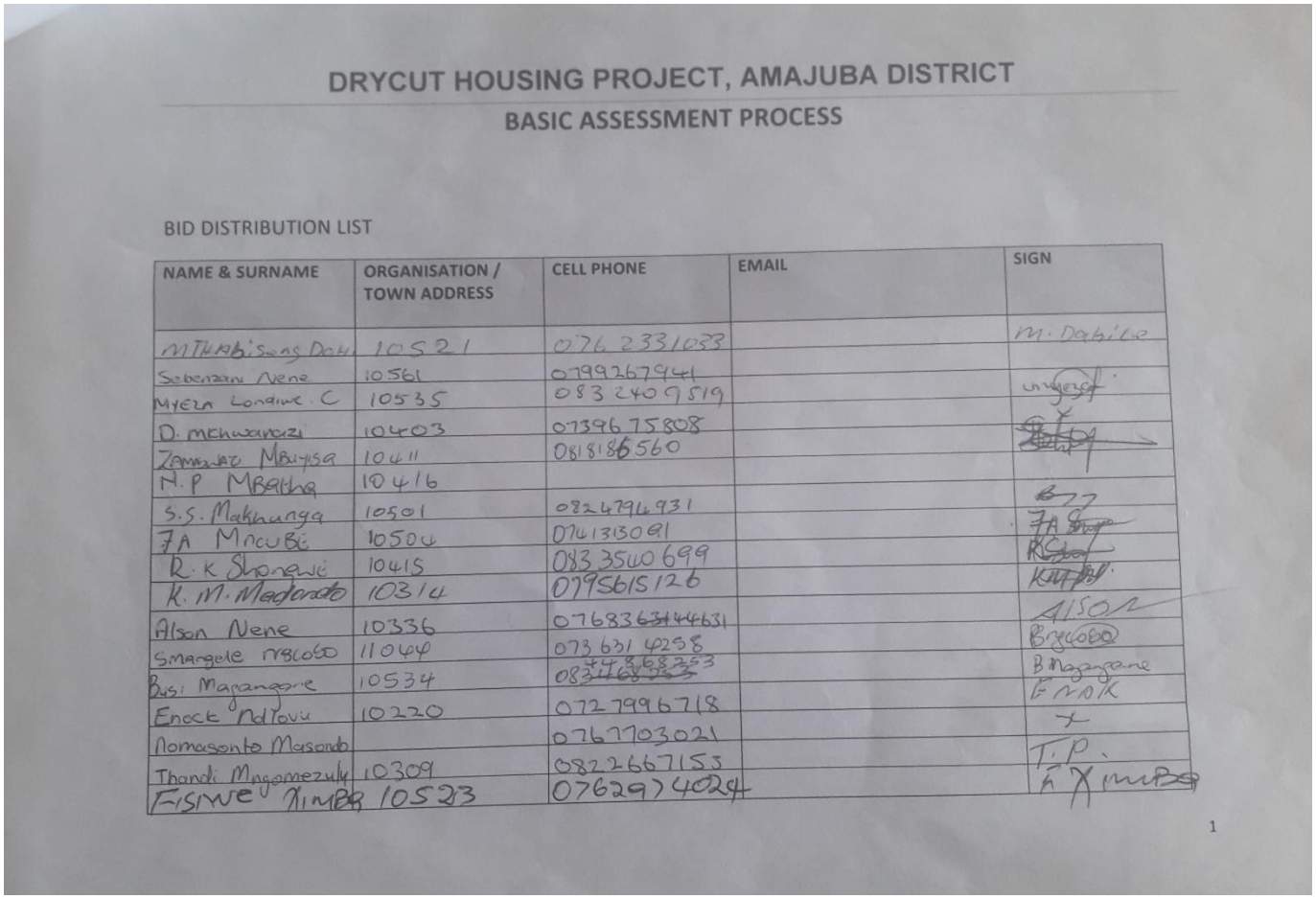

DRYCUT HOUSING PROJECT, AMAJUBA DISTRICT

BASIC ASSESSMENT PROCESS

BID DISTRIBUTION LIST

NAME & SURNAME	ORGANISATION / TOWN ADDRESS	CELL PHONE	EMAIL	SIGN
MTHABISENG DOKU	10521	076 2331033		M. Dabile
Sebenzani Nene	10561	079926794		
MYEZA Longiwe. C	10535	083 240 9519		
D. Mchwarazi	10403	073967 5808		
ZAMOKUHLE MBAMBA	10411	0818186560		
N.P MBATHA	10416			
S.S. Makhunga	10501	0824796931		
ZA Mncube	10504	0761313091		
R.K Shongwe	10415	083 3500 699		
K.M. Madondo	10314	0795615126		
Alson Nene	10336	076 836 3144631		ALSON
Smangele Ngcobo	11044	073 631 4258		
Busi Magangane	10534	083 468 3533		B Magangane
Enock Ndlovu	10220	072 799 6718		
Nomasonto Masondo		076 770 3021		
Thandi Magamezulu	10309	082 266 7153		T.P.
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NOKUTHULA HADEBE	10538	0765647766		
Khanyisile Khumalo	10863	0727245141		JK Khumalo
Elsie Mgwanga	10633	0723418419		
Queen Zikalala	10564	0846077361		
Mandla Mazibuko	10607	0710865791		
Thandiwe Zikalala	10617	0769720747		
Mangoba Sibeko	10526	0781690080		
Njabulo Mdwandwe	10533	0720800849		
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DRYCUT HOUSING PROJECT, AMAJUBA DISTRICT

BASIC ASSESSMENT PROCESS

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Thulakele Ntshangase	10321	0633270400		
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Sibongile Zwane	10257	0733930570		Sbongile
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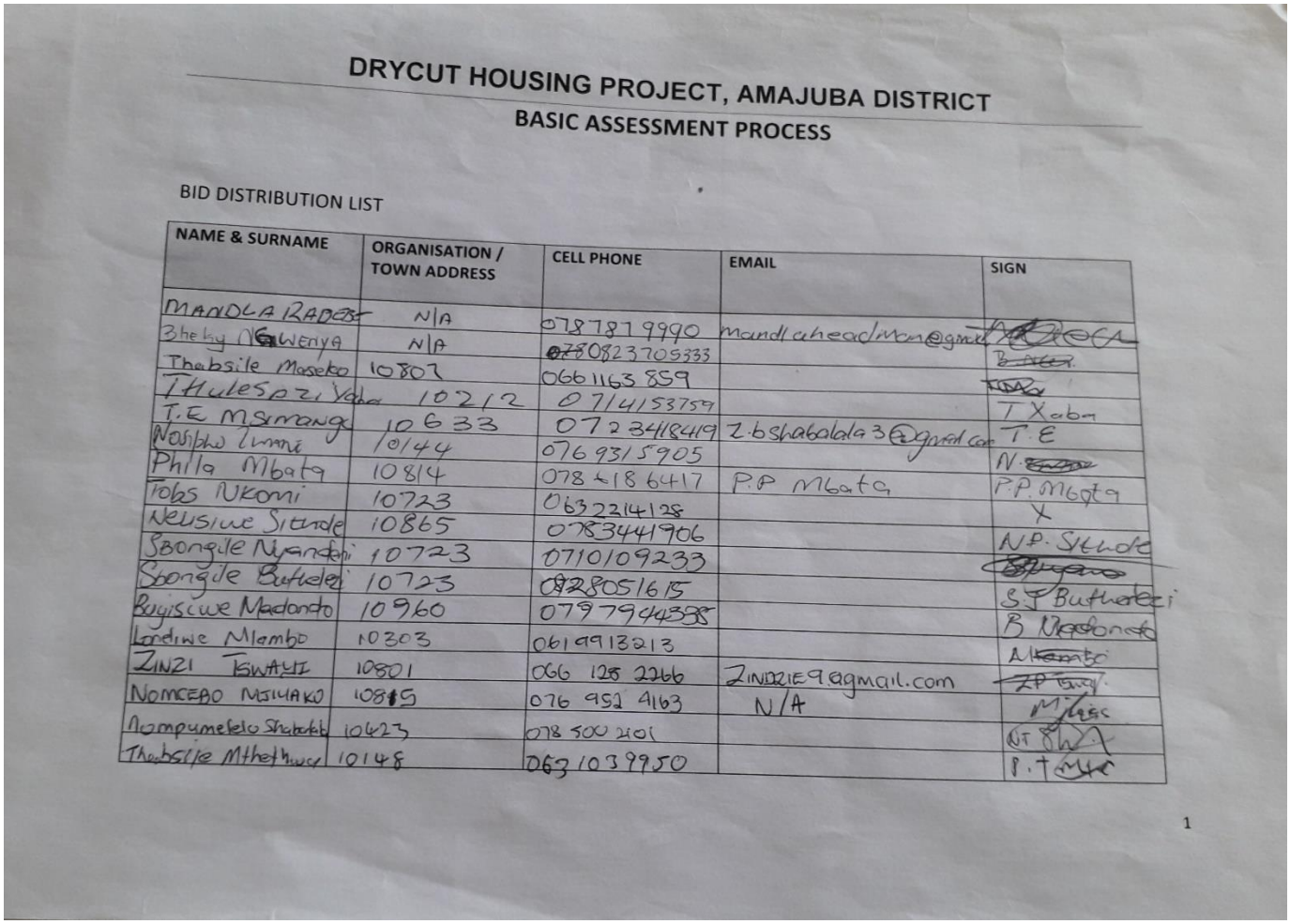
Thandeka Shabalala	10355	0785408421		
[illegible]	10624	0606499640		T.E. Radebe



DRYCUT HOUSING PROJECT, AMAJUBA DISTRICT

BASIC ASSESSMENT PROCESS

BID DISTRIBUTION LIST

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APPENDIX 3: WETLAND HABBITAT ASSESSMENT AND ECOLOGICAL REPORT

APPENDIX 4 HERITAGE IMPACT ASSESSMENT REPORT

APPENDIX 5: ENVIRONMENTAL MANAGEMENT PROGRAMME EMPR)

Newcastle Local Municipality
Drycut Housing Project

Construction & Operational Stage

ENVIRONMENTAL MANAGEMENT PROGRAMME

DRAFT (EMPr)

MASEKO HLONGWA & ASSOCIATES CC
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Table of Contents

I. Glossary of Terms and Abbreviations (See Annexure A)

II. Key to Acronyms

- EDTEA Economic Development Tourism and Environmental Affairs
- DME Department of Mineral and Energy
- ECO Environmental Control Officer
- EMPr Environmental Management Programme
- EA Environmental Authorisation
- ARC Agriculture Research Council
- BA Basic Assessment
- BAR Basic Assessment Report
- BID Background Information Document
- DEA Department of Environmental Affairs
- DWS Department of Water & Sanitation
- EIA Environmental Impact Assessment
- EIR Environmental Impact Report
- EAP Environmental Assessment Practitioner
- I&APs Interested and/or Affected Parties
- LRAD Land Reform for Agricultural Development
- NEMA National Environmental Management Act, 1998(Act 107 of 1998)
- NHRA National Heritage Resources Act
- SAHRA South African Heritage Resource Agency
- SANBI South African National Biodiversity Institute

EMP: SECTION 1: INTRODUCTION

1.1. Background

Current environmental legislation requires that an assessment of potential environmental issues is undertaken as an important component of development projects. The Environmental Impact Assessment process identifies potential impacts that may arise at various stages of the development process and how these impacts can be mitigated. An Environmental Management Plan serves as a guideline.

Bizycon Pty Ltd (PTY) LTD conducted a Basic Assessment for the Drycut Development and identified potential environmental impacts that may arise and made recommendations in the report on how these impacts can be managed, especially during construction stages of the development. It also identified issues that should be considered during the operational phase of the development.

This EMP is a key environmental document, the content of which the line contractor must comply with during the construction process with the assistance of an environmental control officer and the site engineer and all relevant role players. This is to include any post construction rehabilitation work, which may be needed, and which would be carried out by the contractor or specialist subcontractor who he may appoint to do such rehabilitation when needed. This EMPr is also developed in accordance with the requirements of the National Environmental Management Act (NEMA, Act 107 of 1998).

1.2 Aims and objectives of the EMPr

1.2.1 Aim

This EMP outlines measures to be implemented in order to minimize the potential environmental impacts associated with construction of the proposed Cemetery and Crematorium, and the associated ablution facilities. It serves as a guide for the contractor and the construction workforce on their roles and responsibilities concerning environmental management on site, and it provides a framework for environmental monitoring throughout the construction period.

1.2.2 Objectives

The EMP becomes a legally binding document upon granting of an environmental authorisation. The objectives of this EMP include:

- Encourage good management practices through implementation of the proposed development and ensure commitment to environmental issues;
- Define how the management of the environment is reported and performance evaluated;
- To point out necessary mitigation measures to be carried out

- Develop waste management practices based on prevention, minimization, recycling, treatment or disposal of wastes;
- Follow all monitoring procedures required to identify impacts on the environment; and;
- Provide guidance to the employees and contractors regarding their environmental and legislative obligations.

SECTION 2: REGULATORY / LEGISLATIVE CONTEXT

The EPMr is prepared taking into cognisance relevant legislative instruments that relate to the proposed development. The onus lies on the applicant to ensure adherence to all necessary regulations. Contractors must be alerted of the existence of the EMPr and its legislative implications and the need to comply and **a copy of the EMPr must always be kept on site.**

DEALING WITH NON-COMPLIANCE WITH THE EMPr (Penalties/ Incentives)

The contractor shall put in place procedures to motivate his staff to comply with the EMPr and to ensure that the work force is sufficiently aware and understand all necessary legal requirements related to the construction process. It is also important for the contractor to ensure that the workforce understands the implications of acts of non-compliance, or deliberate and malicious damage to the environment by any staff member.

2.1 Key Legislation and Regulatory Requirements

The following legislations are instrument for the construction process of the poultry houses. Noncompliance will lead to the penalties as set by the relevant sections of the related legislations:

2.1.1 National Environmental Management Act No. 107 of 1998

The National Environmental Management Act of 1998, Chapter 7 Part 1 Section 28 States that:

- Every person who causes, has caused, or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, and is responsible for the costs and repair of the environment.

2.1.1.1 Penalties for non-compliance

Chapter 7 of the National Environmental Management Act of 1998 indicates explicitly under subsections 8, 9, and 10 the steps that may be taken to recover environmental protection costs from any manager, agent or employee who omits or goes against this Act.

2.1.2 National Heritage Resources Act No. 25 of 1999

Chapter II Part 1 Section 27 (18) on Protection and Management of Heritage Resources provides guidelines that state that;

- No person will be allowed to destroy, damage, deface, excavate, alter, remove from its original position, subdivide or change the planning status of any heritage sites without a permit issued by the heritage resources authority responsible for the protection of such site.

2.1.2.1 Penalties for noncompliance

Section 51 of National Heritage Resources Act of 1999, set penalties to non-compliance as follows:

- A fine or imprisonment for a period not exceeding five years or to both such fine and imprisonment.
- A fine or imprisonment for a period not exceeding three years or to both such fine and imprisonment.
- A fine or imprisonment for a period not exceeding two years or to both such fine and imprisonment.

2.1.3 Occupational Health and Safety Act No. 85 of 1993

Section 14 (a) of the Occupational Health and Safety Act of 1993 makes the contractor responsible for the health and safety of persons who may be affected by any acts of omissions and the safety of the working environment under his jurisdiction.

2.1.3.1 Penalties for noncompliance

Section 38 (1)(2) (3) and (4) of this Act explicitly explain the offence and penalties to any employer who does or omits an act thereby causing any person to be injured at workplace.

2.1.4 Other necessary legislations but not limited to:

Environmental safety requirements in other legislative instruments such as the National Veld and Forest Fire Act, (No.101 of 1998), National water Act, (No.36of 1998) and Hazardous Substances Act, 1973, the National Air Quality Act, 39 of 2004, need to be taken into consideration and conditions observed during the implementation of his development.

2.2 KEY ROLE PLAYERS AND THEIR RESPONSIBILITIES

The successful implementation if the EMPr hinges heavily on the proper identification, definition and allocation of roles to responsible persons or role players. Construction stage role players include Engineer on Site, Environmental Control Officer (ECO), Health and Safety Manager (HS- Manager), and the anyone appointed to handle environmental issues.

Operational stage compliance lies with the project applicant and representatives. At all stages, the competent authority reserves the right to conduct compliance visits to the site, whether prearranged or not.

SECTION 3: SENSITIVE AREAS OF THE PROJECT AREA

Although the broad environment within and around the proposed development area is important in general consideration of construction impacts, the contractor shall ensure that his workforce are aware of the key sensitive sites within the project area and that they understand how their activities could impact directly or indirectly on environmental resources of these areas. The following descriptions need to be particularly understood and adhered to in the implementation of this EMP.

3.1 The Development site

The development site is a piece of land which was previously used for cultivation. The site is currently vacant, given the seizure of cultivation activities on the land. The site is in close proximity to the community and is also surrounded by river which then confers that extreme care need to be taken when working on the site.

Figure 1: Site with Sensitive hydrological areas of note

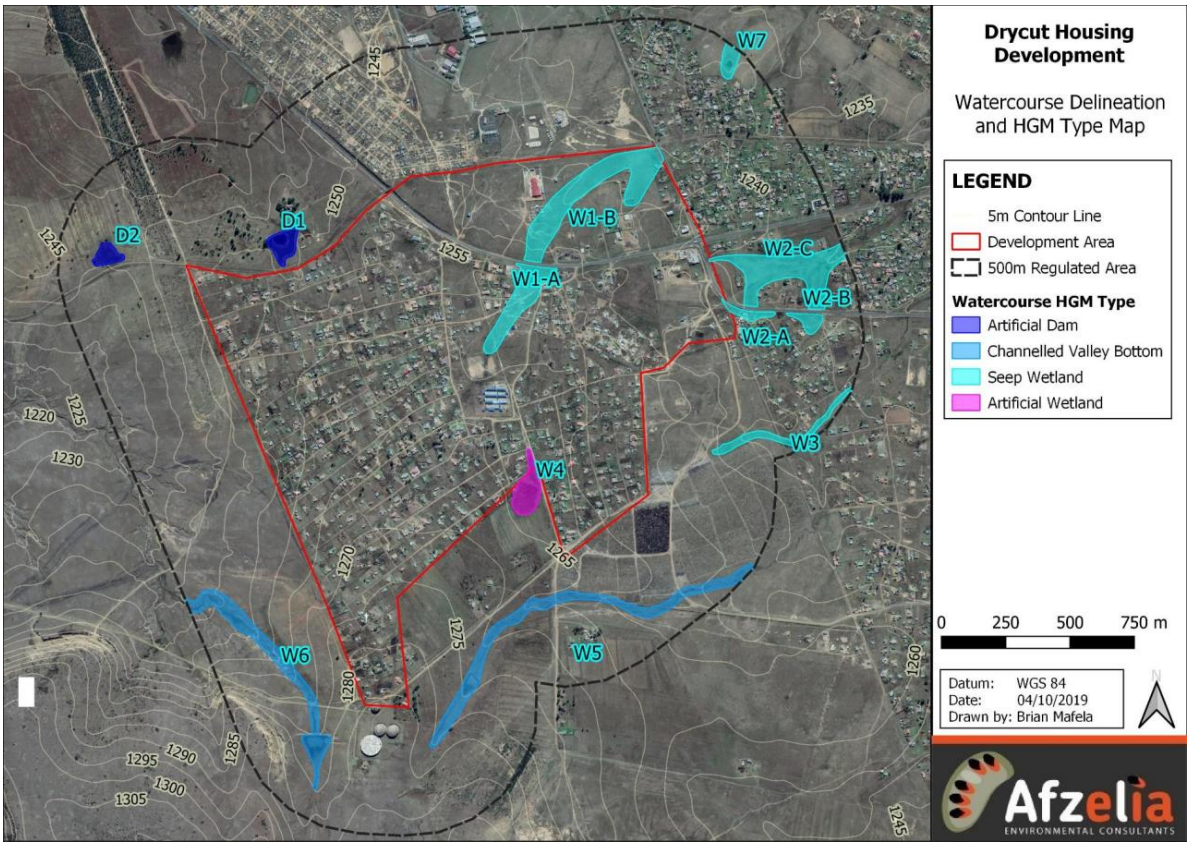

Table 3 Juvenile Grave site and Shembe Worship sites (Heritage Sensitive sites)

3.2 Protecting the Integrity of the Ecosystem of the project site

- As part of conserving biological diversity and protecting the integrity of the ecosystem within development areas, sites that are typically rich in species diversity, contain the presence of rare or endangered species, function as a unique or intriguing habitat, or are heritage sites, are often mapped as “sensitive sites”. The sensitivity refers broadly to sites being sensitive to the activities of man, and therefore, qualifying for additional protection over and above that of the surrounding areas.
- In the case of the site for the proposed farm, no such critical or sensitive areas such as wetlands, heritage, archaeological or culturally sensitive sites were uncounted. However, even though vegetation on the site will be removed, it is important to preserve the integrity of vegetation on surrounding areas**.**

3.3 Potential development activities

- Potential development activities that may impact on receiving environment include:
  a. Clearing of the site unto surrounding areas
  b. Storage of equipment and material unto sensitive areas

c. Driving and turning of construction vehicles outside the designated area of construction

d. Indiscriminate location of construction camp

e. Excavations for foundations for buildings

f. Mixing of mortar and concrete

g. Structure assembly and erecting

h. Transport of materials /supplies

i. Waste generation and management

As a general principles to observe in conducting activities:

- In order to make it easier to avoid, minimize or contain, the occurrence of the above impacts, all construction activities should be restricted to within the boundary of the development footprint.
- The though the vegetation on the site is severely transformed, the few area where the vegetation serves as landcover, especially the seepage areas may need extra care. Thus the buffer zones between the site development footprint around the wet areas should be strictly maintained as no-development zones. These areas are mapped on the layout as open spaces and should be treated as such.

3.4 Ensuring Health and safety

- Although development in whatever form it takes is expected to benefit mankind, it in the process, could also cause disruptions to the established livelihood system and the general day-to-day operations of affected beneficiary communities or as in this case the surrounding households.
- The purpose of this EMPr in this regard is to provide guidelines that would ensure that the health and safety needs of residents are taken into consideration during the construction and operation period and that, every necessary and possible step is taken to ensure that the normal social life of the community is not disrupted significantly during the period of construction and operation but rather improved in a positive manner.

SECTION 4: IMPACTS, MITIGATION MEASURES, AND MONITORING

This section covers the core of the EMPr detailing potential environmental impacts, impacts sources and objectives are described, and environmental management mitigation measures to be implemented during construction are specified. **The contractor shall always adhere to these measures**.

The table below details the potential impacts, management objectives and proposed management actions required for mitigation.

Table 4 EMPr Impacts and Management Actions (Template adapted from CSIR, 2016).

Impact	Management Objectives	Management /Mitigation Actions	Monitoring			
			Indicator	Methodology	Frequency	Responsibility
Site Clearing and Vegetation Removal						
Clearing of the vegetation during site establishment	To ensure safety of the surrounding environment	• Vegetation removal within the buffer zones should be strictly avoided, as this will serve as storm water control mechanism for the river systems. • All areas where vegetation is tripped off, such as camp site etc, should re-vegetation immediately after construction is complete.	• Site visit monitoring of construction period and before handover to ensure environment is properly taken care of.	Visual Observations	Continuous	Constructor, Site Engineer and ECO
Noise Impacts						
Noise is likely to be generated from the use of equipment and from construction workers on	Ensure that noise does not become nuisance to surrounding environment and neighbours	• Construction activities should be limited to daytime hours (i.e. 07:00- 17:00, as defined in South African National Standards (SANS) 10103). The noise generated during construction and operational phases must adhere to the relevant SANS standards.	Construction times to be monitored and managed (as well as included in the tender contract).	Records of complaints register and visual observations	Continuous	Contractor and ECO /EHS Officer

Impact	Management Objectives	Management /Mitigation Actions	Monitoring			
			Indicator	**Methodology**	**Frequency**	**Responsibility**
site.						
Traffic Impacts						
Traffic, congestion and potential for collisions during the construction phase.	Prevent unnecessary impacts on the surroundings road network by supplying parking for construction vehicles on site. Managing the flow of traffic at critical areas where necessary.	• During the construction phase, suitable parking area should be created and designated for construction trucks and vehicles. • A construction supervisor should be appointed to coordinate construction traffic during the construction phase (by drawing up a traffic plan prior to construction). • Road barricading should be undertaken where required and road safety signs should be adequately installed at strategic points within the construction and operational vehicles site must be adhered to	Monitor, Record and report non-compliance.	Records of complaints register and visual observations	Continuous	Contractor EHS Manager / Site Engineer
Safety, Health and Environment						
Potential impact on the safety of	Prevention of injuries to and fatalities of	• Ensure that skilled, licensed and competent Contractors, riggers and crane operators are appointed during the construction phase, along with the	Monitors activities and record and report non-	Records of complaints register and	Continuous	Health and Safety Officer /contractor

Impact	Management Objectives	Management /Mitigation Actions	Monitoring			
			Indicator	**Methodology**	**Frequency**	**Responsibility**
construction workers due to construction activities (such as welding cutting, use of hot metals, working at heights, lifting of heavy items etc.).	construction personnel during the construction phase.	use of certified. Equipment and scaffolding. • Ensure that roads are not closed during construction, which may restrict access for emergency services. • Ensure that construction and operational staff members adhere to the relevant health and safety standards of the Occupational Health and Safety Act 181 of 1993	compliance by undertaking inspections.	visual observations		/ECO
Pollution caused by spillage or discharge of construction wastewater into the surrounding environment	Prevention unnecessary pollution impacts on the surrounding environment	• No mixing of cement directly on the ground. • All spills to be reported to the ECO. • Ensure that adequate containment structures are provided for the storage of construction materials on site. • Ensure the adequate removal and disposal of construction waste and	Monitor activities and record and report non-compliance by undertaking inspections.	Incident registers	Continuous	Project Developer, ECO and contractor

Impact	Management Objectives	Management /Mitigation Actions	Monitoring			
			Indicator	**Methodology**	**Frequency**	**Responsibility**
		material. • Oil containers must be stored on lined platform covered by disposable sand.				
Heritage Resources (Archaeology and Palaeontology)						
Impact on Archaeology and Palaeontology	Prevent damage and destruction to fossil, artefacts and material of heritage significance Especially identified cultural and religious sites	• Ensure the juvenile grave identified is fenced off with recommended buffer and no disturbance is allowed. • All religious sites identified should also be left untouched unless agreement is reached with leaders of such sites. • Carry out general monitoring of excavations for potential fossil heritage, artefacts and material of heritage importance as per the Chance Find Protocol (Refer to Heritage Report in BAR) • All work must cease immediately, if any human remains and /or other Archaeology, Palaeontology and historical material are uncovered. Such material, if exposed, must be reported to the nearest museum, archaeologist/ palaeontologist and to the AMAFA (or the South African	Monitor excavations and construction activities for archaeological and paleontological material. Contact AMAFA/SAHRA and identified paleontological/ Archaeology if any heritage features are uncovered.	Visual observation	Daily during excavation work. As required/ necessary during construction.	Contractor and ECO.

Impact	Management Objectives	Management /Mitigation Actions	Monitoring			
			Indicator	**Methodology**	**Frequency**	**Responsibility**
		Police Service), so that a systematic and professional investigation can be undertaken. Enough time should be allowed to remove/collect such material before construction recommences.				
Groundwater Management						
Contamination of soil and ground water through spillage of concrete and cement and oils from fuelling construction vehicles	To control concrete and cement batching activities to prevent spillages and contamination of soil, groundwater and the marine environment. To also avoid oil and hydrocarbon contamination	• Concrete mixing must be carried out on an impermeable surface (such as on boards or plastic sheeting and/or within a banded (lined) area with an impermeable surface). • Concrete mixing areas must be fitted with a containment facility for the collection of cement-laden water. This facility must be impervious to prevent soil groundwater contamination. • A washout facility must be provided for washing of concrete associated equipment. • Empty cement bags must be secured with adequate binding material if these will be temporarily stored on site. Sand and aggregates containing	Monitor the handling and storage of sand, stone and cement as instructed	Register of incident	Daily	Project Developer, Contractor and EHS Manager. \ECO

Impact	Management Objectives	Management /Mitigation Actions	Monitoring			
			Indicator	**Methodology**	**Frequency**	**Responsibility**
		cement must be kept damp to prevent the generation of dust. • Any excess sand, stone and cement must be removed from site at the completion of the construction period and disposed at a registered disposal facility. • Fuelling should be done on bunded areas with removable sand. Contaminated sand should be removed and disposed of appropriately (nearest disposal site) • Any oil spillage should be rehabilitated immediately to avoid washing into stormwater.				
Wastewater Management						
Pollution caused by spillage or discharge of construction wastewater into the	Reduce construction wastewater discharge into the environment and the resulting	• Implement proper construction site management actions such as the installation of containment structures, good on-site housekeeping (regular sweeping of roadway and work areas, reporting system and environmental awareness training), and spillage management	Monitor via site audits ad records non-compliance and incidents.	Register of incidents Visual observation	Monthly	EHS Manager / ECO

Impact	Management Objectives	Management /Mitigation Actions	Monitoring			
			Indicator	**Methodology**	**Frequency**	**Responsibility**
surrounding environment	impact					
Storm water Management						
Pollution of the surrounding environment because of contamination of storm water. Contamination could result from chemicals, oil, fuels, sewage, solid waste, litter etc.	Reduce the contamination of storm water	• The appointed Contractor should compile a Method Statement for Storm Water Management during the construction phase. • Provide secure storage for oil, chemicals and other waste materials to prevent contamination of storm water runoff. • Regular inspections of storm water infrastructure should be undertaken to ensure that it is kept clear of all debris and weeds. • Erosion prevention structures should be placed to reduce water velocity within the drainage system. • Only essential vegetation should be removed and no disturbance to surrounding vegetation should be permitted. • Accumulation of water on the surface	Compile Method Statement Monitor the banding and containment structures. Monitors via site audits and record non-compliance and incidents (i.e. by implementing walk through inspections.)	Register of incidents Visual observation	Once off (and thereafter updated as required). Weekly Weekly	Contractor ECO/ EHS Manager Contractor

Impact	Management Objectives	Management /Mitigation Actions	Monitoring			
			Indicator	**Methodology**	**Frequency**	**Responsibility**
		must be avoided always.				
Waste Management						
Pollution of the surrounding environment because of the handling, temporary storage and disposal of solid waste (general and hazardous).	Reduce soil and groundwater and river contaminations because of incorrect storage, handling and disposal of general and hazardous waste.	• General waste and hazardous waste should be sorted temporarily on site in suitable (and correctly labelled) waste collection bins and skips (or similar). Waste collection bins and skips should be covered with suitable material, where appropriate. • Should on-site storage of general waste and hazardous waste exceed 100m^3 and 80m^3 respectively, then the National Norms and Standards for the Storage of Waste (published on 29 November 2013 under Government Notice 926) must be adhered to. • Ensure that the construction site is kept cleans always and that construction personnel are made aware of correct waste disposal methods. • No solid waste may be burned or buried on site.	Inspection of the temporary waste storage area. Monitor waste generation and collection throughout the construction phase	Register of incidents Visual observation	Daily	ECO & EHS Manager

Impact	Management Objectives	Management /Mitigation Actions	Monitoring			
			Indicator	**Methodology**	**Frequency**	**Responsibility**
Air Quality Management						
Increased dust level and Air Quality Impact: Emissions from construction vehicles and generations of dust because of earthworks, as well as the delivery and mixing of construction material.	Reduce dust emissions during construction activities.	• Ensure that cleared (excavated) areas and unpaved surfaces are sprayed with water (obtained from an approved source) to minimise dust generation. • Ensure that construction vehicles travelling on unpaved roads do not exceed a speed limit of 40km/hour. • Limit construction activities to daytime hours.	Monitor dust suppression mechanisms and record non-compliances.	Register of incidents Visual observation	During complaints/incidents	EHS Manager/ ECO and Contractor
Socio-Economic Impacts Management						
Employment creation and skills development	Maximise local employment and local business opportunities to	• Enhance the use of local labour and local skills as far as reasonably possible. The project will employ approximately 20 people from the area.	Maximize local employment for unskilled labour and	Records of staff members Number of Local	During the construction phase	Contractor and ECO.

Impact	Management Objectives	Management /Mitigation Actions	Monitoring			
			Indicator	**Methodology**	**Frequency**	**Responsibility**
opportunist during the construction	promote and improve the local economy.	• Where the required skills do not occur locally, and where appropriate and applicable ensure that relevant local individuals are recruited. • Ensure that goods and services are sources from the local and regional economy as far as reasonably possible.	provincial/national skilled labour. Visual observation Procurement source documents	people employed		

MANAGEMENT PLAN FOR OPERATIONAL PHASE

Impact	Management Objectives	Management Actions	Monitoring			
			Indicator	Methodology	Frequency	Responsibility
Alien Vegetation Management						
Potential re-establishment of alien plants on site	Ensure the removal of alien invasive vegetation from the proposed	• Ensure that any alien invasive plants that become re-established on site are removed promptly. The removal of these species must have carried out in line with relevant municipal and provincial procedures,	Monitor the removal of the alien invasive vegetation		During the removal process	EHS Manager / Municipal Environmental Officer in Charge

Impact	Management Objectives	Management Actions	Monitoring			
			Indicator	Methodology	Frequency	Responsibility
	projects area and prevent the establishment and spread of alien invasive plants.	guidelines and recommendations. • The removed species should be immediately disposed of correctly and should not be kept on site for prolonged periods of time, as this will enhance the spread of these species.	Visual observation			
Land rehabilitation	Ensure land (neighbours) impacted during construction phase is sufficiently rehabilitated.	• Infilling of all excavation work. • Remove all rubble from construction site and disposal of it at a registered landfill site.	Infill of excavation ensuring sub soil is filled first. Removal rubble to a registered	Visual observation	When /If complaints are received.	Project Developer
Safety, Health and Environment						
Soil and Water pollution	Prevent unnecessary pollution impacts on the	• Storm water should not be allowed to encounter effluent. • Ensure that excrement, carcasses, feed and other	Carry out though inspection using a checklist.	Incident reports Visual	Daily	Project Applicant (municipal Environmental

Impact	Management Objectives	Management Actions	Monitoring			
			Indicator	Methodology	Frequency	Responsibility
	surrounding environment	operational waste and hazardous materials are appropriately and effective contained and disposed of without detriment to the environment		observation		Officers)
Increase in vertebrate and invertebrate pests.	Highly localized pest invertebrate control that does not affect non-target populations or taxa	• Detect and control pest infestations before they become a problem though frequent and careful cleaning, monitoring and control. • Applicant to adhere to Best Practise Guild lines and Animal Disease Act (Act 35 of 1984)		Visual observation	As necessary	EHS Manager and Project Developer
Storm water Management						
Increased storm water discharge into the surrounding environment which	Reduce the impacts of increased storm water discharge to	• Regular monitoring of stormwater quality and river health	Implement surface water quality monitoring programme, based on consultation with the landowner	Incident reports	As agreed during the operational phase.	Project Applicant (Municipal Environmental Officer)

Impact	Management Objectives	Management Actions	Monitoring			
			Indicator	Methodology	Frequency	Responsibility
may end up in the rivers	the environment	• Regular inspections of storm water infrastructure should be undertaken to ensure that it is kept clear of all debris and weeds. • Accumulation of water on the surface must be avoided. • Waste traps in storm water system should be cleaned at regular intervals. • Run off to roads must avoided.	Undertake regular inspections of the storm water infrastructure (i.e. by implementation walk through inspections).		Weekly	Site Manager and EHS Manager
Socio-Economic Management						
Additional employment opportunities Include locals in owning and operating commercial activities in the commercial zone	Maximise local employment and local business opportunities to promote and improve local economy	• Enhance the use of local labour and local skills as far as reasonably possible. • Where the required skills do not occur locally, and where appropriate and applicable, ensure that relevant local individual are trained. • Ensure that goods and services are sourced from the local and regional economy as	Maximise local employment for unskilled labour and provincial/ national skilled labour Encourage local business ownership, including cooperatives		During the operational phase	Project Developer

Impact	Management Objectives	Management Actions	Monitoring			
			Indicator	Methodology	Frequency	Responsibility
area		far as reasonably possible.				
Boost in the economy of Region .	Maximise positive impacts through ensuring produce is sold to local markets	• Ensure that the proposed project has secured local buyers	Seek out local markets and secure formal trade agreement	Monthly supplier reports	Monthly	Project developer
Safety, Health and Environment						
Pollution of the surrounding environment as a result of the handling, storage and disposal of solid waste	Prevent unnecessary pollution impacts on the surrounding environment	• General waste (i.e. building rubble, demolition waste, discarded concrete, bricks, tiles, woods, glass, plastic, metal, excavated material, packaging material, paper and domestic waste etc.) and hazardous waste (i.e. empty tins, paint and paint cleaning liquids, oils, fuel spillage and chemicals etc.) generated during the operation phase should be stored temporarily	Monitor activities and record and report non-compliance by undertaking inspections.	Compliance reports Visual observations	Throughout the life of the community existence	Project Applicant

Impact	Management Objectives	Management Actions	Monitoring			
			Indicator	Methodology	Frequency	Responsibility
		on site in suitable (and correctly labelled waste collection bins and skips (or similar). • Municipality should include waste collection in Drycut into their scheme • Ensure that enough general waste disposal bins are provided for all personnel throughout the site. These bins must be emptied on a regular basis.				
Fauna and Flora						
Introduction and proliferation of alien species	Minimize introduction and effective control of alien species	• By law, remove and dispose of Category 1b alien species on site. All category 2 species that remain on site must require a permit. • Monitor invasive regularly during decommission and after	• Mechanical removal of these species is recommended. However, the removal must be carefully performed to not excessively disturb the soil layer.	Incident reports Visual observations	Continuously thought-out life of project	Project applicant

Impact	Management Objectives	Management Actions	Monitoring			
			Indicator	Methodology	Frequency	Responsibility
			• Encourage alien plant removal programmes and employ the youth to participate.			

5. EMP CONCLUSIONS AND RECOMMENTATIONS

The significance of most of the issues identified may be effectively reduced after mitigation should this environmental management plan be carefully followed. The development is largely in insitu-upgrade of existing community hence, with already much degradation of the environment. All the potential impacts of vegetation and possible disturbance of the wet and seepage areas can be taken care of by strict adherence of the recommendations in the EPM, BAR and authorisation. Following specifics should be taken note of.

- Contractors need to follow the environmental management plan;
- A copy of the EMP should always be placed on site, and the contractor and team should be workshopped on the requirements of the EMP priori to commencement of the construction work on site (early Stages, after recruitment of workers).
- The development needs to benefit the community in a tangible manner, and therefore, attempts need to be made to integrate community needs and aspirations into the implementation processes of the development.
- Where appropriate, the contractor must use local labour as much as possible;
- The contractor needs to show concerns for health in general and the health safety of the employees in particular;
- In terms of the National Environmental Management Act 107 of 1989 everybody is required to take reasonable measures to ensure that they do not pollute the environment. Reasonable measures include informing and educating employees about the environmental risks of their work and training them to operate in an environmentally acceptable manner;
- Furthermore, in terms of the National Environmental Management Act 107 of 1998 the cost of repair for any environmental damage shall be borne by the person responsible for the damage.
- Operational stage recommendations should be also implemented and the onus is on the applicant to ensure adherence to the mitigation measures proposed. Regular maintenance and monitoring is required from the municipality and to ensure smooth operations.
- The competent authority may also pay random visits to the facility to monitor compliance during construction and operation stages.

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Annex A: Glossary

- **1.3.1 General**
- The contractor shall actively engage himself and workers (if necessary) on this project to knowing and understanding of relevant terms, descriptions, and abbreviations in this EMP as indicated below:
- ***Contractor (CT)***
- For the purpose of this EMP: "CT" refers to the main contractor(s) appointed for the construction activities of the project or portion of the project. The main contractor(s) are required to adhere to the EMP and are responsible for ensuring that all subcontractors, suppliers and staff appointed by them, also adhere to the EMP.
- ***All Staff***
- This is the entire workforce. Workers employed by the contractor or persons involved with activities related to the project, or persons present or visiting the construction area, including permanent, contract, or casual labour and informal traders.
- ***Environmental Control Officer (ECO)***
- An individual or representative of an organization appointed to act on matters concerning the day-to-day implementation of the EMP, and for liaison with the DAEA&RD, and the public affected by construction.
- ***EDTEA***
- Department of Economic Development, Tourism, and Environmental Affairs – who is the competent authority in the case of this application.
- ***Local Community***
- People residing in the region and near the construction activities, including the owners and/or managers of land affected by construction, small holdings, workers on the land, and the people in nearby towns and villages.
- ***Public***
- Any individual or group of individuals concerned with or affected by the project and its consequences, - including the local community, local, regional, and national authorities, investors, workforce, customers, consumers, environmental interest groups, and the general public.

- ***Relevant Authority***
- This refers to the environmental authority on national, provincial or local level with the responsibility for granting approval to a proposal or allocating resources.
- **1.3.2 About the Construction Activities**
- ***Alternatives***
- A possible course of action, in place of another, that would meet the same purpose and need (of proposal). Alternative can refer to any of the following but are not limited to hereto: alternative sites for development, alternative site layouts, alternative design, alternative process and materials.
- ***Construction Areas/Site****:*
- This is land area on which the project is to be located. It includes the sites of individual stands, construction campsites, access roads and tracks, as well as any other area affected or disturbed by construction activities. The EMP (particularly) the specifications for rehabilitation) is relevant for all areas disturbed during construction.
- ***Development***
- This is the act of altering or modifying resources in order to obtain potential benefits.
- ***Access Roads and Tracks***
- Access Roads and Tracks refers exiting and newly established roads and tracks, and areas cleared or driven over to provide access to/from the construction areas, and for the transportation of the construction workforce, equipment and materials.
- **1.3.3 About the Environment**
- ***Receiving / Affected environment***
- Those parts of the socio-economic and biophysical environment impacted on by the development.
- ***Assessment***
- The process of collecting, organizing, analysing, interpreting, and communicating data that is relevant to some decision.
- ***Environment***
- The surrounding within which humans exist that are made up of: - the land, water and atmosphere, fauna and flora, including any part, combination or interrelationships among these; and all the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human wellbeing.
- ***Environmental Impact***

- This is the degree of change in an environment resulting from effect of an activity whether desirable or undesirable. Impacts may be direct consequences of an organization's activities or may be indirectly caused by them.
- ***Environmental Impact Report***
- A report describing the process of examining the environmental effects of a development proposal, the expected impacts and the proposed mitigation measures.
- ***Evaluation***
- The process of weighing information, the act of making value judgments or ascribing values to data in order to reach a decision.
- ***Hazards***
- Hazardous substances in this regard are anything that constitutes a source of, or exposure to danger. Some examples of hazardous sources or materials are:
- Diesel, petroleum, oil, bituminous products;
- Cement;
- Solvent based paints;
- Lubricants;
- Explosives;
- Drilling fluids;
- Pesticides, herbicides.
- ***Hydrological Features***
- Hydrological features include, but not limited to:
- Rivers and Wetlands;
- Open water;
- Vegetated drainage channels;
- Subterranean water;
- ***Life Support Systems***
- Life support systems include, but are not limited to:
- An ecological system in which its outputs are vital for sustaining specialized habitats;
- An ecological system in which its outputs are vital for sustaining human life (e.g. water purification).
- ***Mitigation***

- Measures designed to avoid, reduce or remedy adverse impacts.
- ***Monitoring***
- This is the repetitive and continued observation, measurement and evaluation of environmental data to follow changes over a period to assess the efficiency of control measures.
- ***Negative Impact***
- A change that reduces the quality of the environment (for example, by reducing species diversity and the reproductive capacity of the ecosystem, by damaging health, property or by causing nuisance.
- ***Rehabilitation***
- Measures implemented to restore a damaged Environment to an acceptable level.
- ***Significant impact***
- This is an impact that, by its magnitude, duration or intensity alters an important aspect of the environment.