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REPUBLIC OF SOUTH AFRICA

PWMA 12/T60/00/5414/4

Augmentation of the Lusikisiki Regional Water Supply Scheme

Borrow Pits: Final Environmental Impact Assessment Report



**September
2016**

**AUGMENTATION OF THE LUSIKISIKI REGIONAL WATER SUPPLY SCHEME: BORROW
PITS, EASTERN CAPE PROVINCE, SOUTH AFRICA**

FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DMR Reference: EC 30/5/1/3/3/2/1/00047 BPEM

Prepared for:



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LIST OF ACRONYMS

BID:	Background Information Document
CBA:	Critical Biodiversity Areas
CITES:	Committee for International Trade in Endangered Species
DEA:	Department of Environmental Affairs
DWS:	Department of Water and Sanitation
EAP:	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA:	Environmental Impact Assessment
EIR:	Environmental Impact Report
EMPr:	Environmental Management Programme
GNR:	Government Notice Regulation
ha:	Hectare
I&APs:	Interested and Affected Parties
IDP:	Integrated Development Plan
NEMA:	National Environmental Management Act 107 of 1998 as amended
NFEPA	National Freshwater Ecosystem Priority Area
PoS:	Plan of Study
PAES	Protected Areas Expansion Strategy
PPP:	Public Participation Process
RDB:	Red Data Book
SAHRA	South African Heritage Resources Agency
SANBI	South African National Biodiversity Institute
SSC:	Species of Special Concern
ToR:	Terms of Reference

1. INTRODUCTION

1.1 Background to the Study

The Department of Water and Sanitation (DWS) has completed a detailed feasibility study for the Augmentation of the Lusikisiki Regional Water Supply Scheme (LRWSS) at Lusikisiki, within the OR Tambo District Municipality (ORTDM) in the Eastern Cape. The LRWSS is proposed to augment the existing water supply to the region between Lusikisiki (approximately 15km inland), and the coast, extending from the Mzimvubu River in the south west to the Msikaba River in the north east. In terms of the National Environmental Management Act (Act No. 107 of 1998), the final Environmental Impact Report (EIR) for the LRWSS has been submitted to the Department of Environmental Affairs (DEA) and awaits Environmental Authorisation (EA).

The LRWSS will include the construction of an Earth Core Rockfill Dam (Zalu Dam) on the Xura River. Borrow areas within the dam basin cannot provide sufficient impervious material (residual and completely weathered dolerite) for the clay core of an embankment dam. However, large quantities of impervious material is available in borrow areas located within a 2 km radius downstream of the dam (borrow pits 1 and 2).

In terms of Section 106 of the Mineral and Petroleum Resources Development Act (Act No. 28 of 2002; MPRDA) DWS is exempted from the application for a Mining Right for the two borrow pits but is not exempted from the application for environmental authorisation for the borrow pits.

EOH Coastal & Environmental Services (EOH CES) has been appointed by DWS as the Environmental Assessment Practitioner (EAP) to undertake the EIA for the proposed borrow pits in terms of the MPRDA.

1.2 Environmental Authorisation in South Africa

The regulation and protection of the environment within South Africa occurs mainly through the application of various items of legislation, within the regulatory framework of the Constitution (Act 108 of 1996).

The primary legislation regulating Environmental Impact Assessments (EIA) within South Africa is the National Environmental Management Act (NEMA, Act 107 of 1998). NEMA makes provision for the Minister of Environmental Affairs to identify activities which may not commence prior to authorisation from either the Minister or the provincial Member of the Executive Council (MEC). In addition to this, NEMA also provided for the formulation of regulations in respect of such authorisations.

The EIA regulations (2014) allow for a Basic Assessment process for activities with limited environmental impact (listed in GNR. 983 and 985, 2014) and a more rigorous two-tiered approach for activities with potentially greater environmental impact (listed in GNR. 984, 2014). This two-tiered approach includes both a Scoping and EIA process (Figure 1.1).

The proposed borrow pits require a Full Scoping and EIA due to the following trigger:

Government Notice	Activity Number	Activity Description	Relevance to this project
GNR 984	17	Any activity including the operation of that activity which requires a mining right as contemplated in Section 22 of the MPRDA (2002), including associated infrastructure, structures and earthworks, directly related to the extraction of a mineral resource, including activities for which an exemption has been	Two borrow pits (each larger than 5 Ha in size) will be used for construction of the proposed Zalu Dam wall. Any activity which requires a mining right, including activities for which an exemption has been issued, require that an application for environmental

Government Notice	Activity Number	Activity Description	Relevance to this project
		issued in terms of Section 106 of the MPRDA.	authorisation be submitted to DMR (as per GNR 984 No. 17).

The Department of Mineral Resources (DMR) is the competent authority that will consider the EIA.

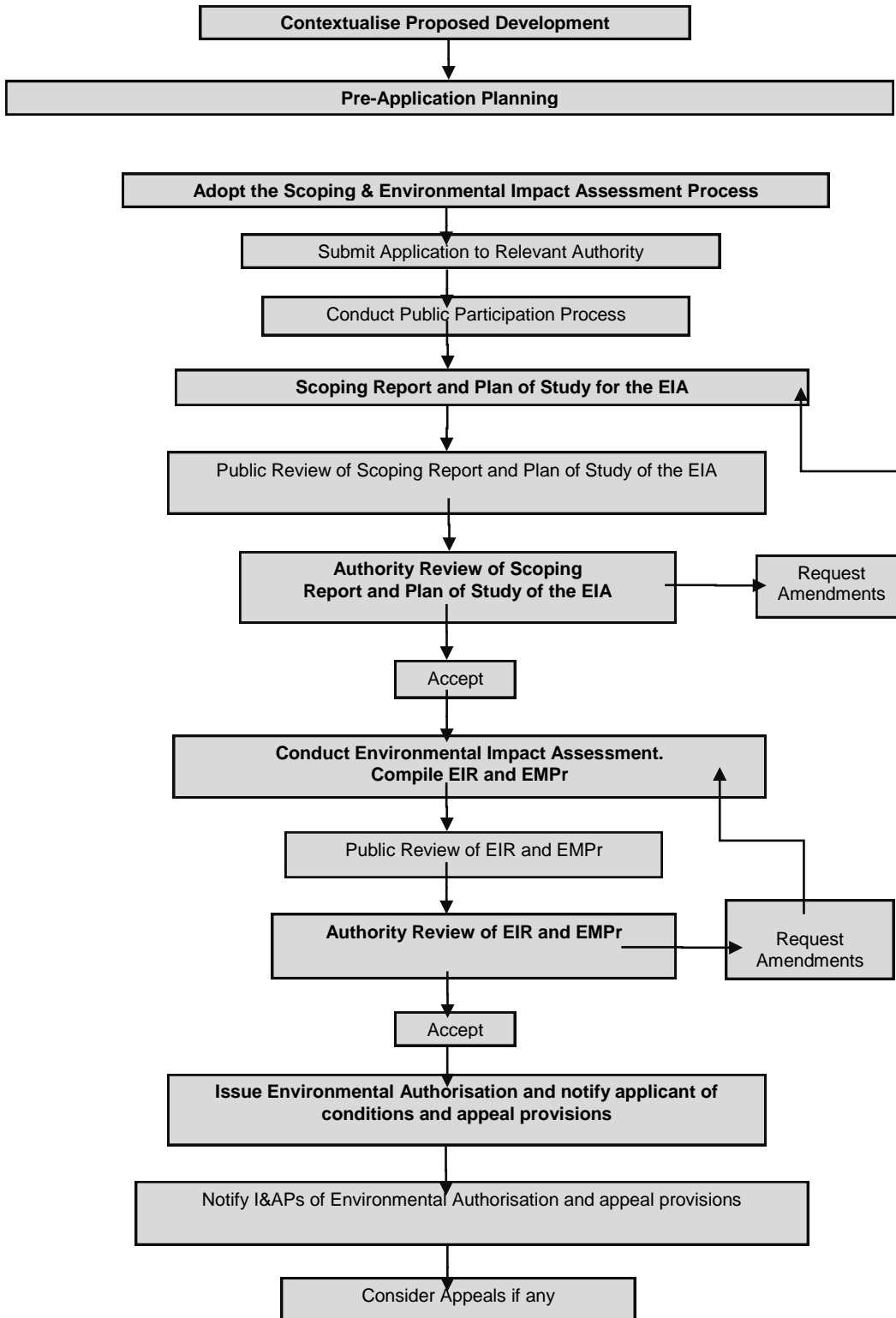


Figure 1.1: The EIA process.

1.3 Scoping Phase

A detailed description of the Scoping Phase for the proposed borrowpits and the outcomes thereof is included in: “EOH Coastal & Environmental Services, January 2016: Lusikisiki Regional Water Supply Scheme, Borrow Pits: Final Scoping Report, EOH CES, East London.”.

A Plan of Study (PoS) for the detailed EIA phase was submitted to the Department of Mineral Resources (DMR) together with the Final Scoping Report (FSR) on the 11th of January 2016, in fulfilment of Appendix 2 in GNR 982 of the EIA Regulations (2014). The PoS and FSR was accepted by DMR on the 18th of May 2016.

1.4 The Environmental Impact Assessment Phase

The Environmental Impact Assessment (EIA) is a comprehensive evaluation and study phase that addresses all the issues raised in the Scoping Phase. It is a substantial phase that has seven key objectives:

- Describe the biophysical and socio-economic environment that is likely to be affected by the proposed borrow pits.
- Assess the significance of impacts that may occur from the proposed borrow pits.
- Assess the alternatives proposed during the Scoping Phase.
- Provide details of mitigation measures and management recommendations to reduce the significance of impacts.
- Provide a framework for the development of the Environmental Management Programme (EMPr).
- Continue with the public participation process.

This EIA phase includes the following steps:

1. Specialist studies

Specialist studies are undertaken to provide a detailed and thorough examination of key issues and environmental impacts. Specialists gather relevant data to identify and assess environmental impacts that might occur on the specific component of the environment that they are studying (for instance waste management, air quality, noise, vegetation, water quality, pollution, waste management). Once completed, these studies are synthesised in, and presented in full as appendices to the Environmental Impact Report (EIR).

2. The Public Participation Process

The public participation process (PPP) initiated at the beginning of the Scoping Phase continues into the EIA Phase. Once again the PPP provides a platform from which all I&APs are able to voice their concerns and raise issues regarding the project.

3. Assessment of the Significance of Impacts

It is necessary to determine the significance, or seriousness, of any impacts on the natural or social environment. It is common practice in the EIA Phase to use a significance rating scale that determines the spatial and temporal extent, and the severity and certainty of any impact occurring, including impacts relating to any project alternatives. This allows the overall significance of an impact or benefit to be determined.

The overall intent of undertaking a significance assessment is to provide the competent authority with information on the potential environmental impacts and benefits, thus allowing them to make an informed, balanced and fair decision.

4. Mitigation Measures and Recommendations

Critical to any EIA is the recommendation of practical and reasonable mitigation measures and recommendations. These recommendations relate to the actions that are needed in order to avoid, minimise or offset any negative impacts from the borrow pits.

5. Planning input

An effective EIA process should actively engage and contribute to the project planning process so as to mitigate environmental impacts through improved design and layout.

6. Environmental Impact Report

The above-mentioned tasks are synthesised in an EIR. This will allow the assessment of the relationship of environmental impacts to project actions, as well as to assess the overall significance of these impacts. The EIR will also provide sufficient information to allow the competent authority to make an informed decision.

1.5 Mining Right Application

DWS is exempted from the application for a Mining Right for the borrow pits, but is not exempted from the application for EA for the borrow pits. The borrow pits require an application for EA in terms of NEMA (Act 107 of 1998) and in terms of the MPRDA (No. 28 of 2002). An application for EA was submitted to DMR (DMR Ref. No.: EC 30/5/1/3/3/2/1/00047 BPEM) on the 12th November 2015.

1.6 Nature and Structure of this Scoping Report

This EIR fulfils the requirement of the EIA Regulations (2014) for the documentation of the EIR phase. The structure of this report is based on APPENDIX 3 of GNR No. 982, of the EIA Regulations (2014), which clearly specifies the required content of an EIR.

1.7 Assumptions and Limitations

This EIR is based on currently available information and, as a result, the following limitations and assumptions are implicit:

- The report is based on project information provided by the client.
- Descriptions of the natural and social environments are based on limited fieldwork, relevant specialist studies and available literature.

1.8 Details and Expertise of the Environmental Assessment Practitioner

In terms of APPENDIX 3(3) of the EIA Regulations (2014), an Environmental Impact Assessment Report must include –

- (a) Details of–
 - (i) The EAP who prepared the report; and
 - (ii) The expertise of the EAP, including a curriculum vitae.

In fulfilment of the above-mentioned legislative requirement the details of the Environmental Assessment Practitioner (EAP) who prepared the report as well as the expertise of the individual members of the study team are provided below.

1.1.1 Details of the EAP

EOH Coastal & Environmental Services (EOH CES) was established in 1990 as a specialist environmental consulting company and has considerable experience in terrestrial, marine and freshwater ecology, the Social Impact Assessment (SIA) process, State of Environment Reporting (SOER), Integrated Waste Management Plans (IWMP), EMPs, Spatial Development Frameworks (SDF), public participation, as well as the management and co-ordination of all aspects of the EIA and Strategic Environmental Assessment (SEA) processes.

1.1.2 Expertise of the study team

Dr Alan Carter (EAP)

Alan is the executive of the EOH CES East London Office. He holds a PhD in Marine Biology and is a certified Public Accountant, with extensive training and experience in both financial accounting and environmental science disciplines with international accounting firms in South Africa and the USA. He has 25 years' experience in environmental management and has specialist skills in sanitation, coastal environments and industrial waste. Dr Carter is registered as a Professional Natural Scientist under the South African Council for Natural Scientific Professions (SACNASP). He is also registered as an EAP by the Environmental Assessment Practitioners of South Africa (EAPSA).

Mr Roy de Kock

Roy is a Senior Consultant holding a BSc Honours in Geology and an MSc in Botany from the Nelson Mandela Metropolitan University in Port Elizabeth. His MSc thesis focused on Rehabilitation Ecology using an open-cast mine as a case study. He has been working for EOH CES since 2010, and is based at the East London branch where he focuses on Ecological and Agricultural Assessments, Geological and Geotechnical analysis, Environmental Management Plans, mining applications and various environmental impact studies. Roy has worked on numerous projects in South Africa, Mozambique and Malawi. Roy is SACNASP registered.

Ms. Caitlin Smith

Caitlin is a Senior Environmental Consultant at EOH CES. Caitlin holds a BSc degree with majors in Geology and Geography as well as a BSc Honours degree in Geology both from Nelson Mandela Metropolitan University. Caitlin's honours thesis involved a petrographic study and scanning electron microscope analysis of kimberlite material. Caitlin has four years' experience as a geologist in the heavy mineral sands mining industry.

Ms Amy Hunter

Amy is an Environmental Consultant at EOH CES. Amy holds a B.Sc. in Biochemistry and Zoology as well as a B.Sc. Honours in Zoology, both from the University of Johannesburg. Her honours project investigated the role of a tenebrionid beetle in the ecology of Bakwena Cave, Pretoria. Her M.Sc project, through Stellenbosch University, was a study on the effects of probiotics on the physiological and biochemical development of hatchery raised dusky kob (*Argyrosomus japonicus*) larvae. Her professional interests and passion lies within coastal and marine ecology as well as the development of sustainable aquaculture in South Africa. Amy has experience in a wide variety of areas with particular focus on aquaculture EIAs, coastal development EIAs and EMPs as well as coastal management programmes.

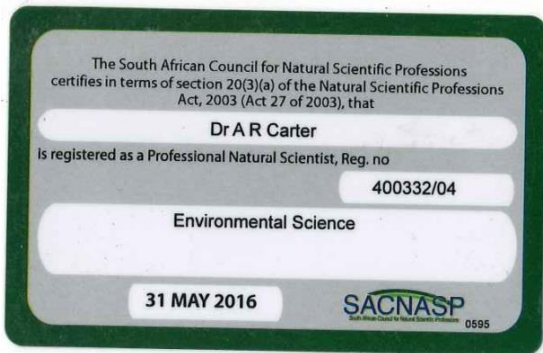
Dr Greer Hawley

Greer is a Principal Consultant and has a BSc degree in Botany and Zoology and a BSc Honours in Botany from the University of Cape Town. She completed her PhD thesis (Microbiology) at Rhodes University. Greer has been involved in a number of diverse activities. The core academic focus has been directed in the field of taxonomy both in the plant and fungal kingdom. Greer's research ranges from studying fresh and marine algae, estuarine diatoms, Restio species classification in the fynbos and forest vegetation and fungal species identification and ecology. Greer's study of fungi have also contributed towards an understanding

of soil ecology and "below ground" ecology. She is currently working on numerous impact assessments at the East London branch.

Mr Lungisa Bosman

Lungisa is a Senior Environmental Consultant who holds a Bachelor of Social Science (1993) from UCT, with majors in Public Administration & Sociology, and a Post Graduate Diploma in Organisation and Management. Lungisa has gained considerable experience in social facilitation and community education and has been involved in a number of projects where he has brought his facilitation skills to bear. These include the ADM and Chris Hani State of Environment studies



2. LOCATION OF ACTIVITY

In terms of APPENDIX 3(3) of the EIA Regulations (2014), an Environmental Impact Assessment Report must include –

- b) The location of the activity, including –
 - (i) The 21 digit Surveyor General code of each cadastral land parcel;
 - (ii) Where available, the physical address and farm name;
 - (iii) Where the required information in terms of (i) and (ii) is not available, the coordinates of the boundary of the property or properties;
- c) A plan which locates the proposed activity or activities applied for at an appropriate scale

The proposed borrow pits are located approximately 10 km north-west of Lusikisiki in the Ingquza Hill Local Municipality (OR Tambo District Municipality). Borrow pit 1 (Figure 2.1) and 2 (Figure 2.2) are located approximately 0,5 km and 1,7 km downstream of the proposed Zalu dam (Figure 2.3). Property details and the 21 Digit SG code of the affected farm are provided in Table 2.1 below. Coordinates of the proposed borrow pits are provided in Table 2.2 and 2.3. The study area for this report is the planned borrow pit areas and a distance of 500 m surrounding them.

Table 2.1: Property details

Province	Eastern Cape
District Municipality	OR Tambo District Municipality (ORTDM)
Local Municipality	Ingquza Hill Local Municipality
Farm numbers	Farm 116.
21 digit SG code	C09600000000011600000

Table 2.2: Coordinates of the corner points of borrow pit 1

Latitude (S) (DDMMSS)	Longitude (E) (DDMMSS)
31°19'1.92"S	29°28'44.98"E
31°19'10.92"S	29°29'1.21"E
31°19'18.53"S	29°28'52.87"E
31°19'16.04"S	29°28'48.92"E

Table 2.3: Coordinates of the corner points of borrow pit 2

Latitude (S) (DDMMSS)	Longitude (E) (DDMMSS)
31°19'37.82"S	29°29'0.86"E
31°19'54.87"S	29°29'13.96"E
31°19'58.29"S	29°29'7.58"E
31°19'50.40"S	29°28'55.58"E



Figure 2.1: A view of a portion of the borrow pit 1 area.



Figure 2.2: A view of a portion of the borrow pit 2 area.

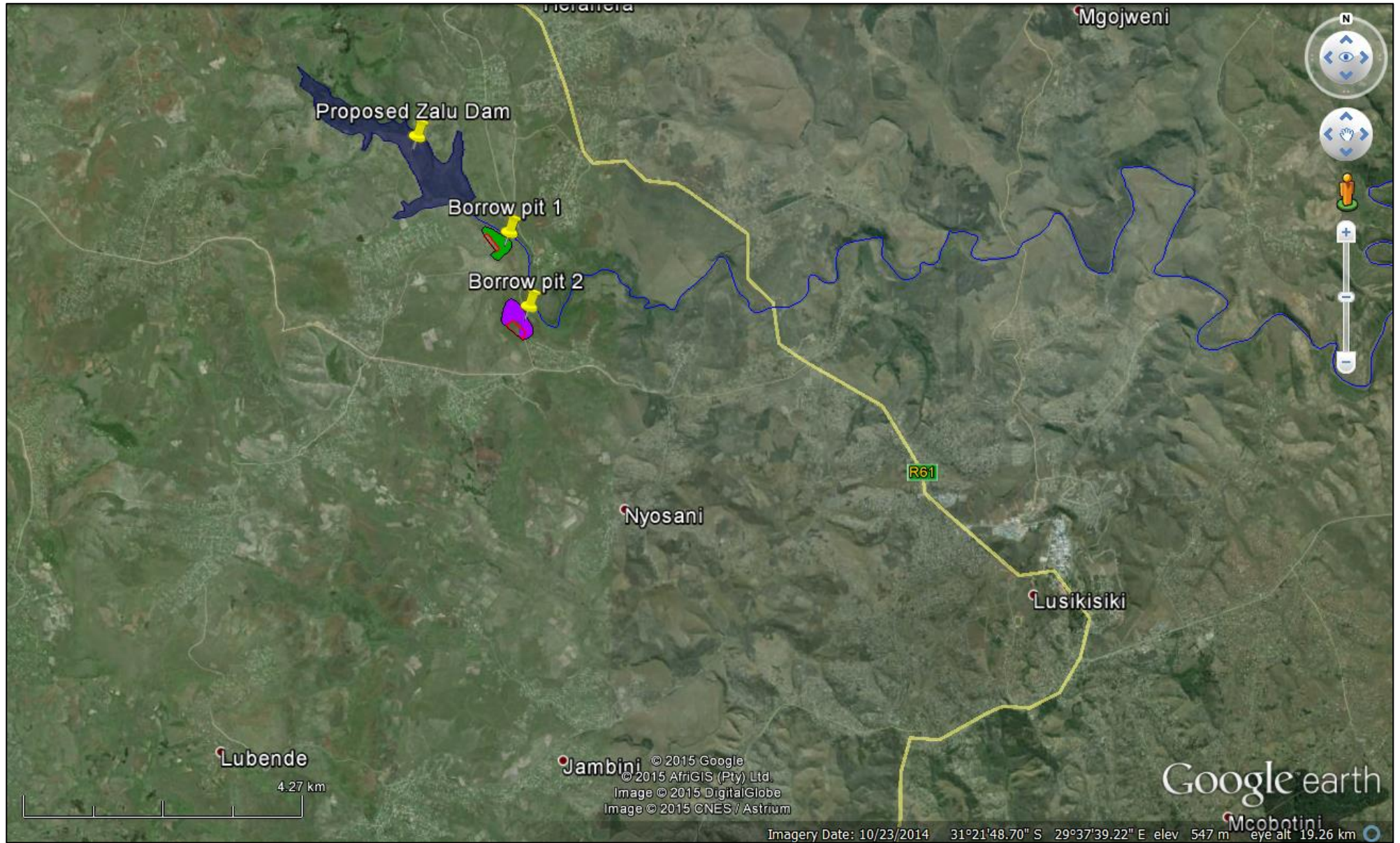


Figure 2.3: Locality map of the proposed borrow pits.

3. PROJECT DESCRIPTION

In terms of APPENDIX 3(3) of the EIA Regulations (2014), an Environmental Impact Assessment Report must include -

- d) **A description of the scope of the proposed activity, including –**
- (i) **All listed and specified activities triggered and being applied for;**
 - (ii) **A description of the associated structures and infrastructure related to the development.**

3.1 Description of Proposed Activity

DWS has completed a detailed feasibility study for the Augmentation of the LRWSS at Lusikisiki, within the OR Tambo District in the Eastern Cape. The LRWSS is proposed to augment the existing water supply to the region between Lusikisiki (approximately 15 km inland), and the coast, extending from the Mzimvubu River in the south west to the Msikaba River in the north east. An EIA for the LRWSS has been completed and awaits approval from DEA.

The LRWSS will include the construction of an Earth Core Rockfill Dam (the proposed Zalu Dam) on the Xura River. Borrow areas within the dam basin cannot provide sufficient impervious material (residual and completely weathered dolerite) for the clay core of an embankment dam, but large quantities of impervious material is available in borrow areas located within a 2 km radius downstream of the dam (borrow pits 1 and 2).

The affected areas and volumes of material to be removed from the borrow pits is illustrated in Table 3.1 and 3.2. Approximately 32 800 m³ and 64 000 m³ of topsoil will be removed from borrow pit 1 and 2 respectively using an excavator. This topsoil will be stockpiled in demarcated areas and will be used to back-fill the excavation and level the slopes once mining is complete. The dolerite material will be removed using an excavator, loaded onto trucks and transported to the proposed Zalu Dam Wall site.

A perimeter fence will be constructed around the borrow areas and an access road will possibly need to be constructed for borrow pit 1 (Figure 3.1). Borrow pit 2 is accessible via existing gravel roads.

Table 3.1: Size of borrow pits.

	Area (hectare)	
	Borrow pit 1	Borrow pit 2
Area impacted	12	19
Mining area	10	16
Stockpile area	1,7	3,7

Table 3.2: Volumes of material to be removed.

Type of material	Estimated volume (m ³)	
	Borrow pit 1	Borrow pit 2
Overburden for spoil: Organic topsoil	32 800	64 000
Impervious fill: Residual and completely weathered dolerite	410 000	880 000
Total	442 800	944 000

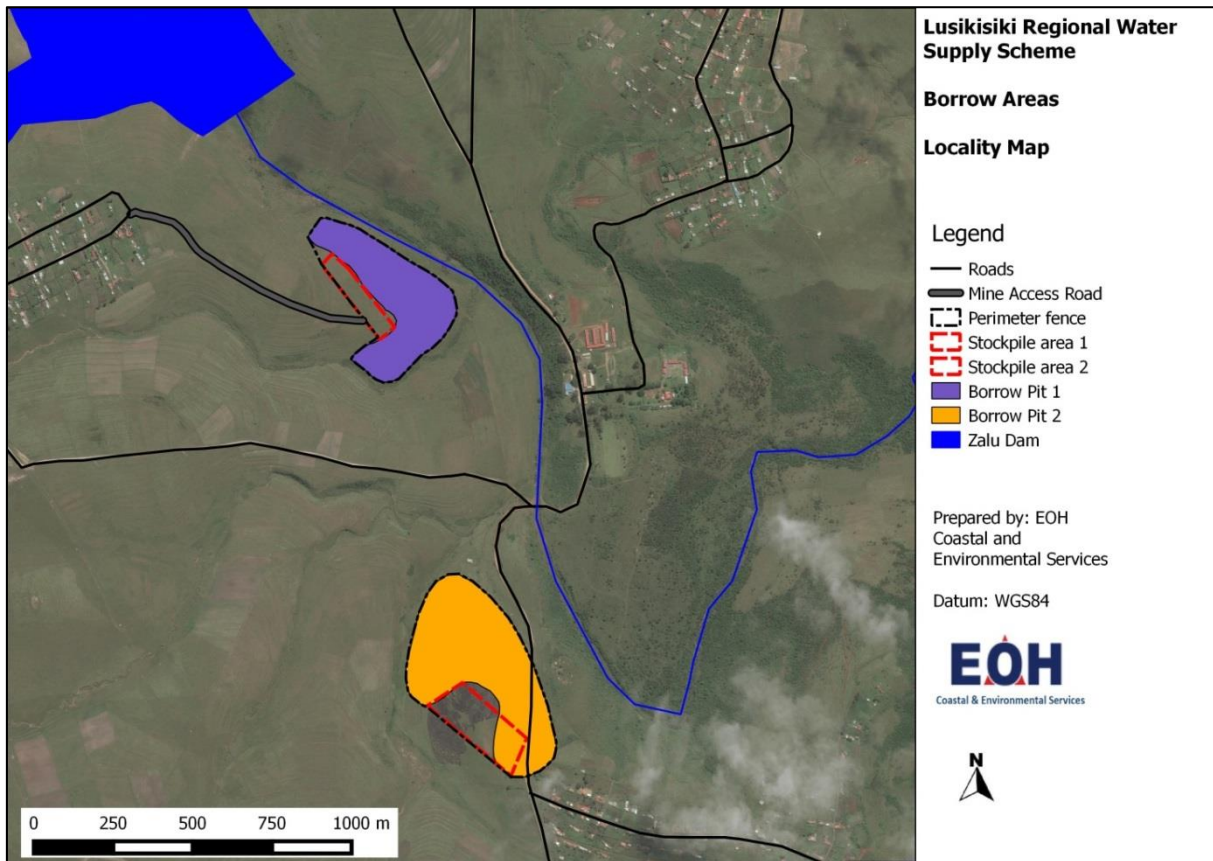


Figure 3.1: Proposed layout of the borrow pit areas.

3.2 Listed activities triggered

The proposed borrow pits trigger the need for a Full Scoping and EIA process under the NEMA Regulations (2014) in terms of Listing Notices 1, 2 and 3 and published in Government Notices No. R. 983, R. 984 and R. 985, respectively. The listed activities that have been applied for are provided in Table 3.3 below.

Table 3.3: Listed activities triggered by the proposed borrow pits

Government Notice	Activity Number	Activity Description	Relevance to this project
GNR 983	22	The decommissioning of any activity requiring (i) a closure certificate in terms of Section 43 of the MPRDA (2002).	<ul style="list-style-type: none"> Decommissioning of the borrow pits once mining is complete will require a closure certificate.
GNR 984	15	The clearance of an area of 20 hectares or more of indigenous vegetation.	<ul style="list-style-type: none"> Mining activities will require the removal of more than 20 hectares of indigenous vegetation for both borrow pits.
GNR 984	17	Any activity including the operation of that activity which requires a mining right as contemplated in Section 22 of the MPRDA (2002) including associated infrastructure, structures and earthworks, directly related to the extraction of a mineral resource, including activities for which an exemption has been issued in terms of Section 106 of the MPRDA.	<ul style="list-style-type: none"> Two borrow pits (each larger than 1,5 Ha in size) will be used for construction of the proposed Zalu Dam wall. Any activity which requires a mining right, including activities for which an exemption has been issued, require that an application for environmental authorisation be submitted to DMR.

4. RELEVANT LEGISLATION

In terms of APPENDIX 3(3) of the EIA Regulations (2014), an Environmental Impact Assessment Report must include –

- e) A description of the policy and legislative context within which the development is located and an explanation of how the proposed development complies with and responds to the legislation and policy context.

4.1 Relevant Legislation and Guidelines used in the Compilation of this Environmental Impact Assessment Report

The table below (Table 4.1) summarises the legislation that is relevant to the proposed borrow pits.

Table 4.1: Environmental legislation considered in the preparation this Environmental Impact Report.

Title of Environmental Legislation, Policy or Guideline	Implications for the proposed borrow pits
Constitution Act (108 of 1996)	<ul style="list-style-type: none"> • Obligation to ensure that the borrow pits will not result in pollution and ecological degradation; and • Obligation to ensure that the proposed borrow pits are ecologically sustainable, while demonstrating economic and social development.
National Environmental Management Act (NEMA) (107 of 1998)	<ul style="list-style-type: none"> • The developer must be mindful of the principles, broad liability and implications associated with NEMA and must eliminate or mitigate any potential impacts. • The developer must also be mindful of the principles, broad liability and implications of causing damage to the environment. • The developer must also comply with the EIA Regulations (2014) in the terms of the Act which specifies when an environmental authorisation is required and the nature of the EIA process.
Mineral and Petroleum Resources Development Act (Act No. 28 of 2002)	<ul style="list-style-type: none"> • The purpose of the Act is to regulate the prospecting for and the optimal exploitation, processing and utilization of minerals; to regulate the orderly utilization and the rehabilitation of the surface of land during and after prospecting and mining operations; and to provide for matters connected therewith. • DWS is exempted from the application for a Mining Permit/Right, but is not exempted from an application for Environmental Authorisation. • Any activities requiring extraction of sand or hard rock for construction purposes will require the submission of an application to DMR for Environmental Authorisation.
National Environmental Management: Waste Act (59 of 2008)	<ul style="list-style-type: none"> • The proponent must ensure that all activities associated with the project address waste related matters in compliance with the requirements of the Act.
National Water Act (36 of 1998)	<ul style="list-style-type: none"> • Appropriate measures must be taken to prevent the pollution of watercourses. • Riparian zones must be protected. • Any mining activity that takes place within a watercourse or within 500 m of a wetland will require a water use licence (section 21(c) and (i) of the National Water Act).
National Heritage Resources Act (Act No. 25 of 1999)	<ul style="list-style-type: none"> • The Act requires all developers (including mines), to undertake cultural heritage studies for any development exceeding 5000 m² in size. It also

Title of Environmental Legislation, Policy or Guideline	Implications for the proposed borrow pits
	<p>provides guidelines for impact assessment studies to be undertaken whenever cultural resources may be destroyed by development activities.</p> <ul style="list-style-type: none"> • ECPHRA/ SAHRA needs to be informed of the project. • Should heritage resources be identified during mining, appropriate measures must be undertaken to involve ECPHRA/ SAHRA and to protect these resources.
Mine Health and Safety Act (Act No. 29 of 1996)	<ul style="list-style-type: none"> • The key objectives of the Act are to provide for the health and safety of persons at work and in connection with the use of plants and machinery. • This Act will be applicable during all phases of the project and therefore necessary measures should be taken to ensure compliance.
Air Quality Act (Act No. 39 of 2004)	<ul style="list-style-type: none"> • The purpose of this Act is to provide for national norms and standards regulating air quality monitoring, management and control. • This Act will be applicable during all phases of the project. The necessary measures must be taken to ensure compliance.
Conservation of Agricultural Resources Act (No. 43 of 1983)	<ul style="list-style-type: none"> • If any declared weed and/or invader species listed in terms of this Act is present on site, it must be removed.

4.2 Relevant environmental policy

4.2.1 National Biodiversity Strategy and Action Plan (NBSAP)

The NBSAP set out a framework and a plan of action for the conservation and sustainable use of South Africa's biological diversity and the equitable sharing of benefits derived from this use. The strategy that was developed set out the strategic objectives, outcomes and activities needed to achieve the overarching goals of conservation, sustainable use and equity. The resulting implementation plan set out high priority activities which are needed to achieve the objectives, which included the identification of lead agents, partners, targets and indicators. Long-term (15 year) targets were also set for the strategic objectives. The strategic objectives that were set out are as follows:

1. An enabling policy and legislative framework integrates biodiversity management objectives into the economy
2. Enhanced institutional effectiveness and efficiency ensures good governance in the biodiversity sector
3. A network of conservation areas conserves a representative sample of biodiversity and maintains key ecological processes across the landscape and seascape
4. Human development and well-being is enhanced through sustainable use of biological resources and equitable sharing of the benefits
5. Integrated terrestrial and aquatic management across the country minimises the impacts of threatening processes on biodiversity, enhances ecosystem services and improves social and economic security

Mitigation measures have been developed for the proposed borrow pits that will ensure that the objectives set out in the NBSAP are not compromised.

4.2.2 Eastern Cape Biodiversity Conservation Plan (ECBCP)

The Eastern Cape Biodiversity Conservation Plan (ECBCP) was a first attempt at detailed, low-level conservation mapping for land-use planning purposes. Specifically, the aims of the Plan were to map

Critical Biodiversity Areas (CBAs) through a systematic conservation planning process. The current biodiversity plan includes the mapping of priority aquatic and terrestrial features, land-use pressures, CBAs and develops guidelines for land and resource-use planning and decision-making. The main output of the ECBCP is the identification of Critical Biodiversity Areas (CBAs) (also called Biodiversity Land Management Classes (BLMC)) which provides recommended land use objectives.

The proposed borrow pits are located in a CBA 2 area (as illustrated in Figure 8.8 in Section 8.5.1) and appropriate mitigations measures have been developed to ensure that the all possible impacts to the biodiversity in the proposed project area have been minimised.

4.2.3 OR Tambo District Municipality Environmental Management Programme (ORTDM EMP)

The ORTDM EMP was developed in order to address issues that were identified in the ORTDM IDP and status quo reports.

During the development of the ORTDM IDP, issues were identified and in order to address these issues, Environmental Management Action Plans (EMAPs) were developed to address each identified issue. Then the EMAPs, together with the ORTDM IDP Sector plans, apply to the relative Municipal Departments. The key EMAPS that were developed include:

1. Land Use Management: Erosion rehabilitation programme
2. Land Use Management: Agricultural practices – promotion of sustainable farming practices
3. Management of Rural and Urban Sprawl
4. ORT Conservation Strategy; including Sensitive Ecosystems and Biodiversity Hotspot Identification and Conservation
5. Alien Invasive Plant Eradication including Mapping and Integration with Other Programmes
6. Forest Plantation Management and Indigenous Forest Rehabilitation; including coastal forest
7. Wastewater Treatment Works (WWTW) Effluent Water Quality Monitoring and Reporting Programme
8. Audit of wastewater treatment works (WWTW), associated infrastructure (pipelines and pump stations) and staff
9. Climate change: Adaptation and mitigation strategy
10. Fresh Water Quality Monitoring and Reporting Programme

4.3 Municipal by-laws and planning

The municipal plan below is relevant to the proposed borrow pits.

4.3.1 The Ingquza Hill Local Municipality IDP (2014/2015)

According to the IHLM Integrated Development Plan (IDP), the Municipality is faced with huge household, community and economic infrastructure backlogs. Major challenges include lack of access roads, incomplete roads and poor road maintenance. Water infrastructure is highlighted as a major challenge.

The proposed borrow pits form part of the larger Lusikisiki Water Supply Scheme project where the provision of potable water will be made to the communities within the Lusikisiki area. This project will form a major component in addressing the sanitation infrastructure shortfall identified in the IDP.

5. PROJECT NEED & DESIRABILITY

In terms of APPENDIX 3(3) of the EIA Regulations (2014), an Environmental Impact Assessment Report must include –

- 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.**

The proposed borrow pits will be used for construction of the Zalu Dam, one of the main components of the LRWSS. The LRWSS falls within the Ingquza Hill (IHLM) and Port St Johns (PSJLM) Local Municipalities in the ORTDM.

ORTDM is one of the most densely populated regions within the country with a population of 1 364 943. The IHLM accounts for about 20% of this population and the PSJLM accounts for about 11% of this population (StatsSA, 2011).

5.1 Access to Water and Sanitation

5.1.1 Ingquza Hill Local Municipality

In 2011 the percentage of the population in the IHLM with no access to piped water was 69.2%. Only 3,7% of the population have piped water in their homes and 63,4% of the population use rivers/streams for water (Figure 5.1).

A large percentage of the population uses pit latrines (66,7%) and 19,2% of the population have no toilets. Only 2,4% of the population have flush toilets connected to the sewerage system (StatsSA, 2011).

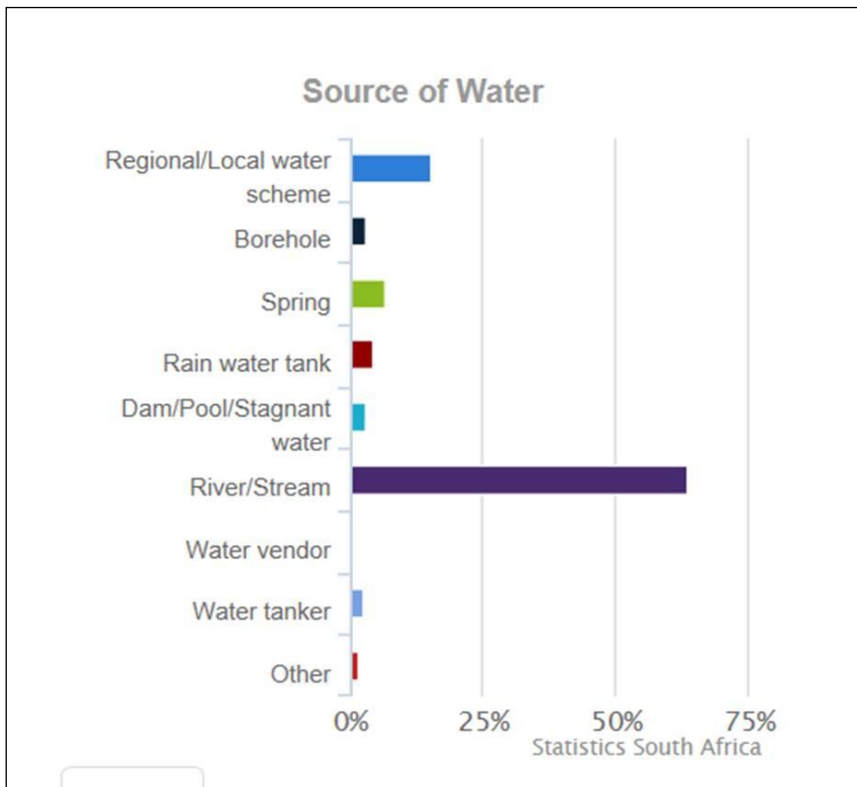


Figure 5.1: Sources of water for the IHLM (StatsSA, 2011).

5.1.2 Port St Johns Local Municipality

According to StatsSA, in 2011 65,3% of the PSJLM population did not have access to piped/tap water. Only 2,7% of the population have piped water inside their homes and 59,8% rely on rivers/streams for water (Figure 5.2).

The bulk of the PSJLM population (54,2%) uses pit toilets, only 3% have flush toilets that are connected to a sewerage system and 31,1% of the population does not have access to toilet facilities.

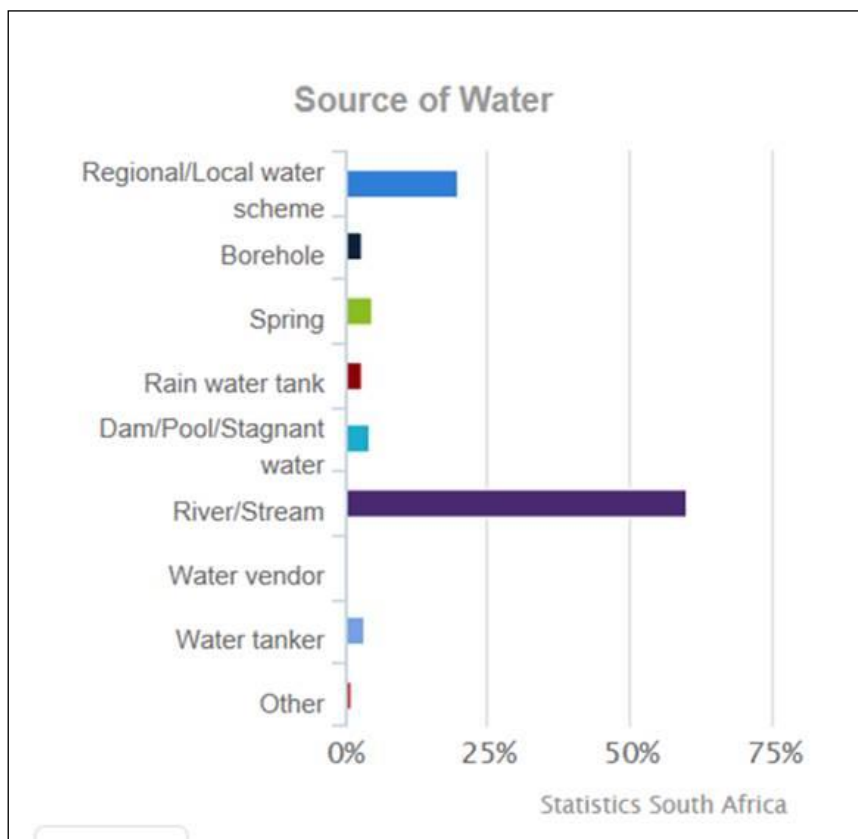


Figure 5.2: Sources of water for the PSJLM (StatsSA, 2011).

There is a need to provide not only potable water services to more households within the LRWSS study area, but also to assist the municipalities with sustainable and clean water provision. At present, the ORTDM has a number of water schemes under its area of jurisdiction. In order to deal with the need for water supply, boreholes are used in some areas. Water is pumped from the borehole into a rainwater tank and is then collected in buckets. In most instances these systems are poorly maintained and non-functional.

5.2 The Constitution

The Constitution places the responsibility on government to ensure that basic services are progressively expanded to all, within the limits of available resources. These basic services include:

- Housing,
- Education,
- Health care,
- Social welfare,
- Transport,
- Electricity and energy,
- **Water**,
- Sanitation and refuse and waste removal.

Without the construction of the proposed LRWSS (using the proposed borrow pits for construction of the proposed Zalu dam wall), it is unlikely that the state will be able to fulfil this responsibility.

5.3 National Infrastructure Plan

In 2012, the South African Government adopted a National Infrastructure Plan. The objectives of the plan are to identify and implement key infrastructure projects that will stimulate the economy by infrastructure development that will combine the goals of ensuring service delivery and at the same time creating jobs.

The investment into infrastructure projects is anticipated to improve access by South Africans to healthcare facilities, schools, water, sanitation, housing and electrification, whilst the construction of ports, roads, railway systems, electricity plants, hospitals, schools and dams will contribute to faster economic growth.

In order to implement the goals and objectives of the National Infrastructure Plan, a number of Strategic Infrastructure Projects (SIPs) have been developed. The construction of the proposed LRWSS forms part of SIP 18 which speaks directly to Water and Sanitation infrastructure. SIP 18 involves a 10 year plan to address the estimated backlog of adequate water to supply 1,4 m households and 2,1 m households with basic sanitation. The project will involve provision of sustainable supply of water to meet social needs and support economic growth. These projects include provision for new infrastructure, rehabilitation and upgrading of existing infrastructure, as well as improved management of water infrastructure.

5.4 National Development Plan (NDP)

The NDP (also referred to as Vision 2030) is a detailed plan produced by the National Planning Commission in 2011 that is aimed at reducing and eliminating poverty in South Africa by 2030. The NDP represents a new approach by Government to promote sustainable and inclusive development in South Africa, promoting a decent standard of living for all, and includes key focus areas, such as the provision of potable water to rural communities such as Lusikisiki.

5.5 Eastern Cape Vision 2030 Provincial Development Plan

The Eastern Cape Vision 2030 Provincial Development Plan sets out nine key challenges that need to be addressed in the Eastern Cape. The challenge relevant to the proposed project has been extracted below:

(3) Infrastructure is poorly located, under-maintained and insufficient to foster higher growth and spatial transformation.

“...Using an integrated approach, led by the Office of the Premier, all current and planned infrastructure projects should be reviewed and an acceleration plan developed to ensure that all households have water, sanitation, electricity and public facilities by 2030.”

6. PROJECT ALTERNATIVES

In terms of APPENDIX 3(3) of the EIA Regulations (2014), an Environmental Impact Assessment Report must include –

- (g) A motivation for the preferred development footprint within the approved site;
- (h) A full description of the process followed to reach the proposed development footprint within the approved site, including –
 - (i) Details of the development footprint alternatives considered;
 - (ix) If no alternative development locations for the activity were investigated, the motivation for not considering such; and
 - (x) A concluding statement indicating the preferred alternative development location within the approved site.

One of the objectives of an EIA is to investigate alternatives to the proposed project. There are two types of alternatives: Fundamental Alternatives and Incremental Alternatives.

6.1 Reasonable and Feasible Alternatives

Alternatives should include consideration of all possible means by which the purpose and need of the proposed activity could be accomplished. The no-go alternative must also in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed. The determination of whether site or activity (including different processes etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment.

“Alternatives”, in relation to a proposed activity, refers to different means of meeting the general purpose and requirements of the activity, which may include alternatives to;

- a) the property on which or location where it is proposed to undertake the activity.
- b) the type of activity to be undertaken.
- c) the design or layout of the activity.
- d) the option of not implementing the activity.

6.2 Fundamental Alternatives

Fundamental alternatives are developments that are totally different from the proposed project description and usually include the following:

- Alternative property or location where it is proposed to undertake the activity.
- Alternative type of activity to be undertaken.
- Alternative technology to be used in the activity.

6.3 Incremental Alternatives

Incremental alternatives relate to modifications or variations to the design of a project that provide different options to reduce or minimise environmental impacts. There are several incremental alternatives that can be considered, including:

- Alternative design or layout of the activity.
- Alternative technology to be used in the activity.
- Alternative operational aspects of the activity

6.4 No-Go development

The EIA process is obligated to assess the status quo (i.e. the “No-Go” option). The No-Go alternative provides the assessment with a baseline against which predicted impacts resulting from the proposed

development may be compared. A “No-Go” alternative has been assessed for the proposed borrow pits.

6.5 Analysis of alternatives

Table 6.2 illustrates the methodology used to assess the identified alternatives. The table assesses the advantages and disadvantages, and provides further comments on the selected alternatives. Table 6.1 below provides a summary of the alternatives assessed:

Table 6.1: A summary of the alternatives that were assessed.

Alternative level	Alternative	Description
Property or location	1 (Preferred alternative)	Current proposed site.
	2	None identified.
Types of technology	1 (Preferred alternative)	Opencast mining using excavators and transporting material using trucks.
	2	None chosen because the preferred mining method is a proven and feasible method for this type of material.
Layout alternative	1 (Preferred alternative)	Current proposed layout
	2	None chosen because the preferred mining area layout is designed based on geological/ geotechnical investigations
No-go option	1	Current land use of the proposed site is rural grazing and agricultural land

Table 6.2: The alternatives for the proposed borrow pits.

Alternative level	Alternatives	Advantages	Disadvantages	Reasonable and feasible	Further assessment	Comment
Property or location (Fundamental location alternative)	Alternative location 1 - Current proposed site (preferred alternative).	<ul style="list-style-type: none"> - The proposed borrow pits are located within 2 km of the proposed Zalu Dam. - The geology in these locations is ideal for the type of material required for construction of a zoned embankment dam i.e. impervious material. - HKS Consulting Engineers conducted a geological investigation of the area and BKS Group conducted a technical feasibility study. - Test pit samples indicate that these borrow pit sites have the right material required for construction of the dam wall (Feasibility Study for the Augmentation of the Lusikisiki Regional Water 	<ul style="list-style-type: none"> - Approximately 31 hectares of Ngongoni Veld will be lost due to mining activities. - Loss of rural grazing/ agricultural land. 	YES	YES	<p>The main determining factors for selecting the proposed location were:-</p> <ul style="list-style-type: none"> - Appropriate geology of the area. - Location in relation to the dam site.

Alternative level	Alternatives	Advantages	Disadvantages	Reasonable and feasible	Further assessment	Comment
		Supply Scheme: Materials and Geotechnical Investigations, October 2013).				
	Alternative location 2 – None identified.	N/A	N/A	N/A	N/A	<ul style="list-style-type: none"> – Alternative locations for the proposed borrow pits are limited and probably not reasonable or feasible due to inappropriate geology. – The appropriate geology was considered a critical aspect. – Alternative locations for the borrow pits would have similar environmental impacts. – There are no existing borrow pits nearby (that can provide the necessary material) where environmental impacts can be

Alternative level	Alternatives	Advantages	Disadvantages	Reasonable and feasible	Further assessment	Comment
						<p>avoided.</p> <ul style="list-style-type: none"> No alternative location will be assessed in the impact assessment.
<p>Type of technology This refers to the fundamental technology options required to operate the borrow pits.</p>	<p>Alternative technology 1 – Opencast mining using excavators and transporting material using trucks (preferred alternative).</p>	<ul style="list-style-type: none"> Less time spent on site resulting in lower environmental impact 	<ul style="list-style-type: none"> Fewer jobs created due to lower labour requirements 	YES	YES	<p>This is the preferred and feasible mining method. This is a proven mining method for this type of material.</p>
	<p>Alternative technology 2 – None chosen because the preferred mining method is a proven and feasible method for this type of material.</p>	N/A	N/A	N/A	N/A	<ul style="list-style-type: none"> There are no feasible alternative mining methods that would have a lower environmental impact. <p>No other mining methods will be assessed further in the impact assessment.</p>
<p>Layout alternative Incremental alternative.</p>	<p>Alternative layout 1 – Current proposed layout (preferred alternative).</p>	<ul style="list-style-type: none"> The proposed layout of the borrow pits is ideal based on test pit samples taken of these sites and previous 	<ul style="list-style-type: none"> The proposed layouts of the two borrow pits are both in close proximity to two non-perennial rivers with 	YES	YES	<p>This is the preferred layout (based on geological conditions) and will be assessed further in the impact assessment.</p>

Alternative level	Alternatives	Advantages	Disadvantages	Reasonable and feasible	Further assessment	Comment
		geological/geotechnical studies (Feasibility Study for the Augmentation of the Lusikisiki Regional Water Supply Scheme: Materials and Geotechnical Investigations, October 2013).	possible environmental impacts.			
	Alternative layout 2 – none chosen because the preferred mining area layout is designed based on geological/geotechnical investigations.	N/A	N/A	N/A	N/A	No other layout will be assessed further in the impact assessment.
No-go option This refers to the current status quo and the risks and impacts associated with it.	Current land use of the proposed site is rural grazing and agricultural land.	<ul style="list-style-type: none"> - Area will not be disturbed by mining operations, i.e. topography, geology and vegetation will not be affected. - Reduced environmental damage. 	<ul style="list-style-type: none"> - Material from a possibly distant alternative location will have to be sourced for construction of the dam wall, which might not be feasible. - Will negatively affect socio-economic development in the region. - Area will suffer 	YES	YES	Will be assessed further in the impact assessment process.

Alternative level	Alternatives	Advantages	Disadvantages	Reasonable and feasible	Further assessment	Comment
			extensive erosion due to over grazing.			

7. PUBLIC PARTICIPATION

In terms of APPENDIX 3(3) of the EIA Regulations (2014), an Environmental Impact Assessment Report must include –

- h) **A full description of the process followed to reach the proposed development footprint within the approved site, including –**
 - (ii) **Details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;**
 - (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.**

7.1 Notification of Interested and Affected Parties

7.1.1 *Public Participation*

Public consultation is a legal requirement throughout the EIA process. The proponent is required to conduct public consultation throughout the Scoping and EIR phase. Formal EIA documents are required to be made available for public review and comment by the proponent, these include the Project Brief, Scoping Report and Terms of Reference for the EIA, the draft and final EIA reports and the decision of the Competent Authority. The method of public consultation to be used depends largely on the location of the development and the level of education of those being impacted on by the project. Required means of public consultation include:

- Site notice/s;
- Newspaper advertisements;
- Letter of Notification to affected landowner(s), stakeholders and registered I&APs;
- Background Information Document (BID) distribution;
- Focus group site meeting (Attendance register and meeting minutes);
- Authority and Stakeholder engagement (DMR, DEA, DEDEAT, DWS).

7.1.2 *Newspaper advertisement*

The LRWSS EIA was advertised in the Daily Dispatch on 10 July 2014 and again on 24 June 2015 (Appendix A). These adverts included notification that a mining application would be lodged with DMR. A new advert for the borrow pits was placed in the Daily Dispatch on 12 November 2015 (Appendix A). This advert provided detail about the proposed borrow pits and provided Interested & Affected parties with an opportunity to register and comment on the draft Scoping Report.

7.1.3 *On-site Notice*

Notice boards were placed next to the Palmerton Mission and Palmerton High School as well as at various other locations within the LRWSS study area (Appendix A). A new site notice (specific to the EIA process for the borrow pits) was also placed near the proposed borrow pit sites.

7.1.4 *Stakeholders and I&APs*

During the EIA for the LRWSS certain stakeholders were identified based on their potential interest in the project. These stakeholders were contacted either via e-mail or telephone for comment and were sent a Letter of Notification (LoN) and a Background Information Document (BID). The borrow pits were discussed in the public meetings in the Scoping and EIR phase of the LRWSS EIA, but no issues were raised by the community. A full list of stakeholders and I&APs (who registered or attended public meetings during the

LRWSS EIA process) is available in Appendix A. These stakeholders were notified of the EIA process for the borrow pits and any comments received were incorporated into the Final EIR. Any new I&APs will be added to this list.

7.1.5 Background information document

A BID was distributed to identified stakeholders and I&APs on 12 November 2015 (Appendix A).

7.1.6 Proof of notification

Stakeholders and I&APs were notified via email/registered mail/ telephonically about the proposed borrow pits as well as of the availability of the draft Scoping Report and draft Environmental Impact Assessment Report for review (Appendix A).

7.1.7 Issues raised by stakeholders/ I&APs

During the EIA process thus far, the following comments relating to the borrow pits were received:

Raised by	Event	Issue/Concern/Comment	Reply/Action
Agnes Mzobotshi (Mzintlava Quarry). Owner of a dolerite quarry in PSJLM (10 km from Lusikisiki).	Registered as an I&AP during the LRWSS EIR public review period.	<ul style="list-style-type: none"> • I am interested because I own a valid licenced quarry in the area in question. • I was born in Lusikisiki and I also reside in Lusikisiki (Ingquza Municipality) and there is no other woman-owned mine around that can supply material for the construction of the project in question . 	<ul style="list-style-type: none"> • DWS will determine where additional construction material will be sourced, if required. • Beyond the scope of this EIA process.
Agnes Mzobotshi (Mzintlava Quarry, South African Women in Mining).	Comment received during the public review period of the draft borrow pit Scoping Report	<ul style="list-style-type: none"> • Is there budget paid upfront to DMR for the rehabilitation of the borrow pits in question? • My concern is that Ingquza Hill Municipality know how many children are buried through illegal mining and abandoned borrow pits in IHLM. • Records and evidence are available from the Mevana Ngobozana Chief and PSJ Life Savers. 	<ul style="list-style-type: none"> • DWS will submit an undertaking and commitment to rehabilitaiton of the borrow pits for an amount calculated using the quantum calculation of financial provision for rehabilitation.
Department of Water and Sanitation	Comment recieved during the public reviwie period of the draft borrow pit Environmental Impact Assessment Report	<ul style="list-style-type: none"> • The Department had no objections to the proposed project provided that the reccommendtions made in their official correspondence were adhered to (Appendix A). 	<ul style="list-style-type: none"> • The Impact Assessment was amended to incorporate the recommendations made by DWS.

8. DESCRIPTION OF THE ENVIRONMENT

In terms of APPENDIX 3(3) of the EIA Regulations (2014), an Environmental Impact Assessment Report must include –

- h) A full description of the process followed to reach the proposed development footprint within the approved site, including–
 - (iv) The environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;

8.1 The Bio-Physical Environment

8.1.1 Current land use

The majority of the study area has been transformed by anthropogenic activities such as overgrazing and active clearing/burning for improved pastures. There is limited cultivated land in the area and what does exist occurs mostly near homesteads (Figure 8.1).

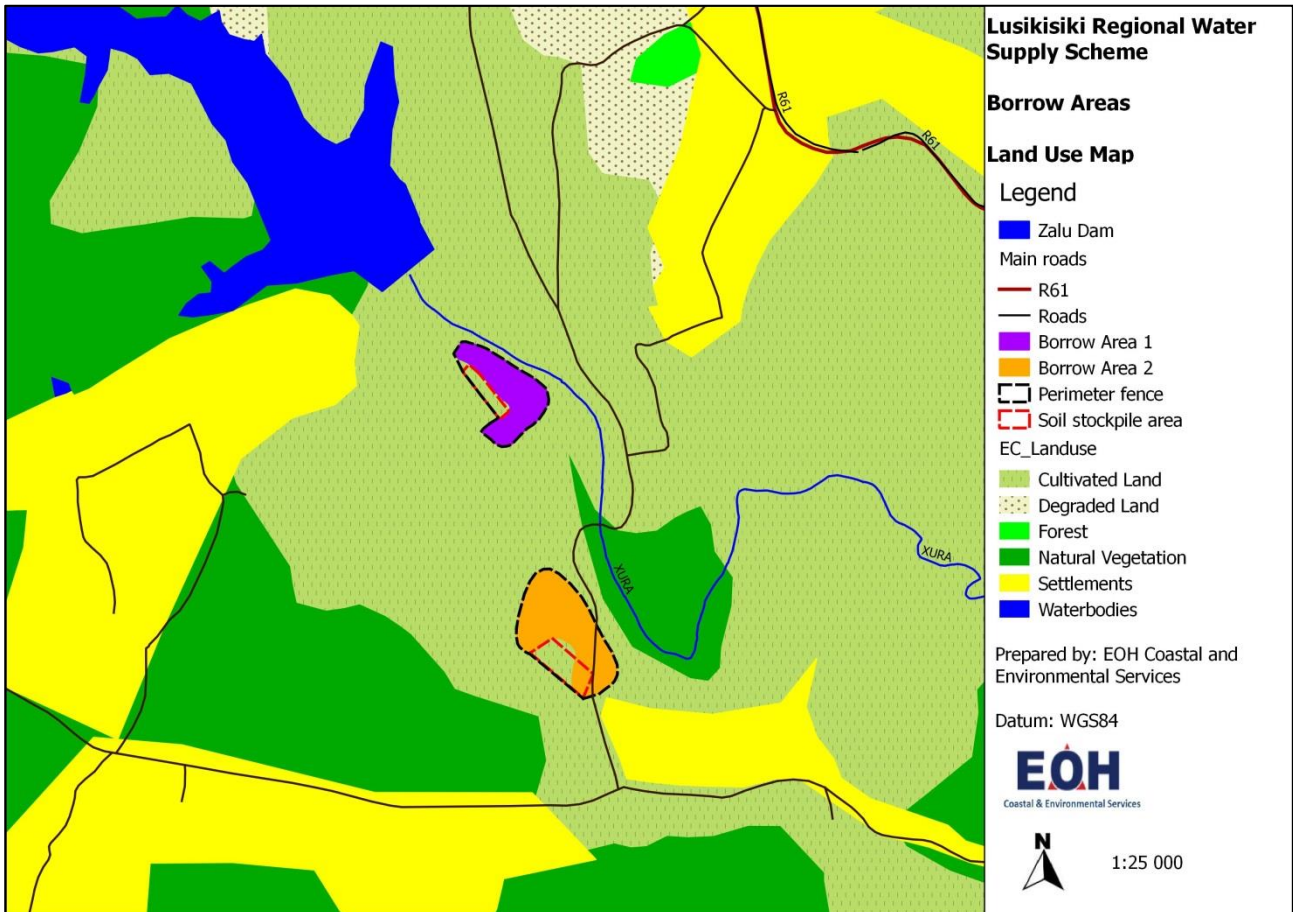


Figure 8.1: Land use map for the study area.

8.1.2 Climate

The borrow pits are located within 10 km of Lusikisiki in the Eastern Cape. Lusikisiki normally receives about 874 mm of rain per year, with most rainfall occurring during summer. It receives the lowest rainfall (12 mm) in July and the highest (124 mm) in February. The average midday temperature for Lusikisiki ranges from 20,2°C in July to 25,5°C in February. The region is the coldest during July when the mercury drops to 8°C on average during the night.

8.1.3 Topography

The topography of the study area is characterised by gentle undulating hills. The borrow pits are underlain by hard dolerite. Elevations range from about 590 to 640 meters above sea level (masl) (Figure 8.2).

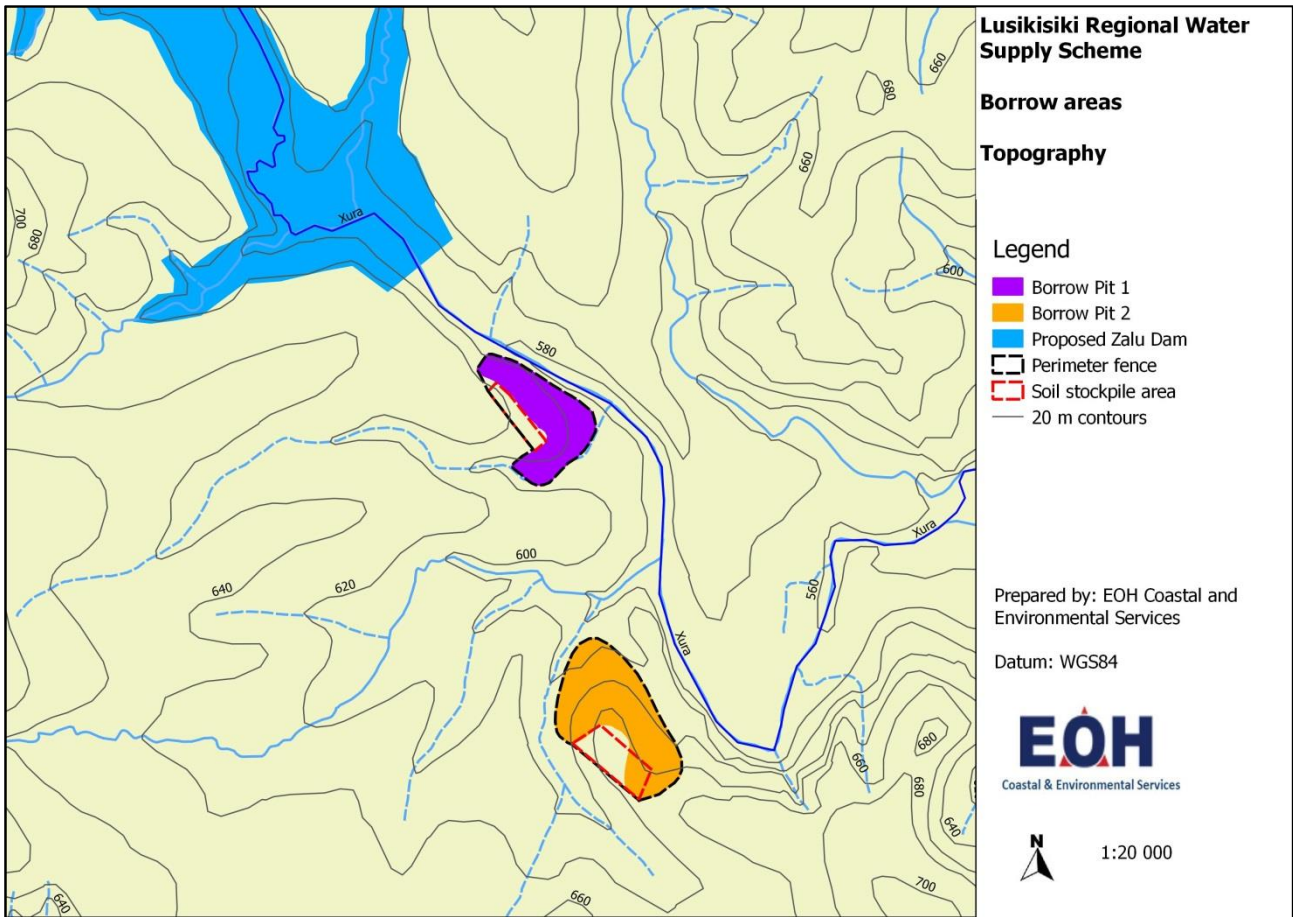


Figure 8.2: Topography of the study area.

8.1.4 Geology and soils

Figure 8.3 below indicated that the study area generally consists of shale of the Karoo Supergroup that has been intruded by Karoo dolerite sills. The borrow pits themselves are underlain by dolerite from these sills. According to Agricultural Geo-referenced Information Systems (AGIS) online (<http://www.agis.agric.za/>) the study area consists of soils with minimal development, usually shallow, on hard or weathering rock.

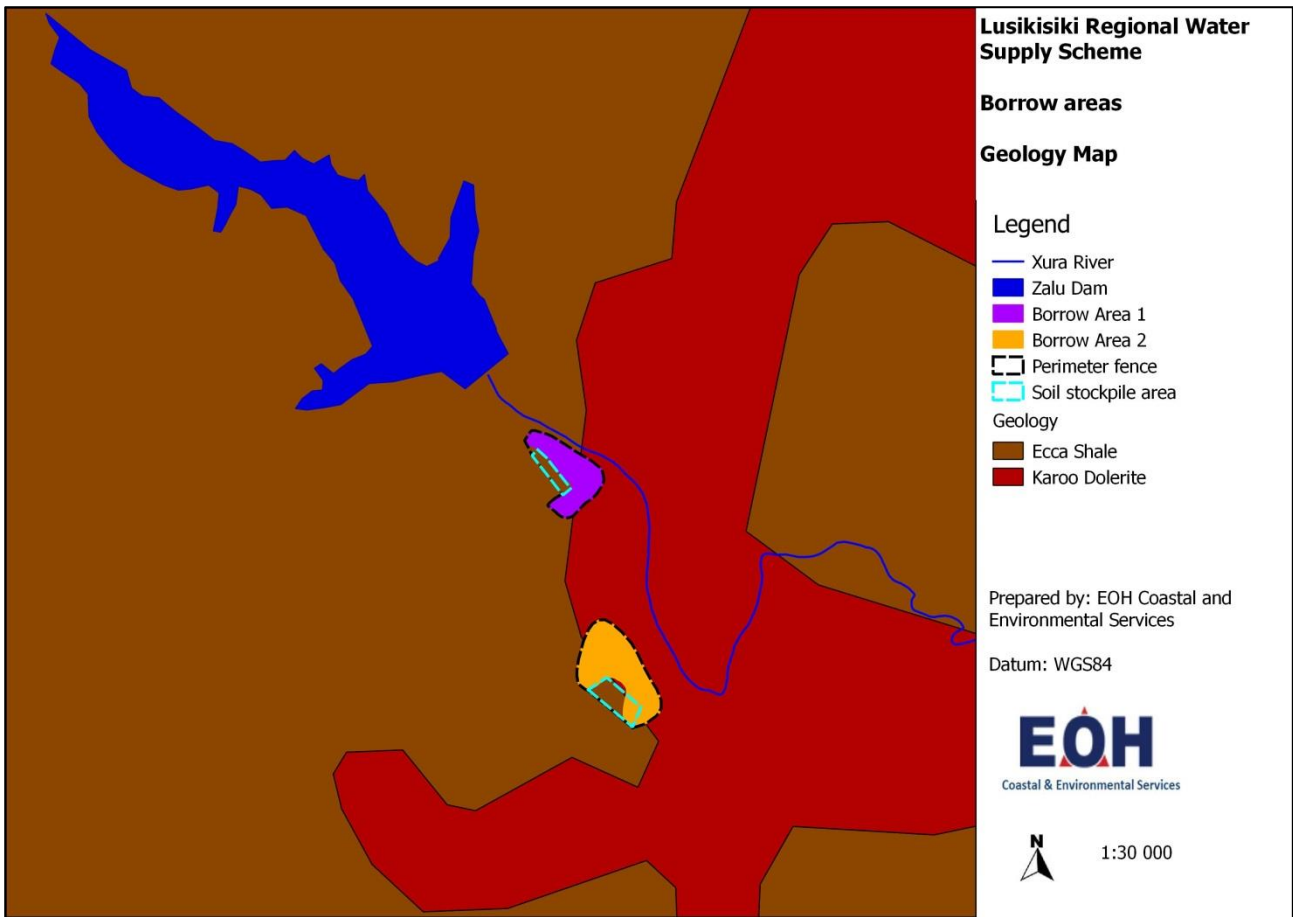


Figure 8.3: Geology of the study area.

8.2 Rivers and wetlands

The borrow pits are bordered on the north-eastern side by the Xura River. The Present Ecological Status (PES) of the Xura River is **Class B** indicating that it is largely natural. A small change in natural habitat and biota has taken place. According to the National Spatial Biodiversity Assessment (NSBA, 2004) the Xura River is classified as **vulnerable** and it is classified as an **Upstream Management Area** (areas where human activities need to be managed to prevent degradation of downstream river FEPAs and Fish Support Areas) according to the National Freshwater Ecosystem Priority Areas (NFEPA) database. There are also two non-perennial rivers in close proximity to the borrow pits (Figure 8.4). The NFEPA wetland database indicates that there are a number of natural wetlands near the borrow pits. The Ecological Specialist also identified riverine wetlands in close proximity to the borrow pits (Figure 8.5).

Any mining activity within 500 m of a wetland or within a watercourse will require authorisation from DWS.

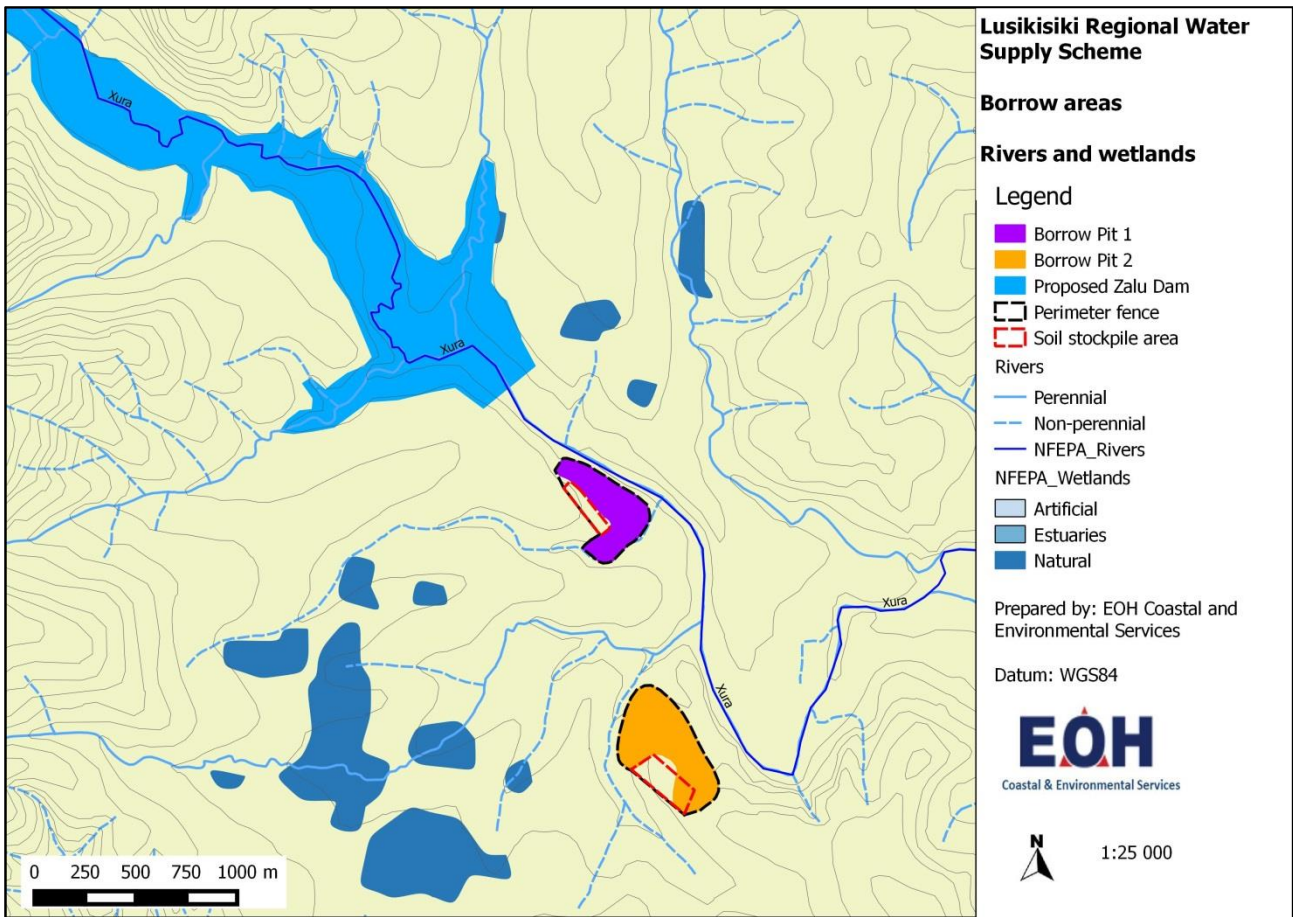


Figure 8.4: Rivers and wetlands in the study area.

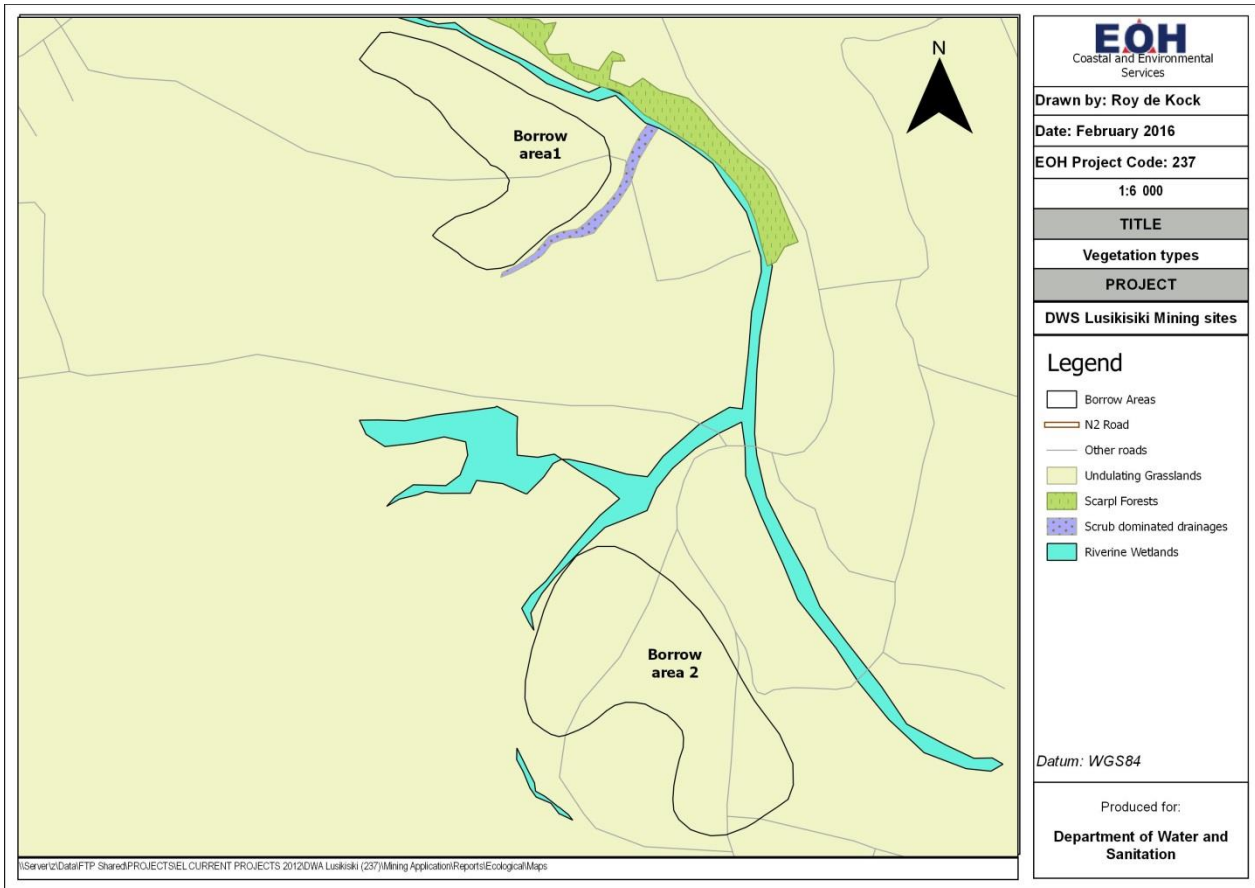


Figure 8.5 Riverine wetlands identified by the Ecological Specialist.

8.3 Vegetation and floristics

8.3.1 SANBI Classification

Mucina and Rutherford (2006) have developed the National Vegetation map as part of a South African National Biodiversity Institute (SANBI) funded project: “to provide floristically based vegetation units of South Africa, Lesotho and Swaziland at a greater level of detail than had been available before.” The map was developed using a wealth of data from several contributors and has resulted in the best national vegetation map to date, the previous being that of Adcocks developed over 50 years ago. This map forms the base of finer scale bioregional plans such as Sub-tropical Thicket Ecosystem Plan (STEP).

The map and accompanying book describe each vegetation type in detail, along with the most important species including endemic species and those that are biogeographically important and is the most comprehensive data for vegetation types in South Africa.

Mucina and Rutherford (2006) define the vegetation type that occurs within the project area as **Ngongoni veld** (Figure 8.6). Ngongoni veld occurs in the KwaZulu-Natal and Eastern Cape Provinces from Melmoth in the north to Libode in the former Transkei. It is characterised as being dense, tall grassland dominated by *Aristida junciformis* with low species diversity. This vegetation type is classified as **Vulnerable** with a conservation target of 25%. Less than 1% is statutorily conserved in the Opathe and Vernon Crookes Nature Reserves. Approximately 39% has been transformed for cultivation, plantations and urban development.

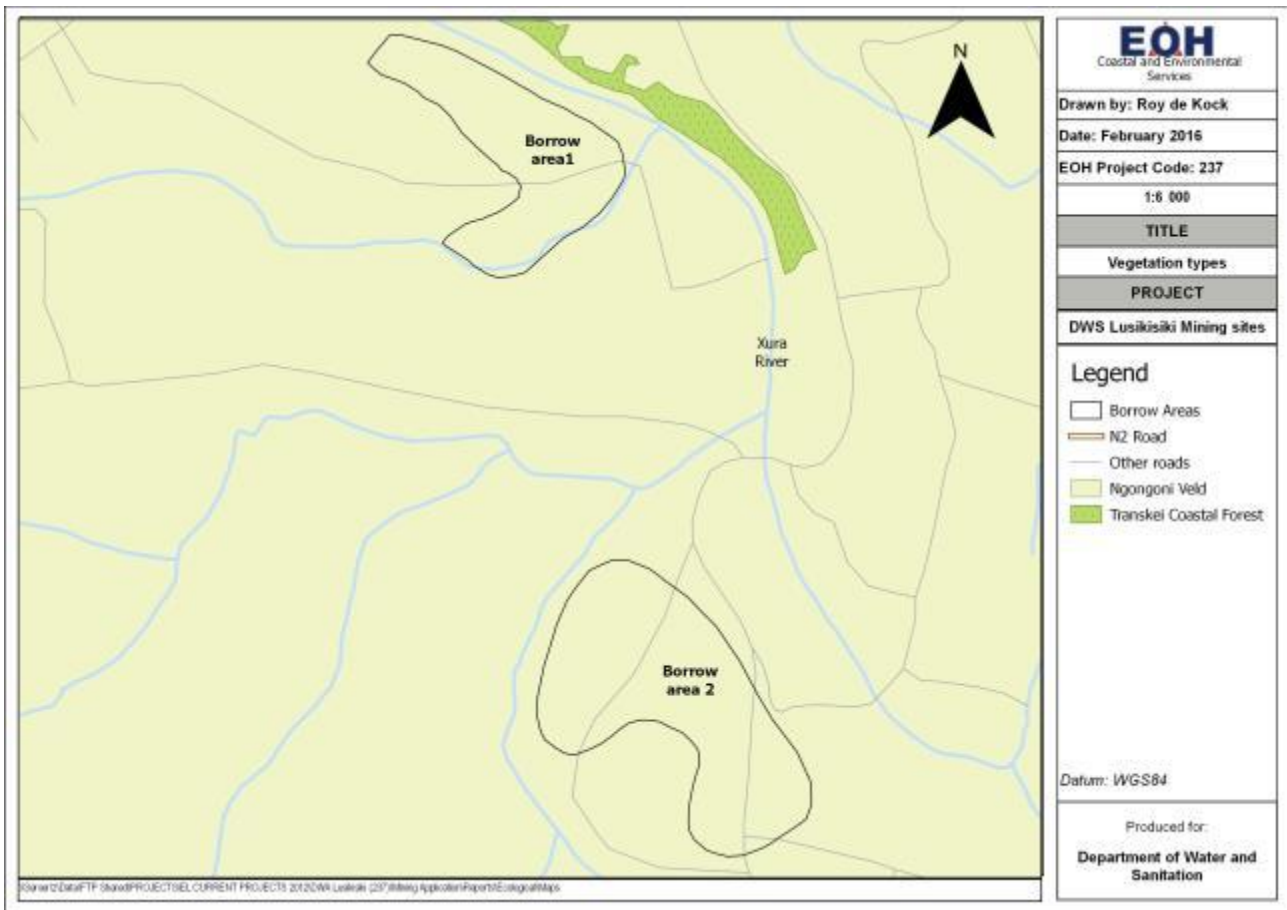


Figure 8.6: SANBI vegetation map of the study area.

8.3.2 Forest classification

Although not indicated in the SANBI vegetation map, a patch of intrazonal Transkei Lower Scarp forest was identified immediately adjacent to Borrow Area 1 along the Xura River (Figure 4.7). According to the National Forest Act (No 84 of 1998; NFA) Classification of South African Indigenous forests, this forest type comprise of low-grown (up to 9 m) and middle-grown (15-25 m) species-rich forests. Species like *Millettia grandis*, *M. sutherlandii*, *Buxus macowanii*, *B. natalensis* and locally *Umtiza listeriana* are typical constituents of canopy layer. The ground layer is poorly developed.

This forest type and its individual species are protected under the NFA and permits will be required if elements of the forest are to be removed.

8.3.3 Species of conservation concern

An Ecological Impact Assessment was carried out for each of the proposed borrow pit sites. During a site visit, 30 plant species were identified where only three of those were listed as species of conservation concern (SCC; Table 8.1 & Figure 8.7). These three species are all schedule 4 species on the Provincial Nature Conservation Ordinance Act 19 of 1974.

The implication is that these species will require a permit for their removal or transplant prior to mining. No protected tree species were observed within the mining sites.

Table 8.1: Plant species of conservation concern identified in the Borrow areas

Family	Species	IUCN	SA RED LIST	PNCO	Protected Tree list	NEMBA
APOCYNACEAE	<i>Asclepia gibba</i>	-	Least Concern	Schedule 4	-	-

Family	Species	IUCN	SA RED LIST	PNCO	Protected Tree list	NEMBA
IRIDACEAE	<i>Dietes grandiflora</i>	-	Least Concern	Schedule 4	-	-
IRIDACEAE	<i>Moraea huttonii</i>	Least Concern	Least Concern	Schedule 4	-	-



Figure 8.7: Plant SCC identified onsite during the site assessment.

8.3.4 Alien invasive species

During the Ecological Impact Assessment, a number of alien species within both the Borrow areas, particularly along drainage lines, were observed. Alien species present on site and their category according to the NEMBA Alien and Invasive Species Regulations (published 1 August 2014) are presented below (Table 8.2).

It is advised that an alien invasive management plan is created and implemented during the mining phase and that active clearing of alien species listed as category 1b in impacted areas is carried out.

Table 8.2: Alien invasive species present on site

Species	Comment
Category 1b	
<i>Cirsium vulgare</i>	1) According to NEMBA category 1b Listed species are those species listed as such by notice in terms of section 70(1)(a) of the Act as species which must be contained.
<i>Tecoma capensis</i>	

Species	Comment
<i>Cereus jamacaru</i>	2) A landowner upon whose land a Category 1 b Listed Invasive Species occurs and which species is under the landowner's control must: <ol style="list-style-type: none"> comply with the provisions of section 73(2) of the Act; and contain the listed invasive species in compliance with section 75 (1), (2) and (3) of the Act; 3) If an Invasive Species Management Programme has been developed in terms of regulation 7, a landowner must control the listed invasive species in accordance with such programme. 4) A landowner contemplated in sub-regulation (2) must allow an authorised official from the Department to enter onto the land to monitor, assist with or implement the containment of the listed invasive species, or compliance with the Invasive Species Management Programme contemplated in regulation 7.
<i>Cuscuta campestris</i>	
<i>Solanum mauritianum</i>	
<i>Solanum elaeagnifolium</i>	
<i>Lantana camara</i>	
Uncategorised	
<i>Bidens pilosa</i>	Although classified as weed species, these species don't occur on the Alien and Invasive Species Regulations List.
<i>Taraxacum officinale</i>	
<i>Hypochaeris radicata</i>	
<i>Verbena aristigera</i>	
<i>Verbena bonariensis</i>	

8.4 Fauna

8.4.1 Amphibians

Amphibians are important in wetland systems, particularly where fish are excluded or of minor importance. In these habitats, frogs are dominant predators of invertebrates. Reports of declining amphibian populations continue to increase globally, even in pristine protected areas (Phillips 1994). These declines are not simple cyclic events; for example, frogs have been identified as bio-indicator species that reflect the wellbeing of aquatic ecosystems (Poynton and Broadley 1991). Frog abundance and diversity is a reflection of the general health and well-being of aquatic ecosystems. According to historical records, 23 species of frog have been documented in the Quarter Degree Squares that the study area falls in. One of these species is listed as Endangered (*Natalobatrachus bonebergi* – Boneberg's Frog/ Natal Diving Frog) and one is listed as Vulnerable (*Afrivalus spinifrons* – Natal Banana Frog). Although no amphibian species were observed on site, the following endangered or vulnerable species may be present:

Boneberg's Frog/Natal Diving Frog/ Kloof Frog has a distribution that ranges from Dwesa Nature Reserve in the Eastern Cape Province east to southern and central Kwa-Zulu Natal (SAFRoG, 2012). Its Area of Occupancy is estimated to be 150 km² (and declining). It occurs in nine locations, all between 50 and 900 meters above sea level. Its habitat preference is in coastal forests and gallery forests along streams.

It is unlikely that this species will occur within the project area as it is too far inland and the level of degradation due to the current land use is likely to preclude this species from the area (Conradie, pers. comm).

The **Natal Banana Frog** is associated with low growing vegetation in shrub land and dry forest and breeds in vleis (including dams) and temporary pools and dams (SA-FROG, 2012). It creates egg nests on emergent vegetation within these areas. This species is endemic to South Africa and occurs as two subspecies.

It is also unlikely that this species will occur within the project area as it is too far inland and the level of degradation due to the current land use is likely to preclude this species from the area (Conradie, pers. comm).

8.4.2 Birds

Nine bird species are endemic to South Africa, but there are no Eastern Cape endemic species. However, there are 62 threatened bird species within the Eastern Cape Province (Barnes, 2000). Most of these species occur in grasslands or are associated with wetlands, indicating a need to conserve what is left of these ecosystems (Barnes, 2000).

Although these species were not observed on site, historical records indicate that there are three **Endangered** species, eight **Vulnerable** species and eight **Near Threatened** species likely to occur in the project area (Table 8.3).

Table 8.3. Threatened bird species that are likely to occur in the project area (BirdlifeSA, 2012).

Scientific Name	Common name	Red List status	NEM:BA
<i>Balearica regulorum</i>	Grey Crowned Crane	Endangered	Endangered
<i>Zoothera guttata</i>	Natal Thrush	Endangered	-
<i>Campethera notata</i>	Knysna Woodpecker	Near Threatened	-
<i>Neotis denhami</i>	Denham's Bustard	Near Threatened	Protected
<i>Polemaetus bellicosus</i>	Martial Eagle	Near Threatened	-
<i>Coracias garrulus</i>	European Roller	Near Threatened	-
<i>Phalacrocorax capensis</i>	Cape Cormorant	Near Threatened	-
<i>Puffinus griseus</i>	Sooty Shearwater	Near Threatened	-
<i>Stephanoaetus coronatus</i>	Crowned Eagle	Near Threatened	-
<i>Bradypterus sylvaticus</i>	Knysna Scrub-Warbler	Near Threatened	-
<i>Bucorvus leadbeateri</i>	Southern Ground-hornbill	Near Threatened	-
<i>Geronticus calvus</i>	Southern Bald Ibis	Near Threatened	Vulnerable
<i>Gyps coprotheres</i>	Cape Vulture	Near Threatened	Endangered
<i>Morus capensis</i>	Cape Gannet	Near Threatened	-
<i>Procellaria aequinoctialis</i>	White-chinned Petrel	Near Threatened	-
<i>Circus maurus</i>	Black Harrier	Vulnerable	-
<i>Sagittarius serpentarius</i>	Secretary Bird	Vulnerable	-

8.4.3 Mammals

It is unlikely that there are any large mammals remaining in the study area. Mammals that still occur in the area are likely to be limited to small (e.g. rodents) and the occasional medium sized animals such as duiker.

8.4.4 Faunal species of conservation concern

Although not observed on site, there is a possibility that the following faunal SCC may be found:

Common name	Scientific name
Rough-haired Golden Mole	<i>Chrysospalax villosus</i>
Maquassie Musk Shrew	<i>Crocidura maquassiensis</i>
White Tailed Mouse	<i>Mystromys albicaudatus</i>
Sclaters forest Shrew	<i>Myosorex sclateri</i>
Forest Shrew	<i>Myosorex varius</i>

8.5 Conservation and spatial planning tools

8.5.1 Eastern Cape Biodiversity Conservation Plan

The Eastern Cape Biodiversity Conservation Plan (ECBCP) is a first attempt at detailed, low-level conservation mapping for land-use planning purposes. Specifically, the aims of the Plan were to map critical biodiversity areas through a systematic conservation planning process. The current biodiversity plan includes the mapping of priority aquatic features, land-use pressures, and critical biodiversity areas which develops guidelines for land and resource-use planning and decision-making.

The ECBCP maps Critical Biodiversity Areas (CBAs) based on extensive biological data and input from key stakeholders. CBA 1 and 2, as defined by the ECBCP, form the foundation areas where conservation is priority. CBAs provide essential ecosystem services and provide the spatial framework for future spatial development planning, particularly indicating those areas where development needs to be avoided or at best, carefully managed. The ECBCP, although mapped at a finer scale than the National Spatial Biodiversity Assessment (Driver et al., 2005) is still, for the large part, inaccurate and "course". Therefore it is imperative that the status of the environment, for any proposed development MUST first be verified before the management recommendations associated with the ECBCP are considered (Berliner and Desmet, 2007). In spite of these short-comings, the ECBCP has been adopted by the provincial department of Economic Development, Environmental Affairs and Tourism (DEDEAT) as a strategic biodiversity plan for the Eastern Cape.

Figure 8.8 illustrates that the ECBCP has classified the entire area as a CBA 2 area which states that the environment must be managed in a near natural state. A site visit confirmed that both proposed borrow pit areas are degraded and shows signs of intensive grazing as well as historical planting (tilling of soils) and urban development (remnants of old huts). Grassland onsite is secondary in nature with various "other" graminoids (other than Ngongoni grass) dispersed throughout the site areas. Based on the site assessment, all these areas are allocated a **low sensitivity**.

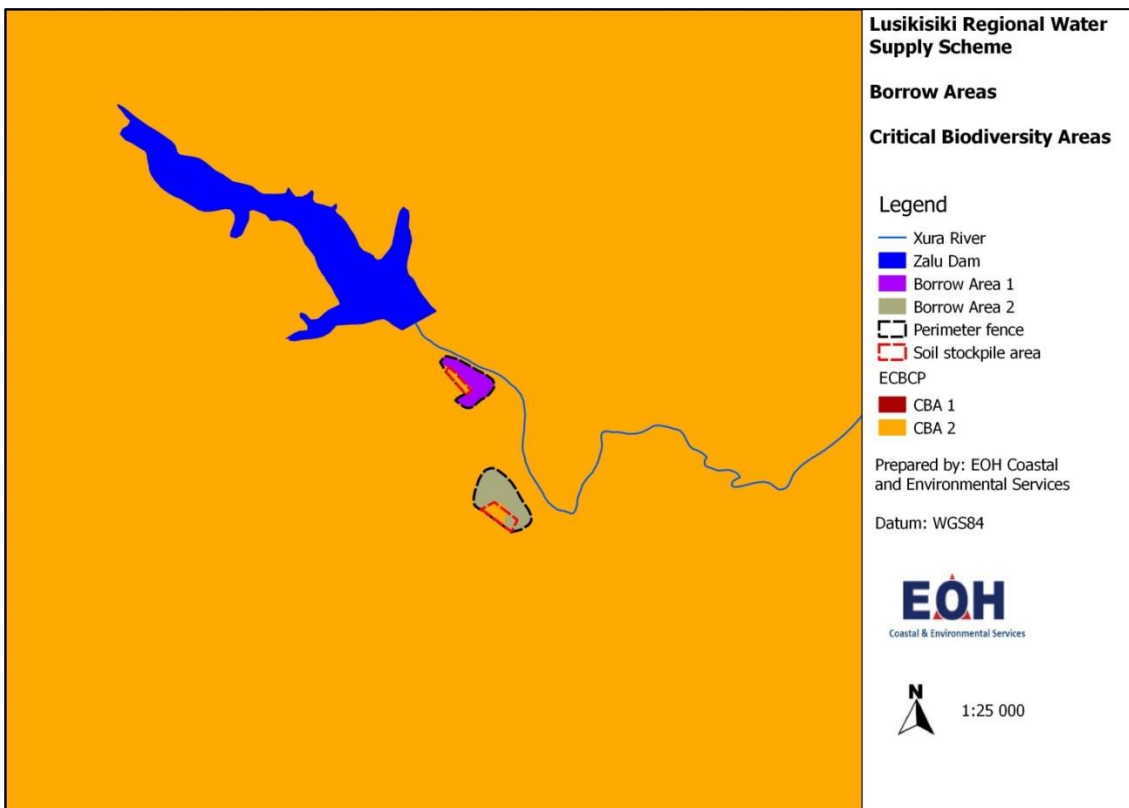


Figure 8.8: ECBCP map of the study area.

8.6 Socio-Economic Profile

The proposed borrow pits fall within the IHLM in the OR Tambo District Municipality, Eastern Cape. The IHLM covers an area of 2,477 km² and comprises the magisterial areas of Lusikisiki and Flagstaff.

8.6.1 Population

According to StatsSA (2011) the total population in the IHLM is 278 481, which is 20,4% of the O R Tambo Districts population. Males constitute 46% of the population (128 974) and females constitute 54% of the population (149 507). 42,4% of the population are age 14 or younger.

There seems to be an out-migration of economically active people in the age group of 20-34 years. This highlights the need for economic investment in order to retain an active workforce and a healthy male-to-female ratio in the area. According to the IHLM IDP, the “high number of young people... leaving the area... suggests that service provision and social upliftment should be targeted at the youth and should be an important consideration for development.” (IHLM IDP Review, 2014-2015).

8.6.2 Employment

According to the IHLM IDP the IHLM is the second highest contributor to the ORTDM’s GGP, after King Sabata Dalindyebo Local Municipality, and accounts for 9,4% of the GGP contribution to the District Municipality (IHLM, 2006). The government sector makes a significant contribution to the IHLM GGP of the municipality with a total contribution of 56%, followed by wholesale (8,7%), retail (7,8%) and agriculture & hunting at 7,4%. The remaining sectors have a contribution of less than 5% each which hampers the economic growth of the area.

According to StatsSA (2011) the unemployment rate in the IHLM is 51,6% and the youth unemployment rate is 60,6% (Figure 8.9). 17,6% of the population receive no income.

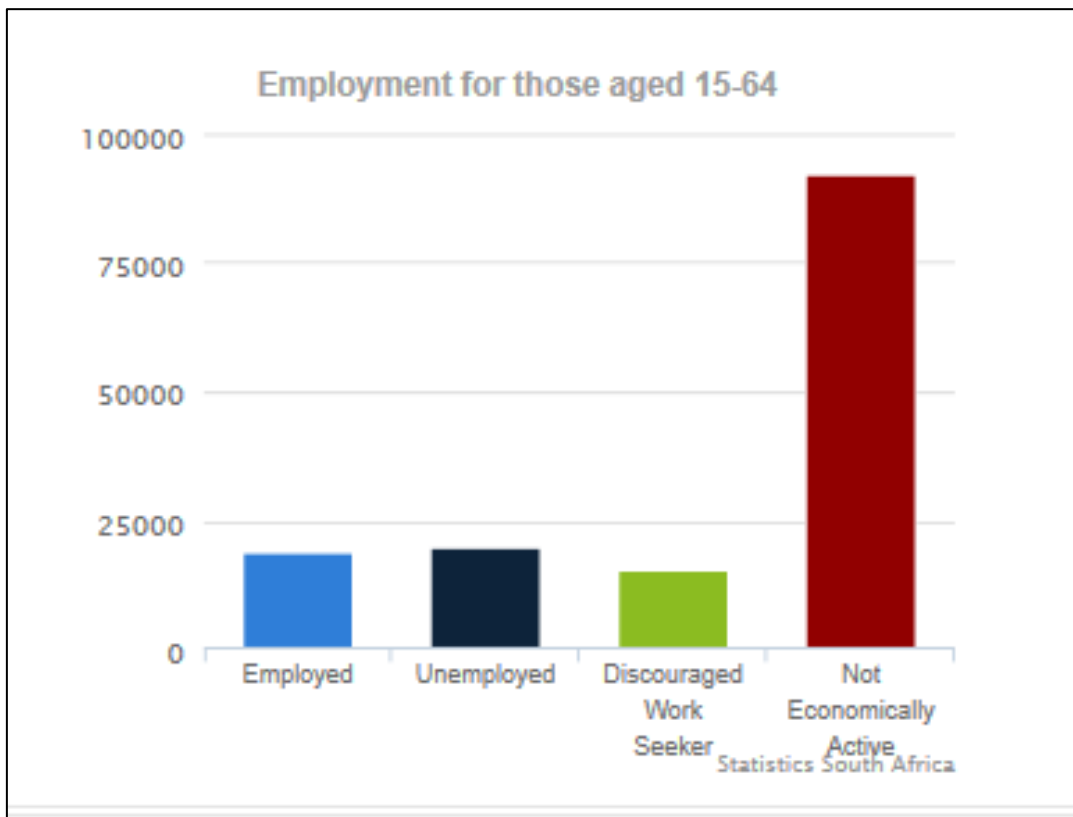


Figure 8.9: Employment in the IHLM (StatsSA, 2011).

8.6.3 Education

The level of education in the IHLM is very low. Only 0,3% of the IHLM population have education higher than matric, 4,5% have completed high school, 7,2% have completed primary school and 3,5% of the population have received no schooling (StatsSA, 2011).

9. APPROACH TO THE ENVIRONMENTAL IMPACT ASSESSMENT

In terms of APPENDIX 3(3) of the EIA Regulations (2014), an Environmental Impact Assessment Report must include –

- (h) A full description of the process followed to reach the proposed development footprint within the approved site, including:
- (vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks.

In line with the above-mentioned legislative requirement, this chapter of the EIR details the approach to the EIA phase of the proposed borrow pits with a particular focus on the methodology that was used when determining the significance of potential environmental impacts.

9.1 General Impact Assessment

A general impact assessment was conducted based on site visits and information relating to the planning and design, site establishment (construction), mining (operation) and decommissioning/closure of the proposed borrow pits.

9.2 Specialist Impact Assessments

A series of specialist studies were conducted during the EIA for the proposed borrow pits. These specialist studies included the proposed borrow pit sites in their assessment. The outcomes will be summarised in this EIR. Specialist studies that will be incorporated in this EIR:

- Ecological Impact Assessment
- Heritage Impact Assessment
- Paleontological Impact Assessment
- Social Impact Assessment

9.3 Methodology for Assessing Impacts and Alternatives

Introduction

Identified impacts will be assessed against the following criteria:

- Temporal scale
- Spatial scale
- Risk or likelihood
- Degree of confidence or certainty
- Severity or benefits
- Significance

The relationship of the issue to the temporal scale, spatial scale and the severity are combined to describe the overall importance rating, namely the significance of the assessed impact.

9.3.1 Description of criteria

Table 9.1: Significance Rating Table

Significance Rating Table	
Temporal Scale (The duration of the impact)	
Short term	Less than 5 years (Many mining phase impacts are of a short duration).
Medium term	Between 5 and 20 years.
Long term	Between 20 and 40 years (From a human perspective almost permanent).
Permanent	Over 40 years or resulting in a permanent and lasting change that will always be there.
Spatial Scale (The area in which any impact will have an affect)	
Localised	Impacts affect a small area of a few hectares in extent. Often only a portion of the project area.
Study area	The proposed site and its immediate environs.
Municipal	Impacts affect the local municipality(s), or any towns within them.
Regional	Impacts affect the wider district municipality or the province as a whole.
National	Impacts affect the entire country.
International/Global	Impacts affect other countries or have a global influence.
Likelihood (The confidence with which one has predicted the significance of an impact)	
Definite	More than 90% sure of a particular fact. Should have substantial supportive data.
Probable	Over 70% sure of a particular fact, or of the likelihood of that impact occurring.
Possible	Only over 40% sure of a particular fact, or of the likelihood of an impact occurring.
Unsure	Less than 40% sure of a particular fact, or of the likelihood of an impact occurring.

Table 9.2: Impact Severity Rating

Impact severity (The severity of negative impacts, or how beneficial positive impacts would be on a particular affected system or affected party)	
Very severe	Very beneficial
An irreversible and permanent change to the affected system(s) or party(ies) which cannot be mitigated. For example the permanent loss of land.	A permanent and very substantial benefit to the affected system(s) or party(ies), with no real alternative to achieving this benefit. For example the vast improvement of sewage effluent quality.
Severe	Beneficial
Long term impacts on the affected system(s) or party(ies) that could be mitigated. However, this mitigation would be difficult, expensive or time consuming, or some combination of these. For example, the clearing of forest vegetation.	A long term impact and substantial benefit to the affected system(s) or party(ies). Alternative ways of achieving this benefit would be difficult, expensive or time consuming, or some combination of these. For example an increase in the local economy.
Moderately severe	Moderately beneficial
Medium to long term impacts on the affected system(s) or party (ies), which could be mitigated. For example constructing a sewage treatment facility where there was vegetation with a low conservation value.	A medium to long term impact of real benefit to the affected system(s) or party(ies). Other ways of optimising the beneficial effects are equally difficult, expensive and time consuming (or some combination of these), as achieving them in this way. For example a 'slight' improvement in sewage effluent quality.
Slight	Slightly beneficial
Medium or short term impacts on the affected system(s) or party(ies). Mitigation is very easy, cheap, less time consuming or not necessary. For example a temporary fluctuation in the water table due to water abstraction.	A short to medium term impact and negligible benefit to the affected system(s) or party(ies). Other ways of optimising the beneficial effects are easier, cheaper and quicker, or some combination of these.
No effect	Don't know/Can't know
The system(s) or party(ies) is not affected by the proposed development.	In certain cases it may not be possible to determine the severity of an impact.

Table 9.3: Overall Significance Rating

Overall Significance (The combination of all the above criteria as an overall significance)	
VERY HIGH NEGATIVE	VERY BENEFICIAL
<p>These impacts would be considered by society as constituting a major and usually permanent change to the (natural and/or social) environment, and usually result in severe or very severe effects, or beneficial or very beneficial effects.</p> <p>Example: The loss of a species would be viewed by informed society as being of VERY HIGH significance.</p> <p>Example: The establishment of a large amount of infrastructure in a rural area, which previously had very few services, would be regarded by the affected parties as resulting in benefits with VERY HIGH significance.</p>	
HIGH NEGATIVE	BENEFICIAL
<p>These impacts will usually result in long term effects on the social and/or natural environment. Impacts rated as HIGH will need to be considered by society as constituting an important and usually long term change to the (natural and/or social) environment. Society would probably view these impacts in a serious light.</p> <p>Example: The loss of a diverse vegetation type, which is fairly common elsewhere, would have a significance rating of HIGH over the long term, as the area could be rehabilitated.</p> <p>Example: The change to soil conditions will impact the natural system, and the impact on affected parties (such as people growing crops in the soil) would be HIGH.</p>	
MODERATE NEGATIVE	SOME BENEFITS
<p>These impacts will usually result in medium to long term effects on the social and/or natural environment. Impacts rated as MODERATE will need to be considered by society as constituting a fairly important and usually medium term change to the (natural and/or social) environment. These impacts are real but not substantial.</p> <p>Example: The loss of a sparse, open vegetation type of low diversity may be regarded as MODERATELY significant.</p>	
LOW NEGATIVE	FEW BENEFITS
<p>These impacts will usually result in medium to short term effects on the social and/or natural environment. Impacts rated as LOW will need to be considered by the public and/or the specialist as constituting a fairly unimportant and usually short term change to the (natural and/or social) environment. These impacts are not substantial and are likely to have little real effect.</p> <p>Example: The temporary changes in the water table of a wetland habitat, as these systems are adapted to fluctuating water levels.</p> <p>Example: The increased earning potential of people employed as a result of a development would only result in benefits of LOW significance to people who live some distance away.</p>	
NO SIGNIFICANCE	
<p>There are no primary or secondary effects at all that are important to scientists or the public.</p> <p>Example: A change to the geology of a particular formation may be regarded as severe from a geological perspective, but is of NO significance in the overall context.</p>	
DON'T KNOW	
<p>In certain cases it may not be possible to determine the significance of an impact. For example, the primary or secondary impacts on the social or natural environment given the available information.</p> <p>Example: The effect of a particular development on people's psychological perspective of the environment.</p>	

10. KEY FINDINGS OF THE SPECIALIST STUDIES

In terms of APPENDIX 3(3) of the EIA Regulations (2014), an Environmental Impact Assessment Report must include –

- (k) A summary of the findings and recommendations of 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 assessment report.**

The following discussion summarises the key findings of the specialist studies. Full reports have been attached in Appendix C of the EIR. The relevant impacts and mitigation measures from these specialist studies have been included in the Impact Assessment of this report.

10.1 Specialist studies

The following Specialist Studies have been completed for the EIA Phase:

- **Ecological Impact Assessment:** Mr Roy de Kock from EOH CES
- **Heritage Impact Assessment:** Mr Gavin Anderson from Umlando
- **Paleontological Impact Assessment:** Dr Gideon Groenewald
- **Social Impact Assessment:** Mr Lungisa Bosman and Dr Greer Hawley from EOH CES

10.1.1 Ecological Impact Assessment

Ecological Specialist

Mr Roy de Kock, from EOH CES, was appointed to conduct an ecological specialist assessment.

Approach

The study site and surrounding areas were assessed using a two-phased approach. Firstly, a desktop assessment of the site was conducted in terms of current vegetation classifications and biodiversity programmes and plans. This included the consideration of:

- Vegetation Map of South Africa, Lesotho and Swaziland
- Eastern Cape Biodiversity Conservation Plan (ECBCP)
- South African National Biodiversity Institute (SANBI) wetlands database

Further to the above, site visits were conducted on the 2nd and 3rd of November 2015 in order to assess the actual ecological state, current land-use, identify potential sensitive ecosystems and identify plant species on the project site. The site visits also served to inform potential impacts of the proposed project and how it would significantly impact on the surrounding ecological environment.

Results

The site survey indicated that the vegetation of the study sites is mostly degraded and transformed as a result of previous land use such as agriculture and grazing. Some SCC were observed onsite and will require permits before they can be removed. Both borrow areas are surrounded by wetlands and river and stream systems which will require careful management to minimise impacts.

Recommendations

All the mitigation measures provided below are to be implemented in the Planning and Design, Site Establishment and Mining Phases for the two borrow areas.

Planning and Design Phase

The following conditions associated with Planning and Design Phase must be implemented:

Issue: Loss of natural vegetation

- The borrow pit sites must be selected so that any sensitive ecological features are avoided.
- The borrow pit sites must be clearly demarcated prior to the site establishment and mining phases to prevent the unnecessary clearing of natural vegetation outside of the designated borrow pit sites.

Issue: Loss of SCC

- Road design should avoid areas where plant and animal SCC have been identified.
- If unavoidable, permits must be obtained from the relevant departments in order to remove plant and animal SCC from the development area prior to mining.
- The developer must develop a Vegetation and Animal Relocation Plan.

Issue: Damage to the riverine systems

- The design of the access road and borrow pits must ensure that appropriate stormwater structures are included in the road and borrow pit designs to manage stormwater and to minimise erosion and sedimentation of watercourses.
- The design of the access road must ensure that all road sections situated on slopes incorporate stormwater diversion.
- The road engineer must ensure that all stormwater structures are designed in line with both DMR and DWS requirements.
- If any planned mining takes place inside or within 50 meters of any river, stream or drainage system, or within 500m of a wetland, authorisation in terms of the National Water Act (Act No. 36 of 1998) must be obtained from DWS.

Issue: Soil erosion

- Appropriate stormwater structures must be designed and implemented to minimise erosion risks.
- All infrastructure situated on slopes must incorporate stormwater diversions.

Issue: Control of alien species

- A Rehabilitation and Alien Management Plan must be developed prior to any activities associated with the borrow pits commencing.

Site Establishment Phase

The following conditions associated with the Site Establishment Phase must be implemented:

Issue: Soil erosion

- Bank restoration, re-vegetation and stabilisation must be implemented once site establishment is complete and must include the use of gabions for bank stabilisation if required.
- Cement, concrete and chemicals must be mixed on an impermeable surface and provision should be made to contain spillages or overflows into the soil. Mixed cement/concrete must not be allowed to flow into any watercourses.
- No cement must be mixed within 100m of a watercourse.

- Any storage tanks containing hazardous materials must be placed in bunded containment areas with sealed surfaces. The bund walls must be high enough to contain 110% of the total volume of the stored hazardous material.
- Contaminated soil must be contained and disposed of off-site at an approved landfill site.
- Any hazardous substances must be stored at least 100m from any of the water bodies on site.
- Drip trays must be placed under all stationary machinery to avoid soil contamination from oil and fuel leaks.
- Drip trays must be placed under vehicles during refuelling.
- Vehicles must be washed in a designated and bunded wash bay to avoid soil contamination.

Issue: Control of alien plant species

- A Rehabilitation and Alien Management Plan must be developed and implemented during the site establishment phase to reduce the establishment and spread of undesirable alien plant species.
- Alien plants must be removed from the site through appropriate methods such as hand pulling, application of chemicals, cutting etc. This must be done under the supervision of the ECO.

Mining Phase

The following conditions associated with the Mining Phase must be implemented:

Issue: Loss of natural vegetation

- The entire site must be rehabilitated to natural Ngongoni Veld after completion of all mining activities.
- Mining activities must be limited to the designated footprint of the mining site i.e. mining minerals, stockpiles, vehicular storage, borrow pit camps etc., must only occur in the designated mining area.
- The mining site must be demarcated prior to mining commencing.
- The mining footprint must be approved by an ECO to ensure that natural vegetation is not unnecessarily damaged.

Issue: Loss of SCC

- No SCC must be removed outside the approved demarcated mining areas.
- No vegetation removal must occur outside the approved demarcated mining area.
- The contractor's workers must not poach or trap wild animals.
- The contractor's workers must not harvest natural vegetation.
- All SCC must be removed according to the approved Vegetation and Animal Relocation Plan
- Permits must be obtained for the removal of all SCC prior to commencement of mining activities onsite.

Issue: Damage to riverine systems

- If any mining activity occurs within 50 meters of a river, stream or drainage system, or within 500m of a wetland, authorisation must be obtained from DWS.
- No mining must be done within any waterbody.
- Silt fences should be used to prevent soil eroding from nearby mining activities reaching watercourses.
- Wet cement must not be allowed to come into contact with any watercourse.
- Borrow pit staff must not use any open water body or natural water source adjacent to the mining site for the purposes of bathing, washing of clothing or for any site establishment related activities.
- All mine-water and contaminated runoff must be directed away from the watercourses.

Issue: Soil erosion

- Bank restoration, re-vegetation and stabilisation must be implemented and inspected regularly during mining and must include the use of gabions for bank stabilisation if required.
- Issue: Spillages of harmful substances
- Cement, concrete and chemicals must be mixed on an impermeable surface and provisions should be made to contain spillages or overflows into the soil. Mixed cement/concrete must not be allowed to flow into any watercourses.
- No cement must be mixed within 100m of a watercourse.
- Any storage tanks containing hazardous materials must be placed in bunded containment areas with sealed surfaces. The bund walls must be high enough to contain 110% of the total volume of the stored hazardous material.
- Contaminated soil must be contained and disposed of off-site at an approved landfill site.
- Any hazardous substances must be stored at least 100m from any of the water bodies on site.
- Drip trays must be placed under all stationary machinery to avoid soil contamination from oil and fuel leaks.
- Drip trays must be placed under vehicles during refuelling.
- Vehicles must be washed in a designated and bunded wash bay to avoid soil contamination.

Issue: Control of alien plant species

- A Rehabilitation and Alien Management Plan must be developed and implemented during the mining phase to reduce the establishment and spread of undesirable alien plant species.
- Alien plants must be removed from the site through appropriate methods such as hand pulling, application of chemicals, cutting etc. This must be done under the supervision of the ECO.

Issue: Rehabilitation of disturbed areas

- All impacted areas must be rehabilitated back to Ngongoni veld after mining.
- Only topsoil from the immediate area must be used for rehabilitation. If none available alternative methods must be investigated and implemented like hydro-seeding, planting etc.
- All mined areas must be restored as per the Rehabilitation and Alien Management Plan.

Decommissioning Phase

The following conditions associated with the Decommissioning Phase must be implemented:

Issue: Control of alien species

- A Rehabilitation and Alien Management Plan must be developed and implemented during the decommissioning and closure phase to reduce the establishment and spread of undesirable alien plant species.
- Alien plants must be removed from the site through appropriate methods such as hand pulling, application of chemicals, cutting etc. This must be done under the supervision of the ECO.

Issue: Rehabilitation of disturbed areas

- All impacted areas must be rehabilitated back to Ngongoni veld after mining.
- Only topsoil from the immediate area must be used for rehabilitation. If none available alternative methods must be investigated and implemented like hydro-seeding, planting etc.
- All mined areas must be restored as per the Rehabilitation and Alien Management Plan.

10.1.2 Heritage Impact Assessment




Heritage Specialist

Mr Gavin Anderson, from Umlando, was appointed to conduct a heritage specialist assessment.

Approach

The first step in the Heritage Impact Assessment (HIA) is a desktop assessment. This involves consultation of the Umlando database which contains archaeological site locations and basic information from several provinces. The database is in Google Earth format and is thus used as a quick reference when undertaking desktop studies. Local data recording centres, a historical architect, palaeontologist and a historian are also consulted where necessary. The field survey results then define the significance of each recorded site as well as a management plan. All sites are grouped according to low, medium and high significance.

Results

<u>Access road to borrow pit 1 (LSS032):</u>	
	<p>The site consists of a sunken stone cairn that may be a grave. Although there are remnants of house foundations, the field has been ploughed. The cairn is 110m from the Zalu Dam high water mark. The access road to borrow pit 1 will not affect the suspected grave (Figure 10.1).</p> <p><u>Significance:</u> The site is of high significance</p> <p><u>SAHRA Rating:</u> 3A if a grave</p>
<u>Borrow pit 2 (LSS033):</u>	
	<p>The site consists of a church that post-dates 1980 (Figure 10.2). The church is located in near the area designated for Borrow Pit 2. The church will not be impacted by the borrow pit.</p> <p><u>Significance:</u> The building is of low significance. However, it is attached to a place of spiritual activity and thus may be of high local significance.</p> <p><u>SAHRA Rating:</u> 3C</p>
<u>Borrow pit 2 (LSS034):</u>	
	<p>The site consists of a large cemetery near the church at LS033 and the village of Pamalitoli (Figure 10.3). The cemetery will not be impacted by the borrow pit.</p> <p><u>Significance:</u> The site is of high significance</p> <p><u>SAHRA Rating:</u> 3A</p>
Figure 10.1: possible grave at LSS032.	
Figure 10.2: church at LSS039.	
Figure 10.3: cemetery at LSS034.	

Borrow pit 1 (LSS061):



The site is located in the proposed Borrow Pit 1. The site consists of an area of terracing with scattered artefacts. These artefacts include Middle Stone Age flakes, a lower grinding stone and pottery shards (Figure 10.4). The artefacts are all in a secondary context. The terracing is for houses, and as a result, human graves might occur in the borrow pit

Significance: The site is of high significance

SAHRA Rating: 3A

Figure 10.4: artefacts at LSS061.

Recommendations

With regards to the access road to borrow pit 1, the Heritage Specialist noted that the nearby grave (LSS032) will not be directly impacted and no mitigation measures were required. The Heritage Specialist recommended that the borrow pit 2 avoid the church (LSS033) and graves (LSS034) within the proposed site. Although no mitigation measures were recommended by the Heritage Specialist for borrow pit 1 (LSS061), it was recommended that the area must still be noted as sensitive for potential human remains.

The recommendations of the Heritage Specialist were considered and the layout of borrow pit 2 was changed to avoid the sensitive heritage sites identified in the Heritage Impact Assessment (Figure 10.5).

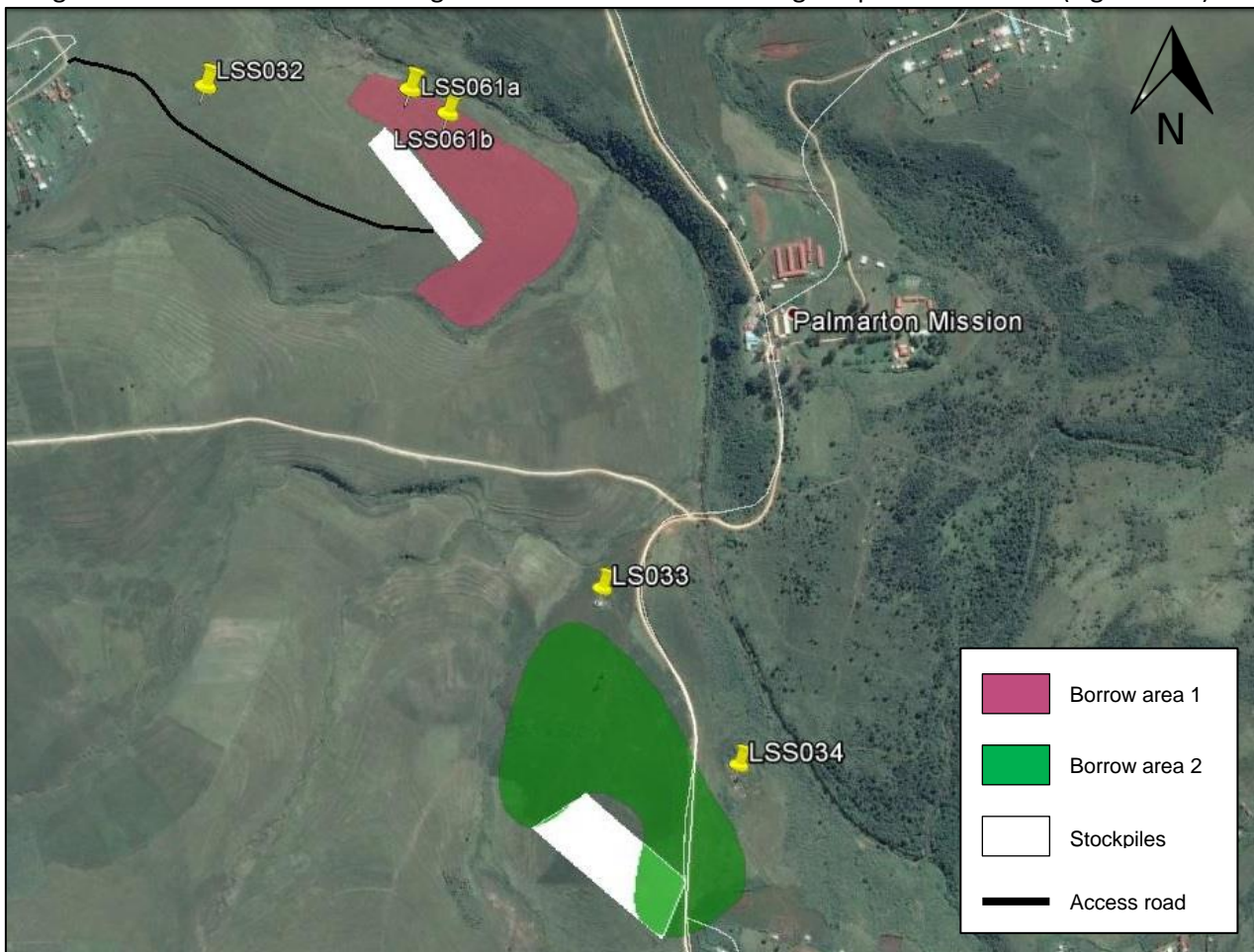


Figure 10.5: The borrow pit layouts (indicated in red) with heritage sites nearby.

The historical sites noted from the desktop study may yield human remains. The nature of the older human graves in this area is that they are subsurface, and unmarked. That is, it will not be possible to note their exact locations, and only those areas where they might occur. Each settlement should have a 50m sensitivity radius placed around it for potential human remains.

For the duration of the project, several steps will need to be followed if graves are uncovered. If human graves are uncovered during the course of earthmoving activity, then both the police and ECPHRA need to be contacted immediately. All site establishment activity in the area needs to stop. A heritage specialist must be appointed to apply for a permit to handle any heritage artefacts uncovered during the project.

10.1.3 Paleontological Impact Assessment

Paleontology Specialist

Dr Gideon Groenewald was appointed by EOH CES to conduct a paleontological specialist assessment

Approach

A Phase 1 Paleontological investigation was undertaken for the proposed project. A preliminary desktop assessment was conducted where the topography and geology of the study area was described. Appropriate 1:250 000 geographical maps (3128 Umtata) and Google Earth satellite imagery was used. Potential fossiliferous rock units (groups, formations etc.) were identified within the study area and the known fossil heritage within each rock unit was inventoried from the published scientific literature, previous paleontological impact studies in the same region and the paleontological specialist's field experience. Priority paleontological areas were then identified within the development footprint prior to conducting a site visit.

A site visit was conducted which aimed to document any exposed fossil material and to assess the paleontological potential of the region in terms of the type and extent of rock outcrop in the area.

The likely impact of the proposed development on local fossil heritage was determined on the basis of the paleontological sensitivity of the rock units concerned and the nature and scale of the development itself, most notably the extent of fresh bedrock excavation envisaged.

Results

The borrow pits are primarily characterised by igneous dolerite, which will not contain fossils and is rated as having a low sensitivity by the paleontologist. Dolerite quarries for provision of material for road fill and hard rock (Figure 10.6) will not contain fossils.



Figure 10.6: Dolerite outcrop at borrow pit 1.

Recommendations

If fossils are recorded, the palaeontologist, Eastern Cape Heritage Authority and SAHRA must be notified and the fossils recorded according to SAHRA specification. No further mitigation for Palaeontological Heritage needs to be planned for this project.

10.1.4 Social Impact Assessment

Social Specialist

Mr Lungisa Bosman and Dr Greer Hawley of EOH CES conducted a social specialist assessment for the LRWSS (incorporating the borrow areas).

Approach

The Social Impact Assessment has been drafted in accordance with the South African EIA regulatory requirements, as guided by Chapter 5 of NEMA. By assessing the Project-Affected Communities (PACs), the report describes the area's socio-economic environment and analyses the potential socio-economic impacts of the project on these PACs. In doing so, it provides guidelines for limiting or mitigating negative impacts and optimising potential benefits.

The report is based largely on primary data gathered by means of qualitative focus group discussions, meetings and key individual interviews held during March and August 2014. Data has also been supplemented with an analysis of the South African Household Census Data of 2011, as well as secondary literature sources.

Results

Taking into account many perspectives from a variety of interest groups and stakeholders, the PAC members and the IHLM appear to be receptive of the LRWSS development. Some of the most important reasons in favour of the project include:

- The need for water supply in most villages;
- The possibility for the project to provide employment opportunities for locals; and
- The need to upgrade existing infrastructure – there will be an upgrade of the current Water Treatment Works (WTW) and supporting infrastructure.

Four main issues were raised by communities affected by the project:

1. Influx of job seekers
2. Impact on health and general quality of life
3. Loss of land due to construction
4. Stimulation of economic growth

Recommendations

Although a number of high negative impacts have been identified in the study, it is expected that the positive impacts will outweigh the negative impacts. Negative impacts can be adequately mitigated and managed through proper monitoring, stakeholder engagement and the involvement of affected communities from the inception of the project.

10.2 Sensitivity assessment

A sensitivity map of the study area is provided in Figure 10.7 below. This map was developed based on site visits and the relevant specialist reports. The area in which the proposed borrow pit sites are located have a high sensitivity due to the **Vulnerable** status of the Ngongoni Veld as classified by NEMBA. However, site visits confirmed that the proposed project area has been transformed as a result of agricultural activities, grazing of livestock and active clearing and burning for improved pastures. Therefore, due to the transformed nature of the proposed project area, the sensitivity of the Ngongoni Veld has been classified as **Moderate**.

Areas of high sensitivity surrounding the borrow pits (as indicated in red in the sensitivity map below) and rivers, drainage lines, wetlands and scarp forests. The identified heritage sites have also been indicated on the sensitivity map.

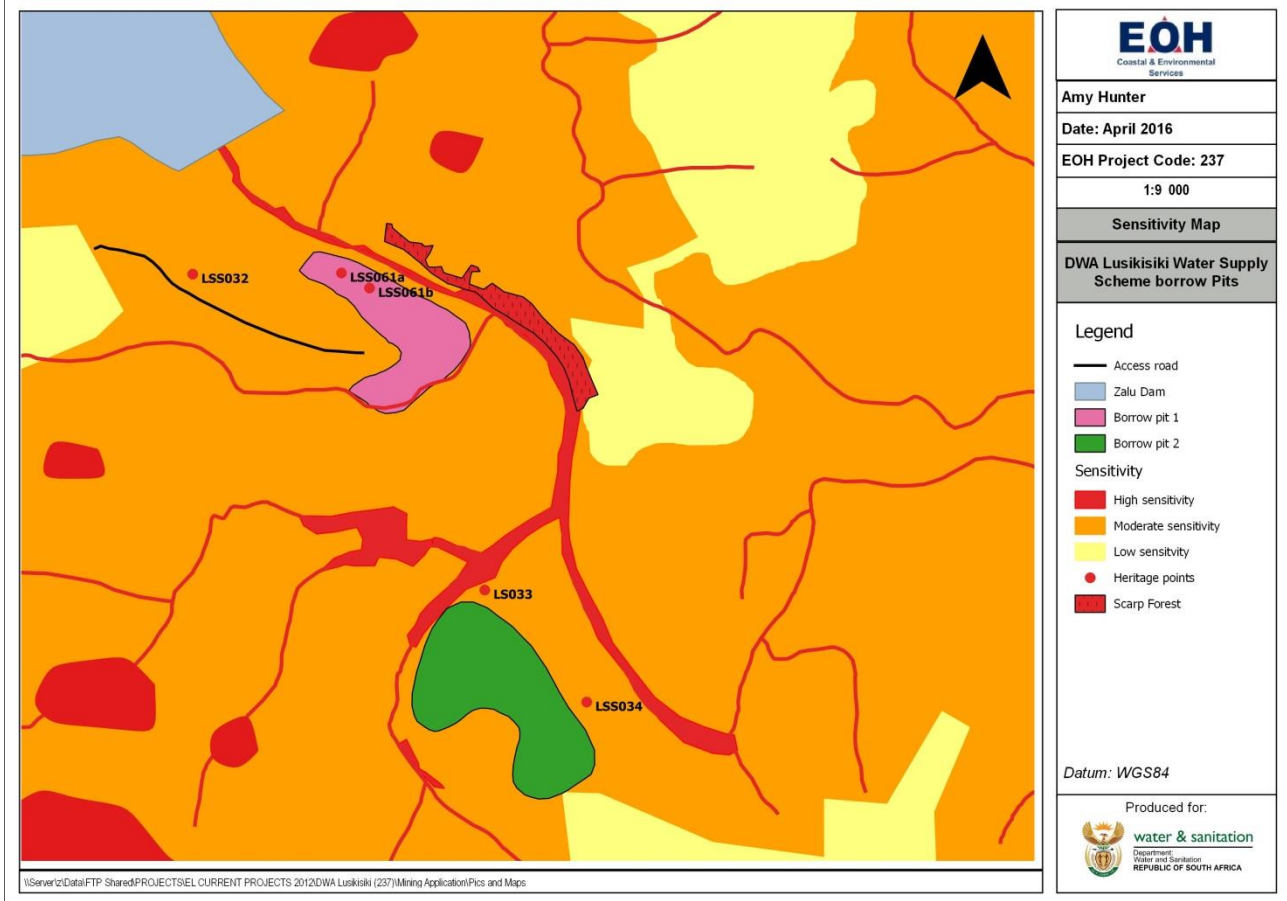


Figure 10.7: Sensitivity map of the study area.

11. IMPACT ASSESSMENT

In terms of APPENDIX 3(3) of the EIA Regulations (2014), an Environmental Impact Assessment Report must include –

- h) A full description of the process followed to reach the proposed development footprint within the approved site, including –
 - (v) The impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts –
 - Can be reversed;
 - May cause irreplaceable loss of resources; and
 - Can be avoided, managed or mitigated;
 - (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;
- i) A full description of the process undertaken to identify, assess and rank the impacts that the activity and associated structures and infrastructure will impose on the preferred location through the life of the activity, including –
 - A description of all environmental issues and risks that were identified during the environmental impact process; and
 - 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.
- (j) An assessment of each identified potentially significant impact and risk, including –
 - Cumulative impacts;
 - The nature, significance and consequences of the impact and risk;
 - The extent and duration of the impact and risk;
 - The probability of the impact and risk occurring;
 - The degree to which the impact and risk can be reversed;
 - The degree to which the impact and risk may cause irreplaceable loss of resources;
 - The degree to which the impact and risk can be mitigated.

11.1 Environmental Issues and Impacts

The impact assessment for the proposed borrow pits was conducted in two parts:

- General Impact Assessment
- Specialist Impact Assessment

The general impact assessment and specialist impact assessments were combined into one table per phase and a detailed assessment of all impacts and mitigation measures is available in **Appendix B**.

11.1.1 General Impact Assessment

The general impact assessment identified and assessed impacts across four phases of borrow pit development:

- Planning & Design Phase
- Site Establishment Phase
- Mining Phase
- Closure Phase

General issues identified that were not covered in the specialist studies such as:

- Legislation and policy compliance
- Borrow pit design
- Topography
- Stormwater
- Visual intrusion
- Sanitation
- Demarcation of borrow pit sites
- Hazardous substances
- Waste management
- Dust and noise issues
- Access control
- Final rehabilitation and decommissioning
- Closure

11.1.2 Specialist Impact Assessment

The specialist impact assessment covered issues identified by the following specialist studies:

- Ecological Impact Assessment
- Heritage Impact Assessment
- Paleontological Impact Assessment
- Social Impact Assessment

11.1.3 Summary of findings

The various issues and impacts that were identified are summarised in table 11.1 and 11.2 below.

Table 11.1: Summary of the issues identified and their applicability in each phase.

Theme	Applicability to phase			
	Planning and Design	Site Establishment	Mining	Decommissioning
GENERAL IMPACTS				
Legislation and Policy Compliance	YES • Failure to comply with relevant policies and legal obligations.	YES • Failure to comply with relevant policies and legal obligations.	YES • Failure to comply with relevant policies and legal obligations.	N/A
Borrow Pit Design	YES • Inappropriate Borrow Pit Design	N/A	N/A	N/A
Stormwater	YES • Inadequate provision of stormwater control	YES • Inadequate provision of stormwater control	YES • Inadequate provision of stormwater control	N/A

Theme	Applicability to phase			
	Planning and Design	Site Establishment	Mining	Decommissioning
Visual intrusion	YES <ul style="list-style-type: none">Inappropriate, visually intrusive borrow pit design	YES <ul style="list-style-type: none">Visual intrusion associated with site establishment activities	YES <ul style="list-style-type: none">Visual intrusion associated with mining activities	N/A
Sanitation	N/A	N/A	YES <ul style="list-style-type: none">Inappropriate siting and servicing of sanitation facilities	N/A
Demarcation of the borrow pit sites site	N/A	YES <ul style="list-style-type: none">Inadequate demarcation and fencing off of the borrow pit sites	YES <ul style="list-style-type: none">Encroachment of mining activities outside demarcated area	N/A
Hazardous substances	YES <ul style="list-style-type: none">Inappropriate provision for hazardous waste management	N/A	YES <ul style="list-style-type: none">Spillage of hazardous substances	N/A
Waste management	YES <ul style="list-style-type: none">Inadequate provision for waste management	N/A	YES <ul style="list-style-type: none">Littering on site	N/A
Dust and noise	N/A	YES <ul style="list-style-type: none">Creation of excessive dust and noise	YES <ul style="list-style-type: none">Creation of excessive dust and noise	N/A
Access control	YES <ul style="list-style-type: none">Inadequate provision of access control measures	YES <ul style="list-style-type: none">Inadequate access control measures	YES <ul style="list-style-type: none">Inadequate access control measures	N/A
Final rehabilitation and decommissioning	N/A	N/A	N/A	YES <ul style="list-style-type: none">Failure to decommission and rehabilitate properly
Closure	N/A	N/A	N/A	YES <ul style="list-style-type: none">Failure to comply with closure requirements

Theme	Applicability to phase			
	Planning and Design	Site Establishment	Mining	Decommissioning
HERITAGE IMPACTS				
Impact on sites of archaeological and cultural significance	YES <ul style="list-style-type: none"> Identified heritage sites not taken into consideration in planning of sites 	YES <ul style="list-style-type: none"> Accidental damage to already identified heritage features. Potential unidentified heritage features may be uncovered and damaged 	YES <ul style="list-style-type: none"> Damage to potential heritage features 	N/A
PALEONTOLOGICAL IMPACTS				
Impact on sites of paleontological significance	N/A	YES <ul style="list-style-type: none"> Potential exposure of and damage to fossils 	YES <ul style="list-style-type: none"> Potential exposure of and damage to fossils 	N/A
ECOLOGICAL IMPACTS				
Loss of natural vegetation	YES Unnecessary loss of natural vegetation due to poor site planning	N/A	YES <ul style="list-style-type: none"> Temporary loss of Ngongoni grassveld Unnecessary loss of natural vegetation 	N/A
Loss of SCC	YES <ul style="list-style-type: none"> Unnecessary loss of plant and animal SCC 	N/A	YES <ul style="list-style-type: none"> Unnecessary loss of plant and animal SCC 	N/A
Damage to riverine systems	YES <ul style="list-style-type: none"> Degradation of watercourses, associated natural habitats and sensitive aquatic ecosystems 	N/A	YES <ul style="list-style-type: none"> Increased levels of sedimentation and pollution of surrounding watercourses 	N/A
Soil erosion	YES <ul style="list-style-type: none"> Increase in surface soil erosion and sedimentation 	YES <ul style="list-style-type: none"> Clearing of ground cover may lead to soil erosion 	YES <ul style="list-style-type: none"> Clearing of ground cover may lead to soil erosion 	N/A
Control of alien plant species	YES <ul style="list-style-type: none"> Inadequate 	YES <ul style="list-style-type: none"> Establishment 	YES <ul style="list-style-type: none"> Large scale 	YES <ul style="list-style-type: none"> Large scale alien plant

Theme	Applicability to phase			
	Planning and Design	Site Establishment	Mining	Decommissioning
	alien plant species management plan	of undesirable alien plant species	alien plant invasion	invasion
Rehabilitation of disturbed areas	N/A	N/A	YES <ul style="list-style-type: none"> Large scale alien plant invasion and potential displacement of indigenous vegetation. 	YES <ul style="list-style-type: none"> Large scale alien plant invasion and potential displacement of indigenous vegetation.
SOCIAL IMPACTS				
Influx of job seekers	N/A	YES <ul style="list-style-type: none"> Increased community conflicts within communities and between locals and outsiders Increased social pathologies Increase and spread of HIV/AIDs and other communicable diseases Economic stimulation of and investment into business and enterprise due to an increase in demand for local services 	YES <ul style="list-style-type: none"> Increased community conflicts within communities and between locals and outsiders Increased social pathologies Increase and spread of HIV/AIDs and other communicable diseases Economic stimulation of and investment into business and enterprise due to an increase in demand for local services 	N/A
Impact on health and general quality of life	N/A	YES <ul style="list-style-type: none"> Upgrading of roads Increased demand on existing infrastructure facilities and social services Noise and dust generated by vehicle activity, blasting, borrow pit sites 	YES <ul style="list-style-type: none"> Upgrading of roads Increased demand on existing infrastructure facilities and social services Noise and dust generated by vehicle activity, blasting, borrow pit sites 	N/A

Theme	Applicability to phase			
	Planning and Design	Site Establishment	Mining	Decommissioning
		<ul style="list-style-type: none"> Reduced safety during the site establishment of the borrow pits due to high vehicle activity and potential run-away fires 	<ul style="list-style-type: none"> Reduced safety during the mining of the borrow pits due to high vehicle activity and potential run-away fires 	
Loss of land as result of the borrow pit construction	N/A	YES <ul style="list-style-type: none"> Loss of access to natural resources 	YES <ul style="list-style-type: none"> Loss of access to natural resources 	N/A
Stimulation of economic growth	N/A	YES <ul style="list-style-type: none"> Employing local labour: Job opportunities Supporting local businesses Skills training opportunities 	YES <ul style="list-style-type: none"> Employing local labour: Job opportunities Supporting local businesses Skills training opportunities 	N/A

Table 11.2: Summary of all General and Specialist Impacts.

Theme	Description of impact
Planning and Design Phase	
GENERAL IMPACTS	
Compliance with relevant environmental legislation and policy	During the planning and design phase, failure to comply with existing policies and legal obligations could lead to the project conflicting with local, provincial and national policies, legislation etc. This could result in legal non-compliance, fines, overall project failure or delays in mining activity and undue disturbance to the natural environment.
Design of the borrow pits	During the planning and design phase, inappropriately designed borrow pits could lead to subsidence, face collapses, erosion and stormwater issues during mining.
Stormwater	During the planning and design phase, inappropriate stormwater design may lead to an increase in surface soil erosion and subsequently sedimentation of the surrounding rivers and streams.
Visual intrusion	During the planning and design phase, inappropriately designed borrow pits may be visually intrusive to the communities surrounding the borrow pit sites.
Hazardous substances	During the planning and design phase, the inadequate planning for the storage, handling and spillage of hazardous substances could result in the contamination of soils and nearby water sources.
Waste management	During the planning and design phase, the inadequate planning for the storage and removal of waste from the site could result in the contamination of the surrounding environment.
Access control	During the planning and design phase, the inadequate planning of access control measures to the proposed borrow pit sites could result in unauthorised people accessing the sites, which poses a safety hazard.

Theme	Description of impact
HERITAGE IMPACTS	
Impact on sites of archaeological and cultural significance	During the planning and design phase, poor planning and consideration of the identified heritage sites could result in the loss of sites of archaeological and cultural significance.
ECOLOGICAL IMPACTS	
Loss of natural vegetation	During the planning and design phase, poor site planning and demarcation of the borrow pit sites could result in the unnecessary loss of natural vegetation.
Loss of SCC	During the planning and design phase, the mining layout at both Borrow areas may lead to the destruction of habitats and the loss of identified and unidentified plant and animal SCC.
Damage to riverine systems	During the planning and design phase, the inappropriate design of stormwater management may cause the degradation of watercourses, associated natural habitats and sensitive aquatic systems.
Soil erosion	During the planning and design phase, inappropriate stormwater design may lead to an increase in surface soil erosion.
Control of alien species	During the planning and design phase, the lack of an appropriate Rehabilitation and Alien Management Plan will result in the invasion of alien vegetation species in areas impacted on by the borrow pits.
Site Establishment Phase	
GENERAL IMPACTS	
Legislation and policy compliance	During the site establishment phase, failure to comply with existing policies and legal obligations could lead to the project conflicting with local, provincial and national policies, legislation etc. This could result in legal non-compliance, fines, overall project failure or delays in site establishment and undue disturbance to the natural environment.
Stormwater	During the site establishment phase, the inadequate provision of stormwater control measures could result in the erosion of surrounding soils and the sedimentation of nearby water resources.
Visual intrusion associated with the establishment of the borrow pit sites	During the site establishment phase, site establishment activity and the presence and use of large machinery on site and along access roads will result in a visual disturbance of the landscape.
Demarcation of the borrow pit sites	During the site establishment phase, site establishment activity and the presence and use of large machinery on site and along access roads will result in a visual disturbance of the landscape.
Dust and noise	During the site establishment phase, dust pollution caused by site establishment activities and increased traffic can cause a nuisance to surrounding communities.
	During the site establishment phase, noise pollution caused by increased traffic volumes and site establishment activities could potentially be a nuisance to surrounding communities.
Sanitation facilities	During the site establishment phase, inappropriate siting and servicing of sanitation facilities could result in contamination of surface and ground water.
Access control	During the site establishment phase, inadequate access control measures could result in unauthorised people entering the site, which poses a safety risk.
HERITAGE IMPACTS	
Impact on sites of	During the site establishment phase, there could be accidental

Theme	Description of impact
archaeological and cultural significance	damage to already identified heritage features.
	During the site establishment phase, potential unidentified heritage features may be uncovered and damaged.
<i>PALEONTOLOGICAL IMPACTS</i>	
Impact on sites of paleontological significance	During the site establishment phase, potential unidentified fossils may be uncovered and damaged.
<i>ECOLOGICAL IMPACTS</i>	
Soil erosion	During the site establishment phase, the extensive clearing of ground cover may lead to soil erosion.
Control of alien species	During the site establishment phase, the clearing of existing natural vegetation creates 'open' habitats that are susceptible to the establishment of undesirable alien plant species in areas that are typically very difficult to eradicate and may pose a threat to natural ecosystems.
<i>SOCIAL IMPACTS</i>	
Influx of job seekers	During the site establishment phase, there may be an increase in community conflicts within communities and between locals and outsiders resulting from tension over perceived preferential treatment where migration workers may receive unfair benefits.
	During the site establishment phase, there may be increased social pathologies such as intra-household violence, women abuse, rape, teenage pregnancies and crime.
	During the site establishment phase, there may be an increase and spread of HIV/AIDs and other communicable diseases.
	During the site establishment phase, the demand for more services will stimulate investment into local towns and will create a market place in Lusikisiki for local resources.
Impact on health and general quality of life	During the site establishment phase, upgrading of roads will occur in order for mining vehicles to access the borrow pit sites.
	During the site establishment phase, an increased demand on existing infrastructure facilities and social services will occur which will place pressure on social service provision, such as hospitals and clinics and schools.
	During the site establishment phase, noise and dust generated by mining vehicle activity and blasting in the borrow pit sites will be generated
	During the site establishment phase, there may be reduced safety due to high vehicle activity and potential run-away fires will.
Loss of land as result of the borrow pit construction	During the site establishment phase, there will be a loss of access to natural resources such as: medicinal plant and food harvesting, hunting, fuel wood collection, thatch grass harvesting, livestock grazing, etc. will be permanently.
Stimulation of economic growth	During the site establishment phase, job opportunities will be available for local communities.
	During the site establishment phase, buying power of people living in the area will increase due to increased individual and household income. This will increase the demand for goods and services, which will present an opportunity for local businesses to diversify and expand.
	During the site establishment phase, skills training opportunities will be available for local labourers such as brick laying and building

Theme	Description of impact
	training.
Mining Phase	
GENERAL IMPACTS	
Compliance with relevant environmental legislation and policy	During the mining phase, failure to comply with existing policies and legal obligations could lead to the project conflicting with local, provincial and national policies, legislation etc. This could result in legal non-compliance, fines, overall project failure or delays in mining activity and undue disturbance to the natural environment.
Storm water	During the mining phase, inadequate stormwater control could result in soil erosion and impact surface water quality.
Visual intrusion associated with mining activities	During the mining phase, the mining activities could result in a negative impact on the aesthetic value of the study area and immediate surrounds.
Sanitation facilities	During the mining phase, inappropriate siting and servicing of sanitation facilities could result in contamination of surface and ground water.
Demarcation of the borrow pit sites	During the mining phase, encroachment of mining activities onto areas outside the borrow pit footprints could result in unnecessary environmental disturbance.
Spillage of hazardous substances	During the mining phase, spillage of any hazardous substances such as fuel, chemicals, etc. could result in ground and surface water contamination.
Waste management	During the mining phase, littering on site may attract vermin, detract from the visual appeal of the area and pollute the surrounding areas.
Dust and noise	During the mining phase, dust pollution caused by mining activities and increased traffic can cause a nuisance to surrounding communities. During the mining phase, noise pollution caused by increased traffic volumes and mining activities, including blasting, could potentially be a nuisance to surrounding communities.
Access control	During the mining phase, inadequate access control measures could result in unauthorised people entering the site, which poses a safety risk, especially during blasting and excavating activities.
HERITAGE IMPACTS	
Identification of archaeological and sites of cultural significance	During the mining phase, sites of archaeological or cultural significance might be uncovered and damaged.
PALEONTOLOGICAL IMPACTS	
Impact on sites of paleontological significance	During the mining phase, potential unidentified fossils may be uncovered and damaged.
ECOLOGICAL IMPACTS	
Loss of natural vegetation	During the mining phase, both Borrow areas will lead to the temporary loss of natural but degraded Ngongoni grassveld during the mining phase. During the mining phase, the clearing of vegetation outside the mining sites will lead to the unnecessary loss of natural vegetation.
Loss of SCC	During the mining phase, the uncontrolled clearing of areas outside the mining area may lead to the unnecessary loss of identified and unidentified plant and animal SCC. During the mining phase, mining activities will lead to the loss of identified and unidentified plant and animal SCC.
Damage to riverine systems	During the mining phase, mining activities may cause increased

Theme	Description of impact
	levels of erosion, sedimentation and pollution of the surrounding watercourses.
Soil erosion	During the mining phase, the extensive clearing of ground cover may lead to soil erosion.
Spillage of harmful substances	During the mining phase, normal vehicle traffic as well as inappropriate storage of hazardous substances may lead to the spillage of toxic substances (such as heavy metals, hydrocarbons, surfactants and oils) which may negatively impact the surrounding environment and biodiversity.
Control of alien species	During the mining phase, the clearing of existing natural vegetation creates 'open' habitats that are susceptible to the establishment of undesirable alien plant species in areas that are typically very difficult to eradicate and may pose a threat to natural ecosystems.
Rehabilitation of disturbed areas	During the mining phase, the failure to adequately rehabilitate areas post-mining could lead to a large scale alien plant invasion and potential displacement of indigenous vegetation.
SOCIAL IMPACTS	
Influx of job seekers	During the mining phase, there may be an increase in community conflicts within communities and between locals and outsiders resulting from tension over perceived preferential treatment where migration workers may receive unfair benefits.
	During the mining phase, there may be increased social pathologies such as intra-household violence, women abuse, rape, teenage pregnancies and crime.
	During the mining phase, there may be an increase and spread of HIV/AIDs and other communicable diseases.
	During the mining phase, the demand for more services will stimulate investment into local towns and will create a market place in Lusikisiki for local resources.
Impact on health and general quality of life	During the mining phase, upgrading of roads will occur in order for mining vehicles to access the borrow pit sites.
	During the mining phase, an increased demand on existing infrastructure facilities and social services will occur which will place pressure on social service provision, such as hospitals and clinics and schools.
	During the mining phase, noise and dust generated by vehicle activity and blasting in the borrow pit sites will be generated
	During the mining phase, there may be reduced safety due to high vehicle activity and potential run-away fires will.
Loss of land as result of the borrow pit construction	During the mining phase, there will be a loss of access to natural resources such as: medicinal plant and food harvesting, hunting, fuel wood collection, thatch grass harvesting, livestock grazing, etc. will be permanently.
Stimulation of economic growth	During the mining phase, job opportunities will be available for local communities.
	During the mining phase, buying power of people living in the area will increase due to increased individual and household income. This will increase the demand for goods and services, which will present an opportunity for local businesses to diversify and expand.
	During the mining phase, skills training opportunities will be available for local labourers such as brick laying and building training.

Theme	Description of impact
<i>Decommissioning/Closure Phase</i>	
<i>GENERAL IMPACTS</i>	
Final rehabilitation and decommissioning	During the decommissioning/closure phase failure to decommission and rehabilitate the mining site properly could result in soil erosion, storm water issues, safety risks and invasion of alien plant species.
Closure	During the decommissioning/closure phase failure to comply with the closure requirements could result in unnecessary environmental degradation and failure to obtain a closure certificate from DMR.
<i>ECOLOGICAL IMPACTS</i>	
Control of alien species	During the decommissioning and closure phase the lack of an effective alien vegetation management plan may lead to the large scale alien plant invasion.
Rehabilitation of disturbed areas	During the decommissioning and closure phase the failure to adequately rehabilitate areas post-mining could lead to a large scale alien plant invasion and potential displacement of indigenous vegetation.
<i>No-go Alternative</i>	
Not constructing the borrow pits	Not constructing the borrow pits will result in no change in the current ecological landscape or the social climate.

12. IMPACT STATEMENT

In terms of APPENDIX 3(3) of the EIA Regulations (2014), an Environmental Impact Assessment Report must include:

- (l) 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 superimposes 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;
- (n) The final proposed alternatives which respond to the impact management measures, avoidance, and mitigation measures identified throughout the assessment;

In line with the above-mentioned legislative requirement, this chapter of the EIR provides an Environmental Impact Statement which summarises the environmental impact assessment findings. This chapter of the EIR also includes a sensitivity map and a summary of the alternatives investigated.

12.1 Environmental impact statement

The HIGH negative impacts that were identified are summarised in Table 12.1 below. These impacts can all be reduced through the recommended mitigation measures to LOW or MODERATE post-mitigation impacts.

Table 12.1: High impacts identified for the proposed borrow pits.

Theme	Description of impact	Significance post-mitigation
<i>Planning and Design Phase</i>		
<i>GENERAL IMPACTS</i>		
Compliance with relevant environmental legislation and policy	During the planning and design phase, failure to comply with existing policies and legal obligations could lead to the project conflicting with local, provincial and national policies, legislation etc. This could result in legal non-compliance, fines, overall project failure or delays in mining activity and undue disturbance to the natural environment.	LOW NEGATIVE
Design of the borrow pits	During the planning and design phase, inappropriately designed borrow pits could lead to subsidence, face collapses, erosion and stormwater issues during mining.	LOW NEGATIVE
Stormwater	During the planning and design phase, inappropriate stormwater design may lead to an increase in surface soil erosion and subsequently sedimentation of the surrounding rivers and streams.	LOW NEGATIVE
<i>ECOLOGICAL IMPACTS</i>		
Damage to riverine systems	During the planning and design phase, the inappropriate design of stormwater management may cause the degradation of watercourses, associated natural habitats and sensitive aquatic systems.	MODERATE NEGATIVE
<i>Site Establishment Phase</i>		
<i>GENERAL IMPACTS</i>		

Theme	Description of impact	Significance post-mitigation
Legislation and policy compliance	During the site establishment phase, failure to comply with existing policies and legal obligations could lead to the project conflicting with local, provincial and national policies, legislation etc. This could result in legal non-compliance, fines, overall project failure or delays in site establishment and undue disturbance to the natural environment.	LOW NEGATIVE
Stormwater	During the site establishment phase, the inadequate provision of stormwater control measures could result in the erosion of surrounding soils and the sedimentation of nearby water resources.	LOW NEGATIVE
Demarcation of the borrow pit sites	During the site establishment phase inadequate demarcation and fencing off of the borrow pit sites could lead to unnecessary environmental disturbance.	LOW NEGATIVE
<i>SOCIAL IMPACTS</i>		
Influx of job seekers	During the site establishment phase, there may be an increase and spread of HIV/AIDs and other communicable diseases.	LOW NEGATIVE
Impact on health and general quality of life	During the site establishment phase, an increased demand on existing infrastructure facilities and social services will occur which will place pressure on social service provision, such as hospitals and clinics and schools.	MODERATE NEGATIVE
	During the site establishment phase, there may be reduced safety due to high vehicle activity and potential run-away fires will.	MODERATE NEGATIVE
Stimulation of economic growth	During the site establishment phase, job opportunities will be available for local communities.	HIGH POSITIVE
	During the site establishment phase, buying power of people living in the area will increase due to increased individual and household income. This will increase the demand for goods and services, which will present an opportunity for local businesses to diversify and expand.	HIGH POSITIVE
<i>Mining Phase</i>		
<i>GENERAL IMPACTS</i>		
Compliance with relevant environmental legislation and policy	During the mining phase, failure to comply with existing policies and legal obligations could lead to the project conflicting with local, provincial and national policies, legislation etc. This could result in legal non-compliance, fines, overall project failure or delays in mining activity and undue disturbance to the natural environment.	LOW NEGATIVE
Stormwater	During the mining phase, inadequate stormwater control could result in soil erosion and impact surface water quality	LOW NEGATIVE
Sanitation facilities	During the mining phase, inappropriate siting and servicing of sanitation facilities could result in contamination of surface and ground water.	LOW NEGATIVE
Demarcation of the borrow pit sites	During the mining phase, encroachment of mining activities onto areas outside the borrow pit footprints could result in unnecessary environmental disturbance.	LOW NEGATIVE
Access control	During the mining phase, inadequate access control measures could result in unauthorised people entering the site, which poses a safety risk, especially during blasting and excavating activities.	LOW NEGATIVE

Theme	Description of impact	Significance post-mitigation
ECOLOGICAL IMPACTS		
Loss of natural vegetation	During the mining phase, the clearing of vegetation outside the mining sites will lead to the unnecessary loss of natural vegetation.	LOW NEGATIVE
Loss of SCC	During the mining phase, the uncontrolled clearing of areas outside the mining area may lead to the unnecessary loss of identified and unidentified plant and animal SCC.	LOW NEGATIVE
Damage to riverine systems	During the mining phase, mining activities may cause increased levels of erosion, sedimentation and pollution of the surrounding watercourses.	LOW NEGATIVE
SOCIAL IMPACTS		
Impact on health and general quality of life	During the mining phase, there may be reduced safety due to high vehicle activity and potential run-away fires will.	MODERATE NEGATIVE
Decommissioning/Closure Phase		
GENERAL IMPACTS		
Final rehabilitation and decommissioning	During the decommissioning phase failure to decommission and rehabilitate the mining site properly could result in soil erosion, storm water issues, safety risks and invasion of alien plant species.	LOW NEGATIVE
Closure	During the decommissioning phase failure to comply with the closure requirements could result in unnecessary environmental degradation and failure to obtain a closure certificate from DMR.	LOW NEGATIVE

12.2 Comparative assessment of impacts

Below is an assessment of the impacts in terms of the number of impacts identified for each phase. The breakdown of the impact assessments in Table 12.2 to 12.7 below provides insight into the key issues of all phases (including the no-go option) of the proposed borrow pits.

GENERAL IMPACT ASSESSMENT

An analysis of the distribution of General impacts identified indicates that the bulk of the mitigation effort should be placed on the site establishment and mining Phase. The HIGH impacts identified in the planning and design phase, site establishment, mining phase and decommissioning phases relate to compliance with legislation, borrow pit design, stormwater infrastructure design, location and servicing of sanitation facilities and demarcation of the borrow pit sites.

Both HIGH and MODERATE identified impacts can be significantly reduced through the recommended mitigation measures resulting in predominantly LOW post-mitigation impacts.

Table 12.2: Comparative Assessment of General Impacts occurring in all phases for the proposed borrow pits.

	PRE-MITIGATION				POST-MITIGATION			
	LOW	MODERATE	HIGH	VERY HIGH	LOW	MODERATE	HIGH	VERY HIGH
Planning & Design	0	4	3	0	7	0	0	0
Site establishment	0	4	3	0	7	0	0	0
Mining	0	5	5	0	10	0	0	0
Decommissioning	0	0	2	0	2	0	0	0

TOTAL	0	13	13	0	26	0	0	0
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HERITAGE IMPACT ASSESSMENT

The Heritage Impact Assessment identified impacts in the planning and design, site establishment, mining and decommissioning phases.

All pre-mitigation impacts identified were rated as MODERATE and these impacts can be reduced using the recommended mitigation measures to LOW post-mitigation impacts.

Table 12.3: Comparative Assessment of Heritage Impacts occurring in all phases for the proposed borrow pits.

	PRE-MITIGATION				POST-MITIGATION			
	LOW	MODERATE	HIGH	VERY HIGH	LOW	MODERATE	HIGH	VERY HIGH
Planning & Design	0	1	0	0	1	0	0	0
Site establishment	0	2	0	0	2	0	0	0
Mining	0	1	0	0	1	0	0	0
Decommissioning	0	0	0	0	0	0	0	0
TOTAL	0	4	0	0	4	0	0	0

PALEONTOLOGICAL IMPACT ASSESSMENT

The Paleontological Impact Assessment identified impacts in the planning and design, site establishment, mining and decommissioning phases.

All pre-mitigation impacts identified were rated as MODERATE and these impacts can be reduced using the recommended mitigation measures to LOW post-mitigation impacts.

Table 12.4: Comparative Assessment of Paleontological Impacts occurring in all phases for the proposed

	PRE-MITIGATION				POST-MITIGATION			
	LOW	MODERATE	HIGH	VERY HIGH	LOW	MODERATE	HIGH	VERY HIGH
Planning & Design	0	0	0	0	0	0	0	0
Site establishment	0	1	0	0	1	0	0	0
Mining	0	1	0	0	1	0	0	0
Decommissioning	0	0	0	0	0	0	0	0
TOTAL	0	2	0	0	2	0	0	0

ECOLOGICAL IMPACT ASSESSMENT

HIGH impacts identified from the Ecological Impact Assessment related to THE LOSS OF NATURAL VEGETATION, the loss of SCC, damage to riverine systems, soil erosion, spillage of harmful substances and the control of alien species.

An analysis of the distribution of impacts illustrated that the bulk of the mitigation effort should be placed on the site establishment and mining phase as these are the highest impacting phases.

HIGH and MODERATE pre-mitigation impacts can be reduced through the recommended mitigation measures to predominantly LOW post-mitigation impacts.

Table 12.5: Comparative Assessment of Ecological Impacts occurring in all phases for the proposed borrow pits.

	PRE-MITIGATION				POST-MITIGATION			
	LOW	MODERATE	HIGH	VERY HIGH	LOW	MODERATE	HIGH	VERY HIGH
Planning & Design	0	4	1	0	4	1	0	0
Site establishment	0	2	0	0	2	0	0	0
Mining	0	5	3	0	7	1	0	0
Decommissioning	0	2	0	0	2	0	0	0
TOTAL	0	13	4	0	15	2	0	0

SOCIAL IMPACT ASSESSMENT

HIGH impacts identified from the Social Impact Assessment related to the influx of job seekers, the impact on health and general quality of life, loss of access to natural resources and the stimulation of local economic growth.

An analysis of the distribution of impacts illustrated that the bulk of the mitigation effort should be placed on the site establishment phase as this is the highest impacting phase. However, two impacts during the site establishment phase were identified as being positive impacts.

HIGH and MODERATE pre-mitigation impacts can be reduced through the recommended mitigation measures to predominantly LOW post-mitigation impacts.

Table 12.6: Comparative Assessment of Social Impacts occurring in all phases for the proposed borrow pits. (+ = beneficial impact)

	PRE-MITIGATION				POST-MITIGATION			
	LOW	MODERATE	HIGH	VERY HIGH	LOW	MODERATE	HIGH	VERY HIGH
Planning & Design	0	2	1	0	2	1	0	0
Site establishment	0	5(+2)	5	0	5	2(+1)	(+1)	0
Mining	4(+1)	4(+2)	1	0	6(+1)	1(+3)	(+1)	0
Decommissioning	0	0	0	0	0	0	0	0
TOTAL	0	11(+4)	7	0	13(+1)	4(+4)	0	0

NO-GO IMPACT ASSESSMENT

The negative impacts identified when assessing the NO-GO alternative related to communities in the project area (possibly 32 800 households) not having sufficient access to potable water. Socio-economic development in the study area would also be inhibited.

Positive impacts identified from the NO-GO alternative relate to the preservation of the existing vegetation if the LRWSS does not go ahead.

Table 12.7: Impacts associated with the No-go alternative.

	PRE-MITIGATION				POST-MITIGATION			
	LOW	MODERATE	HIGH	VERY HIGH	LOW	MODERATE	HIGH	VERY HIGH
TOTAL	0	0	(+1)	0	0	0	(+1)	0

12.3 Overall site sensitivity

The entire site has been assessed by various specialists, and this information has been analysed spatially and then used to inform the most environmentally acceptable layout for the borrow pits. This layout will be based on an overall sight rate of **LOW** sensitivity with small localised areas of **HIGH** sensitivity surrounding the borrow pits (Figure 12.1 below). The final layout will be based on the sensitivity map and impacts and mitigation measures identified throughout the process.

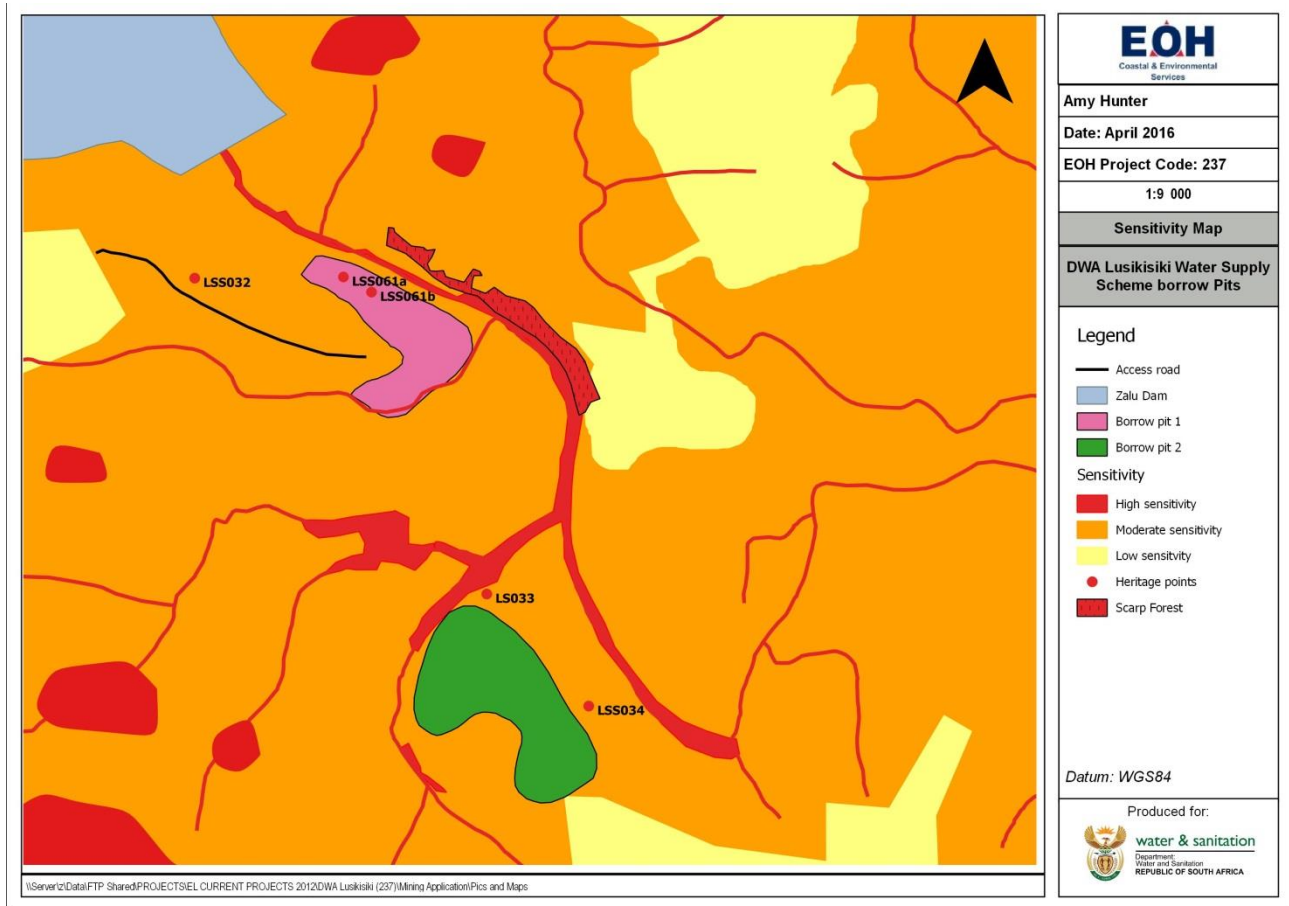


Figure 12.1: Sensitivity map of the study area.

12.4 Consideration of alternatives

Chapter 6 provides a detailed comparison of alternatives for the proposed borrow pits. It should be noted that the assessment of alternatives does not consider those alternatives that are not deemed to be either **reasonable** or **feasible**.

12.4.1 Location alternatives

The current location (preferred alternative) is the only alternative assessed in the impact assessment process. Alternative locations for the proposed borrow pits are limited and probably not reasonable or feasible due to inappropriate geology (critical aspect).

12.4.2 Technology alternatives

The technology alternatives considered in Chapter 6 are a crushing and screening area on site (preferred) and a crushing and screening area offsite (not feasible). Only the former is assessed in the impact

assessment as the latter is not considered to be economically viable. Dolerite material would have to be transported significant distances in order to get processed.

12.4.3 Layout alternatives

The current layout (preferred alternative) is the only layout alternative assessed in the impact assessment. The proposed layout has been subjected to environmental screening and is based on ideal geological conditions and lower heritage sensitivity.

13. CONCLUSION, EAP OPINION AND RECOMMENDATIONS

In terms of APPENDIX 3(3) of the EIA Regulations (2014), an Environmental Impact Assessment Report must include –

- (m) Based on the assessment, and where applicable, recommendations from specialist reports, the recording of proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation;**
- (o) 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.**
- (p) A description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed;**
- (q) 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;**
- (r) Where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required and the date on which the activity will be concluded and the post construction monitoring requirements finalised;**
- (s) An undertaking under oath or affirmation by the EAP in relation to:**
 - The correctness of the information provided in the reports;
 - The inclusion of comments and inputs from stakeholders and I&APs;
 - The inclusion of inputs and recommendations from the specialist reports where relevant; and
 - Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties;

In line with the above-mentioned legislative requirement, this Chapter of the EIR provides the recommended mitigation measures, uncertainties or gaps in knowledge, the EAP's opinion as to whether or not the activity should be authorised and the reason(s) for this opinion as well as an undertaking by the EAP.

13.1 Description of the proposed activity

DWS has completed a detailed feasibility study for the Augmentation of the LRWSS at Lusikisiki, within the OR Tambo District in the Eastern Cape. The LRWSS is proposed to augment the existing water supply to the region between Lusikisiki (approximately 15 km inland), and the coast, extending from the Mzimvubu River in the south west to the Msikaba River in the north east. An EIA for the LRWSS has been completed and awaits approval from DEA.

The LRWSS will include the construction of an Earth Core Rockfill Dam (the proposed Zalu Dam) on the Xura River. Borrow areas within the dam basin cannot provide sufficient impervious material (residual and completely weathered dolerite) for the clay core of an embankment dam, but large quantities of

impervious material is available in borrow areas located within a 2 km radius downstream of the dam (borrow pits 1 and 2).

The affected areas and volumes of material removed from the borrow pits is illustrated in Table 13.1 and 13.2. Approximately 32 800 m³ and 64 000 m³ of topsoil will be removed using an excavator from borrow pit 1 and 2. This topsoil will be stockpiled in demarcated areas and will be used to fill the excavation and level the slopes once mining is complete. The dolerite material will be removed using an excavator, loaded onto trucks and transported to the proposed Zalu Dam.

A perimeter fence will be constructed around the borrow areas and an access road will possibly need to be constructed for borrow pit 1 (Figure 3.1). Borrow pit 2 is accessible via existing gravel roads.

Table 13.1: Size of borrow pits.

	Area (hectare)	
	Borrow pit 1	Borrow pit 2
Area impacted	12	19
Mining area	10	16
Stockpile area	1,7	3,7

Table 13.2: Volumes of material to be removed.

Type of material	Estimated volume (m ³)	
	Borrow pit 1	Borrow pit 2
Overburden for spoil: Organic topsoil	32 800	64 000
Impervious fill: Residual and completely weathered dolerite	410 000	880 000
Total	442 800	944 000

13.2 Assumptions, uncertainties and gaps

The following assumptions have been made during the EIA process:

- The information provided by DWS is assumed to be correct.
- The layout provided by DWS is preliminary, and might undergo changes in response to the recommendations contained in this report.

13.3 Opinion of the EAP

Although a number of significant impacts are associated with the proposed borrow pits and associated infrastructure, it is the professional opinion of EOH CES and the specialists that:

- The vast majority of environmental impacts identified can be adequately mitigated to reduce the impacts to an acceptable level, provided mitigation measures recommended in this report are implemented and maintained throughout the life of the project.
- The implementation of mitigation measures and recommendations must be consistently monitored by an independent Environmental Control Officer (ECO) during site establishment /mining.
- The recommendations made by all specialists and the EAP in the EMPr (Appendix D) must be implemented.
- The information in the report is sufficient to allow DMR to make an informed decision.

It is the opinion of EOH CES that **NO FATAL FLAWS** are associated with the proposed borrow pits.

13.4 Recommendations of the EAP

It is the opinion of EOH CES that the proposed borrow pits should be approved provided that appropriate mitigation measures are implemented and that the Environmental Management Programme (EMPr) is implemented, maintained and adapted to incorporate relevant legislation, standard requirements and audit reporting, throughout the life of the borrow pits.

The mitigation measures for all impacts identified in the EIA are provided in the detailed impact assessment in Appendix B and have been incorporated into the EMPr (Appendix D).

The EMPr must be implemented by the relevant parties during all phases of development of the project i.e. Planning & Design, Site establishment, Mining and Closure/Decommissioning phase.

Inclusions, additions and adaptations of the EMPr, as well as all final plan drawings and maps must be submitted to DMR (Port Elizabeth) for final approval.

13.5 Recommended mitigation measures

Theme	Mitigation measure
Planning and Design Phase	
GENERAL	
Compliance with relevant environmental legislation and policy	<ul style="list-style-type: none"> All relevant legislation and policy must be consulted and the proponent must ensure that the project is compliant with such legislation and policy. These should include (but are not restricted to): MPRDA, NEMA, Local and District Spatial Development Frameworks, Eastern Cape Biodiversity Conservation Plan (ECBCP), Local Municipal bylaws.
Design of the borrow pits	<ul style="list-style-type: none"> The borrow pit mining plans must be designed by an appropriately qualified engineer. All mining activity must avoid the watercourses and must not occur within the 32m buffer. Mining activity should not, as far as is possible take place within the 1:100 year floodline. Also refer to the Ecological Impact Assessment mitigation measures
Stormwater	<ul style="list-style-type: none"> Appropriate stormwater structures must be designed and implemented. All stormwater structures must be designed in line with DWS requirements. A dirty water system must be designed to collect any dirty water generated from mining activities so that it is not likely to spill into any clean water system.
Visual intrusion	<ul style="list-style-type: none"> The borrow pit design must ensure that the visual impact of the borrow pits is minimized where possible.
Hazardous substances	<ul style="list-style-type: none"> An appropriate hazardous waste management plan must be developed prior to mining activities commencing.
Waste management	<ul style="list-style-type: none"> Measures must be taken to ensure that waste generated on site will be stored and disposed of in an appropriate manner.
Access control	<ul style="list-style-type: none"> Adequate access control measures must be developed to restrict access to the borrow pit sites to unauthorised people.
HERITAGE	
Impact on sites of archaeological and cultural significance	<ul style="list-style-type: none"> All access roads, mining activity and planned mining activities must avoid the identified heritage sites.

Theme	Mitigation measure
ECOLOGICAL	
Loss of natural vegetation	<ul style="list-style-type: none"> • The borrow pit sites must be selected so that any sensitive ecological features are avoided. • The borrow pit sites must be clearly demarcated prior to the site establishment and mining phases to prevent the unnecessary clearing of natural vegetation outside of the designated borrow pit sites.
Loss of SCC	<ul style="list-style-type: none"> • Borrow pit design should avoid areas where plant and animal SCC have been identified. • If unavoidable, permits must be obtained from the relevant departments in order to remove plant and animal SCC from the development area prior to mining.
Damage to riverine systems	<ul style="list-style-type: none"> • The mining engineer must ensure that appropriate stormwater structures are included in the borrow pit design to manage stormwater and to minimise erosion and sedimentation of watercourses. • The mining engineer must ensure that borrow pits situated on slopes incorporate stormwater diversion. • The mining engineer must ensure that all stormwater structures are designed in line with both DMR and DWS requirements. • If any planned mining takes place inside or within 50 meters of any river, stream or drainage system, or within 500m of a wetland, authorisation must be obtained from DWS. Additional conditions from DWS may be applied in order to protect these systems.
Soil erosion	<ul style="list-style-type: none"> • Appropriate stormwater structures must be designed and implemented. • All infrastructure situated on slopes must incorporate stormwater diversions.
Control of alien species	<ul style="list-style-type: none"> • A Rehabilitation and Alien Management Plan must be developed prior to any activities associated with the borrow pits commencing.
Site Establishment Phase	
GENERAL	
Legislation and policy compliance	<ul style="list-style-type: none"> • All relevant legislation and policy must be complied with during site establishment. • These should include (but are not restricted to): MPRDA, NEMA, NWA, NFA, Local and District Spatial Development Frameworks, Eastern Cape Biodiversity Conservation Plan (ECBCP), Local Municipal bylaws.
Stormwater	<ul style="list-style-type: none"> • Appropriate stormwater structures must be installed during site establishment • All stormwater structures installed must be in line with DWS requirements.
Visual intrusion associated with the establishment of the borrow pit sites	<ul style="list-style-type: none"> • All site establishment activity must take place during normal working hours (i.e. 7 – 5pm). • All site establishment activity and equipment must be limited to the demarcated areas.
Demarcation of the borrow pit sites	<ul style="list-style-type: none"> • The boundaries of the borrow pit sites must be adequately demarcated to restrict site establishment and other (eating, washing and ablution) activities. All plant, equipment and other materials must remain within the demarcated boundaries. • The mining related activities should as far as possible not take place within the 1:100 year floodline. • Refer to the mitigation measures outlined in the Ecological Impact

Theme	Mitigation measure
Demarcation of the borrow pit sites	<p>Assessment.</p> <ul style="list-style-type: none"> • The boundaries of the borrow pit sites must be adequately demarcated to restrict site establishment and other (eating, washing and ablution) activities. All plant, equipment and other materials must remain within the demarcated boundaries. • Refer to the mitigation measures outlined in the Ecological Impact Assessment.
Dust and noise	<ul style="list-style-type: none"> • Cleared surfaces for site establishment must be dampened whenever possible and especially in dry and windy conditions to avoid excessive dust generation. • Any soil excavated, and not utilised for rehabilitation, must be removed from site or covered and no large mounds of soil should be left behind after mining activities have ceased. • Refer to the mitigation measures described Social Impact Assessment. • Site establishment activities, which include the movement of related vehicles, must be restricted to normal working hours (7:00am – 17:00pm). • Refer to the mitigation measures described Social Impact Assessment.
Access control	<ul style="list-style-type: none"> • Access to the borrow pit sites must be restricted to authorised personnel only • The borrow pit sites and camp sites must be fenced off and access control must be implemented at all times.
HERITAGE	
Impact on sites of archaeological and cultural significance	<ul style="list-style-type: none"> • If any graves/heritage features are damaged during site establishment then site establishment must stop immediately. • Any damage to heritage features must be reported to the EM, Heritage Specialist and SAHRA. • If human graves are uncovered during site establishment then all activity must stop immediately. • The police and ECPHRA must to be notified immediately. • If any other archaeological artefacts are uncovered during site establishment then site establishment must stop and these should be reported to the EM, Heritage Specialist and SAHRA/ECPHRA immediately.
PALEONTOLOGICAL IMPACTS	
Impact on sites of paleontological significance	<ul style="list-style-type: none"> • If fossils are uncovered during the site establishment phase, all activity must cease immediately. • The ECO, the appointed Palaeontologist and ECPHRA must be notified immediately. • The Palaeontologist must apply for permits from SAHRA to collect any fossils have been uncovered.
ECOLOGICAL	
Soil erosion	<ul style="list-style-type: none"> • Bank restoration, re-vegetation and stabilisation must be implemented once site establishment is complete and must include the use of gabions for bank stabilisation if required.
Control of alien species	<ul style="list-style-type: none"> • A Rehabilitation and Alien Management Plan must be developed and implemented during the site establishment phase to reduce the establishment and spread of undesirable alien plant species. • Alien plants must be removed from the site through appropriate methods such as hand pulling, application of chemicals, cutting etc. This must be done under the supervision of the ECO.

Theme	Mitigation measure
SOCIAL IMPACTS	
<p>Influx of job seekers</p>	<p>A project steering committee consisting of the DWS, contractor (community liaison person), recruitment agency, community leaders, elders, youth, ward councillors and the IHLM LED must be established in order to:</p> <ul style="list-style-type: none"> • Conduct an audit of the affected communities in term of employment capacity. • Identify potential workers from the affected communities. • Identify possible conflicts in and between communities. • Recommend support programmes that would assist with conflict minimisation and resolution. <hr/> <p>Crime:</p> <ul style="list-style-type: none"> • The role of Traditional Authorities in exerting control over land allocation in order to prevent densification of people around the site establishment areas should be supported. • The DWS and contractor must encourage settlement in Lusikisiki by providing daily transport for “outside” workers who settle in the town of Lusikisiki, to and from the site establishment sites to minimise the potential crime factor in the rural areas. • All mine workers must be clearly identifiable and wear easily recognisable uniforms. They need to carry identification cards issued by the contractor. • The SAPS must have access to the borrow pit sites. • Local communities should be encouraged to report suspicious activity to the community liaison or nearest environmental site officer. • The contractor must prevent loitering around the mining camp by providing transport to and from the camp sites. • All borrow pit and camp sites must be fenced and secure. <p>Increased prostitution and sexual behaviour:</p> <ul style="list-style-type: none"> • National and local awareness programmes that discourage promiscuity, especially at schools in the project area should be supported. • Condoms must be made easily accessible to all mine workers. <hr/> <ul style="list-style-type: none"> • An HIV/AIDS, non-discrimination, awareness, prevention and health care support, policy must be implemented. • Condoms must be made easily accessible to all mine workers. • An HIV/AIDS education and behaviour change programme for all contracted mine workers should be developed. • The above program must extend to the communities located near the borrow pit sites. • Existing public health care centres and programmes such as TAC must be involved in HIV/AIDS campaigns and monitoring of HIV/AIDS prevalence should be undertaken in collaboration with these agencies. • Voluntary counselling and testing should be encouraged for all workers. <hr/> <ul style="list-style-type: none"> • DWS is limited in its capacity to enhance the benefits of this impact, as the development of the communities and town will occur in response to the needs and demands of mine workers. The proponent can play role in facilitating the skills required to recognise the need

Theme	Mitigation measure
	<p>and respond appropriately. The proponent must link the Provincial Department of Economic Development and Local Municipal LED programmes with small to medium enterprises (including communities) in the area so that a state of “readiness” to optimise economic benefits is achieved. This may involve training in the following sectors: business, tourism, catering etc.</p>
<p>Impact on health and general quality of life</p>	<ul style="list-style-type: none"> • No mitigation measures are required • Service providers associated with the IHLM and PSJLM, clinics, schools and the SAPS must be made aware of an increase in demand, both in the town of Lusikisiki and in the surrounding rural areas, and therefore the increased pressure to provide services for new households. • This will require direct communication with the local municipalities, ORTDM, the Department of Health, South African Police Service and the Department of Education. The channels of communication must be established as permanent points of contact throughout the site establishment phase of the project. • Regular monitoring of the schools and clinics in order to determine whether there are sufficient resources must be undertaken. When resources are deemed insufficient, DWS must communicate, through established channels, with the relevant departments for assistance. <hr/> <ul style="list-style-type: none"> • During windy periods un-surfaced and un-vegetated areas should be dampened down. • Vegetation should be retained where possible as this will reduce dust travel. • Excavations and other clearing activities must only be done during agreed working times and permitting weather conditions to avoid drifting of sand and dust into neighbouring areas. • A speed limit of 30km/h must not be exceeded on dirt roads. • Any complaints or claims emanating from the lack of dust control must be attended to immediately. • Drilling, blasting and movement of heavy machinery must be limited to normal working hours (7 AM to 5 PM). • Ensure there is a facility for nearby residents to make complaints. These must be addressed and recorded. • Communities must have access to a grievance reporting mechanism, e.g. through a project steering or liaison committee. <hr/> <p>Traffic safety:</p> <ul style="list-style-type: none"> • All affected communities must be informed of the formal access routes. • All vehicle operators and drivers must undergo regular training, clearly outlining the high safety risk to local rural communities • Signage making communities aware of the high safety risk due to heavy vehicles on the road must be erected at appropriate locations. • Traffic calming devices such as speed bumps should be considered on rural access roads. <p>Fire safety:</p> <ul style="list-style-type: none"> • Fires outside borrow pit camps must be prohibited. • Fires that are lit must be in a contained area and safety precautions must be followed. The fire must be monitored for cinders and extinguished when no longer needed.

Theme	Mitigation measure
	<ul style="list-style-type: none"> • Fire fighting equipment must be stored onsite. • The borrow pit campsite must be surrounded by a firebreak. • Education of fire risks must form part of the mine-worker training.
Loss of land as result of the borrow pit construction	<ul style="list-style-type: none"> • The process for land acquisition by DWS must be conducted through the traditional authorities operating in the areas as they have jurisdiction over land allocations. • Individual landowners must be identified and engaged. • All the properties must be professionally assessed and valued by professional independent evaluators registered with South African Institute of Valuers and the South African Council for Property Valuers. • Valuations, and the process of evaluation, must be shared with the landowners and will form the basis for on-going negotiations with them.
Stimulation of economic growth	<ul style="list-style-type: none"> • Equal jobs opportunities for women and men must be promoted. • Culture and tradition must be considered when planning the division of labour for site establishment. • Employment must be managed by a recruitment agency/office that uses a selection system that ensures recruitment of semi and unskilled workers from all local impacted communities in accordance with recent government policies related to local procurement. This must ensure a fair and equitable recruitment process. • Where appropriate, employees involved in the site establishment phase should be incorporated into the permanent maintenance staff for the mining phase; and • Particular attention must be paid to employment opportunities for women and disabled persons. <ul style="list-style-type: none"> • The proponent must ensure that the principal of utilising local business resources (suppliers and SMMEs) in accordance with recent government policies related to local procurement (State of the nation address, 2015) forms part of the procurement specifications. Examples of local business resources that must be considered: <ul style="list-style-type: none"> – Catering services – Transport services – Quarries/borrow pits (where necessary) – Small civils – Accommodation – Security – Hygiene services – Fencing • Implement a skills development programme which includes training in business, project management, monitoring and evaluation.
Mining Phase	
GENERAL	
Compliance with relevant environmental legislation and policy	<ul style="list-style-type: none"> • The proponent must ensure that mining is compliant with the relevant legislation and policy. • These should include (but are not restricted to): MPRDA, NEMA, Local and District Spatial Development Frameworks, Eastern Cape Biodiversity Conservation Plan (ECBCP), Local Municipal bylaws.
Storm water	<ul style="list-style-type: none"> • Water runoff must be controlled and the stormwater management plan implemented.

Theme	Mitigation measure
	<ul style="list-style-type: none"> • All polluted water systems must be separated from clean water systems. • All water collected within any dirty area, including water seeping from mining operations, out crops or any other activity must be collected into a dirty water system. • Silt fences must be used to prevent soil eroding from nearby mining activities reaching water courses.
Visual intrusion associated with mining activities	<ul style="list-style-type: none"> • Mining activities should only take place during normal work hours (7am to 5pm). • Mining activities must be limited to the designated area and not encroach into surrounding areas.
Sanitation facilities	<ul style="list-style-type: none"> • Sanitation facilities must NOT be located near any water resources or water drainage areas and must be placed outside of areas susceptible to flooding. • Sanitation facilities must be located within the borrow pit footprint. • The facilities must be regularly serviced to reduce the risk of surface or groundwater pollution. • Waste water from chemical toilets must not be discharged into any water resources. • If toilets are not going to be used for a while, they must be emptied and cleaned.
Demarcation of the borrow pit sites	<ul style="list-style-type: none"> • The boundaries of the borrow pit sites must be adequately demarcated to restrict mining and other (eating, washing and ablution) activities. All plant, equipment and other materials must remain within the demarcated boundaries.
Spillage of hazardous substances	<ul style="list-style-type: none"> • All oils, fuel and other maintenance equipment and supplies must be stored in a secure area with a compacted surface. • Temporary bunds must be constructed around chemical or fuel storage areas to contain potential spillages. • Storage areas should be located outside of the 1:100 year floodline of any watercourse and must be fenced to prevent unauthorised access into the area. • Spill kits must be kept on-site and maintained. • If pollution of any surface or groundwater occurs, it must be immediately reported to the Department of Water and Sanitation and appropriate mitigation measures must be employed. • Cement, concrete and chemicals must be mixed on an impermeable surface and provisions should be made to contain spillages or overflows into the soil. Mixed cement/concrete must not be allowed to flow into any watercourses. • No cement must be mixed within 100m of a watercourse. • Any storage tanks containing hazardous materials must be placed in bunded containment areas with sealed surfaces. The bund walls must be high enough to contain 110% of the total volume of the stored hazardous material. • Contaminated soil must be contained and disposed of off-site at an approved landfill site. • Any hazardous substances must be stored at least 100m from any of the water bodies on site. • Drip trays must be placed under all stationary machinery to avoid soil contamination from oil and fuel leaks. • Drip trays must be placed under vehicles during refuelling. • Vehicles must be washed in a designated and bunded wash bay to avoid soil contamination.
Waste management	<ul style="list-style-type: none"> • Sufficient waste containers must be available. • No waste must be buried on site. • Waste must be collected on a regular basis and disposed of at a licensed landfill site.

Theme	Mitigation measure
Dust and noise	<ul style="list-style-type: none"> • Exposed surfaces for mining activities must be dampened whenever possible and especially in dry and windy conditions to avoid excessive dust generation. • Refer to the mitigation measures described Social Impact Assessment.
	<ul style="list-style-type: none"> • Mining activities and blasting, which include the movement of related vehicles, must be restricted to normal working hours (7:00am – 17:00pm). • Refer to the mitigation measures described Social Impact Assessment.
Access control	<ul style="list-style-type: none"> • Access to the borrow pit sites must be restricted to authorised personnel only • The borrow pit areas must be fenced off and access control must be implemented at all times.
HERITAGE	
Identification of archaeological and sites of cultural significance	<ul style="list-style-type: none"> • If human graves are uncovered during mining then all activity must stop immediately. • The police and ECPHRA must to be notified immediately. • If any other archaeological artefacts are uncovered during mining activity then mining must stop and these should be reported to the EM, Heritage Specialist and SAHRA/ECPHRA immediately.
PALEONTOLOGICAL IMPACTS	
Impact on sites of paleontological significance	<ul style="list-style-type: none"> • If fossils are uncovered during the site establishment phase, all activity must cease immediately. • The ECO, the appointed Palaeontologist and ECPHRA must be notified immediately. • The Palaeontologist must apply for permits from SAHRA to collect any fossils have been uncovered.
ECOLOGICAL	
Loss of natural vegetation	<ul style="list-style-type: none"> • The entire site must be rehabilitated to natural Ngongoni Veld after completion of all mining activities. • Mining activities must be limited to the designated footprint of the mining site i.e. mining minerals, stockpiles, vehicular storage, borrow pit camps etc., must only occur in the designated mining area. • The mining site must be demarcated prior to mining commencing. • The mining footprint must be approved by an ECO to ensure that natural vegetation is not unnecessarily damaged.
Loss of SCC	<ul style="list-style-type: none"> • No SCC must be removed outside the approved demarcated mining areas. • No vegetation removal must occur outside the approved demarcated mining area. • The contractor’s workers must not poach or trap wild animals. • The contractor’s workers must not harvest natural vegetation. • The developer must develop a Vegetation and Animal Relocation Plan that must be approved by the appointed ECO and incorporated into the site EMPr. • All SCC must be removed according to the approved Vegetation and Animal Relocation Plan • Permits must be obtained for all SCC prior to commencement of site establishment activities onsite.
Damage to riverine systems	<ul style="list-style-type: none"> • If any mining activity occurs within 50 meters of a river, stream or drainage system, or within 500m of a wetland, authorisation must be obtained from DWS.

Theme	Mitigation measure
	<ul style="list-style-type: none"> • No mining must be done within 32 meters of any waterbody. • Silt fences should be used to prevent soil eroding from nearby mining activities reaching watercourses. • Wet cement must not be allowed to come into contact with any watercourse. • Borrow pit staff must not use any open water body or natural water source adjacent to the mining site for the purposes of bathing, washing of clothing or for any site establishment related activities. • All mine-water and contaminated runoff must be directed away from the watercourses.
Soil erosion	<ul style="list-style-type: none"> • Bank restoration, re-vegetation and stabilisation must be implemented and inspected regularly during mining and must include the use of gabions for bank stabilisation if required.
Control of alien species	<ul style="list-style-type: none"> • A Rehabilitation and Alien Management Plan must be developed and implemented during the mining phase to reduce the establishment and spread of undesirable alien plant species. • Alien plants must be removed from the site through appropriate methods such as hand pulling, application of chemicals, cutting etc. This must be done under the supervision of the ECO.
Rehabilitation of disturbed areas	<ul style="list-style-type: none"> • All impacted areas must be rehabilitated back to Ngongoni veld after mining. • Only topsoil from the immediate area must be used for rehabilitation. If none available alternative methods must be investigated and implemented like hydro-seeding, planting etc. • All mined areas must be restored as per the Rehabilitation and Alien Management Plan.
SOCIAL IMPACTS	
Influx of job seekers	<p>A project steering committee consisting of the DWS, contractor (community liaison person), recruitment agency, community leaders, elders, youth, ward councillors and the IHLM LED must be established in order to:</p> <ul style="list-style-type: none"> • Conduct an audit of the affected communities in term of employment capacity. • Identify potential workers from the affected communities. • Identify possible conflicts in and between communities. • Recommend support programmes that would assist with conflict minimisation and resolution. <p>Crime:</p> <ul style="list-style-type: none"> • The role of Traditional Authorities in exerting control over land allocation in order to prevent densification of people around the borrow pit areas should be supported. • The DWS and contractor must encourage settlement in Lusikisiki by providing daily transport for “outside” workers who settle in the town of Lusikisiki, to and from the borrow pit sites to minimise the potential crime factor in the rural areas. • All mine workers must be clearly identifiable and wear easily recognisable uniforms. They need to carry identification cards issued by the contractor. • The SAPS must have access to borrow pit sites. • Local communities should be encouraged to report suspicious activity to the community liaison or nearest environmental site officer.

Theme	Mitigation measure
	<ul style="list-style-type: none"> • The contractor must prevent loitering around the borrow pit camp by providing transport to and from the camp sites. • All borrow pits and camp sites must be fenced and secure. <p>Increased prostitution and sexual behaviour:</p> <ul style="list-style-type: none"> • National and local awareness programmes that discourage promiscuity, especially at schools in the project area should be supported. • Condoms must be made easily accessible to all mine workers. <ul style="list-style-type: none"> • An HIV/AIDS, non-discrimination, awareness, prevention and health care support, policy must be implemented. • Condoms must be made easily accessible to all mine workers. • An HIV/AIDS education and behaviour change programme for all contracted mine workers should be developed. • The above program must extend to the communities located near the borrow pit sites. • Existing public health care centres and programmes such as TAC must be involved in HIV/AIDS campaigns and monitoring of HIV/AIDS prevalence should be undertaken in collaboration with these agencies. • Voluntary counselling and testing should be encouraged for all workers. <ul style="list-style-type: none"> • DWS is limited in its capacity to enhance the benefits of this impact, as the development of the communities and town will occur in response to the needs and demands of mine workers. The proponent can play role in facilitating the skills required to recognise the need and respond appropriately. The proponent must link the Provincial Department of Economic Development and Local Municipal LED programmes with small to medium enterprises (including communities) in the area so that a state of “readiness” to optimise economic benefits is achieved. This may involve training in the following sectors: business, tourism, catering etc.
Impact on health and general quality of life	<ul style="list-style-type: none"> • No mitigation measures are required • Service providers associated with the IHLM and PSJLM, clinics, schools and the SAPS must be made aware of an increase in demand, both in the town of Lusikisiki and in the surrounding rural areas, and therefore the increased pressure to provide services for new households. • This will require direct communication with the local municipalities, ORTDM, the Department of Health, South African Police Service and the Department of Education. The channels of communication must be established as permanent points of contact throughout the site establishment phase of the project. • Regular monitoring of the schools and clinics in order to determine whether there are sufficient resources must be undertaken. When resources are deemed insufficient, DWS must communicate, through established channels, with the relevant departments for assistance. • During windy periods un-surfaced and un-vegetated areas should be dampened down. • Vegetation should be retained where possible as this will reduce dust travel. • Excavations and other clearing activities must only be done during

Theme	Mitigation measure
	<p>agreed working times and permitting weather conditions to avoid drifting of sand and dust into neighbouring areas.</p> <ul style="list-style-type: none"> • A speed limit of 30km/h must not be exceeded on dirt roads. • Any complaints or claims emanating from the lack of dust control must be attended to immediately. • Drilling, blasting and movement of heavy machinery must be limited to normal working hours (7 AM to 5 PM). • Ensure there is a facility for nearby residents to make complaints. These must be addressed and recorded. • Communities must have access to a grievance reporting mechanism, e.g. through a project steering or liaison committee. <p>Traffic safety:</p> <ul style="list-style-type: none"> • All affected communities must be informed of the formal access routes. • All vehicle operators and drivers must undergo regular training, clearly outlining the high safety risk to local rural communities • Signage making communities aware of the high safety risk due to heavy vehicles on the road must be erected at appropriate locations. • Traffic calming devices such as speed bumps should be considered on rural access roads. <p>Fire safety:</p> <ul style="list-style-type: none"> • Fires outside borrow pit camps must be prohibited. • Fires that are lit must be in a contained area and safety precautions must be followed. The fire must be monitored for cinders and extinguished when no longer needed. • Fire fighting equipment must be stored onsite. • The borrow pit campsite must be surrounded by a firebreak. • Education of fire risks must form part of the mine-worker training.
Loss of land as result of the borrow pit construction	<ul style="list-style-type: none"> • The process for land acquisition by DWS must be conducted through the traditional authorities operating in the areas as they have jurisdiction over land allocations. • Individual landowners must be identified and engaged. • All the properties must be professionally assessed and valued by professional independent evaluators registered with South African Institute of Valuers and the South African Council for Property Valuers. • Valuations, and the process of evaluation, must be shared with the landowners and will form the basis for on-going negotiations with them.
Stimulation of economic growth	<ul style="list-style-type: none"> • Equal jobs opportunities for women and men must be promoted. • Culture and tradition must be considered when planning the division of labour for site establishment. • Employment must be managed by a recruitment agency/office that uses a selection system that ensures recruitment of semi and unskilled workers from all local impacted communities in accordance with recent government policies related to local procurement. This must ensure a fair and equitable recruitment process. • Where appropriate, employees involved in the site establishment phase should be incorporated into the permanent maintenance staff for the mining phase; and • Particular attention must be paid to employment opportunities for

Theme	Mitigation measure
	<p>women and disabled persons.</p> <ul style="list-style-type: none"> • The proponent must ensure that the principal of utilising local business resources (suppliers and SMMEs) in accordance with recent government policies related to local procurement (State of the nation address, 2015) forms part of the procurement specifications. Examples of local business resources that must be considered: <ul style="list-style-type: none"> – Catering services – Transport services – Quarries/borrow pits (where necessary) – Small civils – Accommodation – Security – Hygiene services – Fencing • Implement a skills development programme which includes training in business, project management, monitoring and evaluation.
Decommissioning/Closure Phase	
GENERAL	
Final rehabilitation and decommissioning	<ul style="list-style-type: none"> • All infrastructure, equipment, machinery and other items used during the mining period must be removed from the site. • Waste material of any description, including receptacles, scrap, rubble and tyres, must be removed entirely from the mining area and disposed of at a recognized landfill facility. No waste must be buried or burned on the site. • The borrow pits, access roads, storm water control areas and any other affected areas must be rehabilitated. • The site must be covered with locally occurring grass and shaped/ levelled correctly. • All exposed areas must be re-vegetated where possible. • Mining areas must be inspected weekly for soil stability. • Alien invasive plant species must be eradicated as per the Rehabilitation and Alien Management Plan. • The closed borrow pits must pose no safety risks. • Rehabilitation must be completed in such a manner that the land can be optimally used post-mining. • Final rehabilitation must be completed within a period specified by the Regional Manager (DMR).
Closure	<ul style="list-style-type: none"> • Closure must comply with the MPRDA (Act 28 of 2002), NEMA (Act 107 of 1998) and the NEMA Regulations (2014) requirements for mine closure. • A closure plan must be compiled using the guidelines described in Appendix 5 of the NEMA Regulations (2014) and submitted to DMR. • A closure certificate must be obtained from the Minister of Mineral Resources.
ECOLOGICAL IMPACTS	
Control of alien species	<ul style="list-style-type: none"> • A Rehabilitation and Alien Management Plan must be developed and implemented during the decommissioning and closure phase to reduce the establishment and spread of undesirable alien plant species. • Alien plants must be removed from the site through appropriate methods such as hand pulling, application of chemicals, cutting etc.

Theme	Mitigation measure
	This must be done under the supervision of the ECO.
Rehabilitation of disturbed areas	<ul style="list-style-type: none"> • All impacted areas must be rehabilitated back to Ngongoni veld after mining. • Only topsoil from the immediate area must be used for rehabilitation. If none available alternative methods must be investigated and implemented like hydro-seeding, planting etc. • All mined areas must be restored as per the Rehabilitation and Alien Management Plan.
<i>No-go Alternative</i>	
Not constructing the borrow pits	<ul style="list-style-type: none"> • None

13.6 Declaration by the EAP

I, _____

declare that:

- I act as the independent environmental practitioner in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting environmental impact assessments, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this report are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the EAP:

Name of company (if applicable):

Date:

14. ADDITIONAL INFORMATION

In terms of APPENDIX 3(3) of the EIA Regulations (2014), an Environmental Impact Assessment Report must include –

- (t) Where applicable, details of any financial provisions for the rehabilitation, closure and ongoing post decommissioning management of negative environmental impacts;
- (u) An indication of any deviation from the approved scoping report, including the plan of study, including-
 - Any deviation from the methodology used in determining the significance of potential environmental impacts and risks;
 - And a motivation for the deviation.
- (v) Any specific information that may be required by the competent authority;
- (w) Any other matters required in terms of section 24(4)(a) and (b) of the Act.

14.1 Financial provisions for rehabilitation

DWS are required to submit an undertaking and commitment to rehabilitation. This includes a quantum calculation for financial provision for rehabilitation (based on the DMR “Guideline Document for the Evaluation of the Quantum of Closure-Related Financial Provision provided by a mine”, 2005). This financial provision is attached as Appendix E.

15. REFERENCES

AGIS online (www.agis.agric.za/agisweb/agis.html).

Conservation and Agricultural Resources Act (No. 43 of 1983).

Constitution Act (No. 108 of 1996).

Eastern Cape Vision 2030 Provincial Development Plan.

Hazardous Substances Act (No. 15 of 1973).

Integrated Development Plan (2013/2014). KSD Local Municipality.

Mineral and Petroleum Resources Development Act (No. 28 of 2002).

Mucina, L. & Rutherford, M.C. (eds). 2006. The vegetation of South Africa, Lesotho and Swaziland. *Strelitzia* 19. South African National Biodiversity Institute, Pretoria.

NPC National Development Plan 2030.

National Environmental Management Act (No. 107 of 1998).

National Environmental Management: Air Quality Act (No. 39 of 2004).

National Environmental Management: Biodiversity Act (No. 10 of 2004).

National Environmental Management: Protected Areas Act (No. 57 of 2003).

National Environmental Management: Waste Management Act (No. 59 of 2008).

National Forests Act (No. 84 of 1998).

National Heritage Resource Act (No. 25 of 1999).

National Water Act (No. 36 of 1998).


Occupational Health and Safety Act (No. 85 of 1993).

StatsSA (<http://www.statssa.gov.za/>).

16. APPENDICES

16.1 Appendix A: Public participation documents

Newspaper advert:



water affairs
Department of Water Affairs
REPUBLIC OF SOUTH AFRICA

NOTICE OF ENVIRONMENTAL IMPACT ASSESSMENT

EOH
Coastal & Environmental Services

**Proposed Lusikisiki Regional Water Supply Scheme
(Ingquza Hill & Port St Johns Local Municipalities, OR
Tambo District Municipality, Eastern Cape)**
(DEA Ref: 14/12/16/3/3/2/714)

Notice is hereby given in terms of Regulation 54(2) published in Government Notice No. R543 under Chapter 5 of the National Environmental Management Act (Act 107 of 1998) (NEMA), of the intent to submit an Environmental Impact Assessment (EIA) application to the National Department of Environmental Affairs (DEA).

The process will also include the submission of Water Use Licence applications to the Department of Water Affairs (DWA) as regulated by the National Water Act (Act 36 of 1998) and a request of a quarry mining licence from the Department of Mineral Resources as regulated by the Minerals and Petroleum Resources Development Act (Act 28 of 2002).

Proponent and Location:
The Department of Water Affairs (DWA), in association with the OR Tambo Water Services Authority, propose to implement a regional water supply project within the OR Tambo District Municipality in the Eastern Cape Province of South Africa.

Project Activities:
The proposed project will include the following main elements:

- Construction of the Zalu Dam on the Xura River
- Construction of a weir across the Xura River, downstream of the Zalu Dam.
- Abstraction of raw bulk water from an upgraded weir on the Xura River
- Construction/upgrading of pump station(s)
- Pumping raw water from the point of abstraction to the Lusikisiki potable water treatment facility.
- Upgrading/expansion of the Lusikisiki potable water treatment facility.
- Construction of associated potable water reticulation infrastructure (various routes).
- Construction of new potable water reservoirs (various sites)
- Establishment of deep level groundwater abstraction, treatment and distribution schemes (various locations).

Listed Activities:
The various elements of the proposed project trigger a number of listed activities in terms of listing notices (GNR 544, 545 and 546) published in terms of the EIA regulations (2010).

Main triggers:

- **GN R 545 No 15:** An area in excess of 20 hectares will be transformed from undeveloped land to institutional use; a dam operated by the Department of Water Affairs.
- **GN R 545 No 19:** Construction of the Zalu Dam on the Xura River. It is estimated that the highest part of the dam will exceed 5m.

Other triggers:


- **GN R 544 No 9, 11, 18 & 23**
- **GN R 546 No 2, 4, 13 & 16**

EOH Coastal & Environmental Services has been appointed as the Environmental Assessment Practitioner (EAP) to assist the DWA in obtaining the required environmental approvals for the proposed project in terms of the Environmental Management Act of 1998 (NEMA).

You are hereby invited to register as an Interested & Affected Party (I&AP). Please submit your name, contact information and any comments to the contact person below.

For more information, registration as an I&AP or submission of written comments by post, phone, fax or e-mail, contact:
Dr Cherie-Lynn Mack or Dr Alan Carter, PO Box 8145, East London, 5210, Tel: 043 726 7809, Fax: 043 726 8352, e-mail: cherie-lynn.mack@eoh.co.za

Date of advert: 10 July 2014



GIBB
ENGINEERING & ARCHITECTURE

NOTICE OF A DRAFT BASIC ASSESSMENT FOR THE PROPOSED CONSTRUCTION OF A PIPELINE WITHIN MBASHE LOCAL MUNICIPALITY, EASTERN CAPE PROVINCE (14/12/16/3/3/1/1067)

Notice is hereby given that Eskom Holdings Limited (Eskom) has submit-

Published on the 10th July 2014 in the Daily Dispatch.

SA AUCTIONS

Kim's Corner
 4701 221 2219 • CELL: 083 434 5337
GENERAL AUCTION
FRIDAY, 13 NOVEMBER 2015 AT 10:00
17:00 - 22 CORRIE STREET, GLENVIEW

Large building, lounge sets, couches, office chairs, tables, beds, book beds, plants, tools, hobs, fridges, washing machines, iron, under cover, hedge, beverage cooler, stainless steel, electrical, tools, broom, vacuum, electrical, furniture, washers & LOTS OF SMALL

Overview
 This is a key position within a startup wood processing business in Butterworth. Minimum requirements:
 • Strong managerial, supervisory and people skills
 • Extensive and proven track record
 • Costable references
 • Qualified in health and safety
 • Basic computer literacy
 • Reading in or willing to relocate to Butterworth
 • Willing to process plant technical applications
 • Driver's license

Key performance areas
 • Oversee factory including plant and employee operations
 • Ability to plan and process factory processing activities
 • Liaise with internal departments and clients
 • Accurately keep track of incoming expenses and out of 'incoming' products
 • Uncompromised quality and cost control
 • Keep track of cleanliness and maintenance of equipment and premises

Forward CV, certified copies of qualifications, ID and drivers license to: **hr@businesslinkages.com** or post to Human Resources, ESO, P O Box 1229, Southmead 5213, East London.
 Closing date: 26 November 2015

INDEPENDENT DEVELOPMENT TRUST

ERRATUM
 TENDER NOTICE No. 2015/10-010, advertised on 10th November 2015, closing 10 December 2015

This serves as a notification for correction of the following:
 • Date of compulsory site briefing is on Wednesday 10 November 2015, at 10:00 am and venue is at the original advert
 • Cluster 20, 4A, 4B, 4C, 4D, 4E, 4F, 4G, 4H, 4I, 4J, 4K, 4L, 4M, 4N, 4O, 4P, 4Q, 4R, 4S, 4T, 4U, 4V, 4W, 4X, 4Y, 4Z, 4AA, 4AB, 4AC, 4AD, 4AE, 4AF, 4AG, 4AH, 4AI, 4AJ, 4AK, 4AL, 4AM, 4AN, 4AO, 4AP, 4AQ, 4AR, 4AS, 4AT, 4AU, 4AV, 4AW, 4AX, 4AY, 4AZ, 4BA, 4BB, 4BC, 4BD, 4BE, 4BF, 4BG, 4BH, 4BI, 4BJ, 4BK, 4BL, 4BM, 4BN, 4BO, 4BP, 4BQ, 4BR, 4BS, 4BT, 4BU, 4BV, 4BW, 4BX, 4BY, 4BZ, 4CA, 4CB, 4CC, 4CD, 4CE, 4CF, 4CG, 4CH, 4CI, 4CJ, 4CK, 4CL, 4CM, 4CN, 4CO, 4CP, 4CQ, 4CR, 4CS, 4CT, 4CU, 4CV, 4CW, 4CX, 4CY, 4CZ, 4DA, 4DB, 4DC, 4DD, 4DE, 4DF, 4DG, 4DH, 4DI, 4DJ, 4DK, 4DL, 4DM, 4DN, 4DO, 4DP, 4DQ, 4DR, 4DS, 4DT, 4DU, 4DV, 4DW, 4DX, 4DY, 4DZ, 4EA, 4EB, 4EC, 4ED, 4EE, 4EF, 4EG, 4EH, 4EI, 4EJ, 4EK, 4EL, 4EM, 4EN, 4EO, 4EP, 4EQ, 4ER, 4ES, 4ET, 4EU, 4EV, 4EW, 4EX, 4EY, 4EZ, 4FA, 4FB, 4FC, 4FD, 4FE, 4FF, 4FG, 4FH, 4FI, 4FJ, 4FK, 4FL, 4FM, 4FN, 4FO, 4FP, 4FQ, 4FR, 4FS, 4FT, 4FU, 4FV, 4FW, 4FX, 4FY, 4FZ, 4GA, 4GB, 4GC, 4GD, 4GE, 4GF, 4GG, 4GH, 4GI, 4GJ, 4GK, 4GL, 4GM, 4GN, 4GO, 4GP, 4GQ, 4GR, 4GS, 4GT, 4GU, 4GV, 4GW, 4GX, 4GY, 4GZ, 4HA, 4HB, 4HC, 4HD, 4HE, 4HF, 4HG, 4HH, 4HI, 4HJ, 4HK, 4HL, 4HM, 4HN, 4HO, 4HP, 4HQ, 4HR, 4HS, 4HT, 4HU, 4HV, 4HW, 4HX, 4HY, 4HZ, 4IA, 4IB, 4IC, 4ID, 4IE, 4IF, 4IG, 4IH, 4II, 4IJ, 4IK, 4IL, 4IM, 4IN, 4IO, 4IP, 4IQ, 4IR, 4IS, 4IT, 4IU, 4IV, 4IW, 4IX, 4IY, 4IZ, 4JA, 4JB, 4JC, 4JD, 4JE, 4JF, 4JG, 4JH, 4JI, 4JJ, 4JK, 4JL, 4JM, 4JN, 4JO, 4JP, 4JQ, 4JR, 4JS, 4JT, 4JU, 4JV, 4JW, 4JX, 4JY, 4JZ, 4KA, 4KB, 4KC, 4KD, 4KE, 4KF, 4KG, 4KH, 4KI, 4KJ, 4KK, 4KL, 4KM, 4KN, 4KO, 4KP, 4KQ, 4KR, 4KS, 4KT, 4KU, 4KV, 4KW, 4KX, 4KY, 4KZ, 4LA, 4LB, 4LC, 4LD, 4LE, 4LF, 4LG, 4LH, 4LI, 4LJ, 4LK, 4LL, 4LM, 4LN, 4LO, 4LP, 4LQ, 4LR, 4LS, 4LT, 4LU, 4LV, 4LW, 4LX, 4LY, 4LZ, 4MA, 4MB, 4MC, 4MD, 4ME, 4MF, 4MG, 4MH, 4MI, 4MJ, 4MK, 4ML, 4MM, 4MN, 4MO, 4MP, 4MQ, 4MR, 4MS, 4MT, 4MU, 4MV, 4MW, 4MX, 4MY, 4MZ, 4NA, 4NB, 4NC, 4ND, 4NE, 4NF, 4NG, 4NH, 4NI, 4NJ, 4NK, 4NL, 4NM, 4NN, 4NO, 4NP, 4NQ, 4NR, 4NS, 4NT, 4NU, 4NV, 4NW, 4NX, 4NY, 4NZ, 4OA, 4OB, 4OC, 4OD, 4OE, 4OF, 4OG, 4OH, 4OI, 4OJ, 4OK, 4OL, 4OM, 4ON, 4OO, 4OP, 4OQ, 4OR, 4OS, 4OT, 4OU, 4OV, 4OW, 4OX, 4OY, 4OZ, 4PA, 4PB, 4PC, 4PD, 4PE, 4PF, 4PG, 4PH, 4PI, 4PJ, 4PK, 4PL, 4PM, 4PN, 4PO, 4PP, 4PQ, 4PR, 4PS, 4PT, 4PU, 4PV, 4PW, 4PX, 4PY, 4PZ, 4QA, 4QB, 4QC, 4QD, 4QE, 4QF, 4QG, 4QH, 4QI, 4QJ, 4QK, 4QL, 4QM, 4QN, 4QO, 4QP, 4QQ, 4QR, 4QS, 4QT, 4QU, 4QV, 4QW, 4QX, 4QY, 4QZ, 4RA, 4RB, 4RC, 4RD, 4RE, 4RF, 4RG, 4RH, 4RI, 4RJ, 4RK, 4RL, 4RM, 4RN, 4RO, 4RP, 4RQ, 4RR, 4RS, 4RT, 4RU, 4RV, 4RW, 4RX, 4RY, 4RZ, 4SA, 4SB, 4SC, 4SD, 4SE, 4SF, 4SG, 4SH, 4SI, 4SJ, 4SK, 4SL, 4SM, 4SN, 4SO, 4SP, 4SQ, 4SR, 4SS, 4ST, 4SU, 4SV, 4SW, 4SX, 4SY, 4SZ, 4TA, 4TB, 4TC, 4TD, 4TE, 4TF, 4TG, 4TH, 4TI, 4TJ, 4TK, 4TL, 4TM, 4TN, 4TO, 4TP, 4TQ, 4TR, 4TS, 4TT, 4TU, 4TV, 4TW, 4TX, 4TY, 4TZ, 4UA, 4UB, 4UC, 4UD, 4UE, 4UF, 4UG, 4UH, 4UI, 4UJ, 4UK, 4UL, 4UM, 4UN, 4UO, 4UP, 4UQ, 4UR, 4US, 4UT, 4UU, 4UV, 4UW, 4UX, 4UY, 4UZ, 4VA, 4VB, 4VC, 4VD, 4VE, 4VF, 4VG, 4VH, 4VI, 4VJ, 4VK, 4VL, 4VM, 4VN, 4VO, 4VP, 4VQ, 4VR, 4VS, 4VT, 4VU, 4VV, 4VW, 4VX, 4VY, 4VZ, 4WA, 4WB, 4WC, 4WD, 4WE, 4WF, 4WG, 4WH, 4WI, 4WJ, 4WK, 4WL, 4WM, 4WN, 4WO, 4WP, 4WQ, 4WR, 4WS, 4WT, 4WU, 4WV, 4WW, 4WX, 4WY, 4WZ, 4XA, 4XB, 4XC, 4XD, 4XE, 4XF, 4XG, 4XH, 4XI, 4XJ, 4XK, 4XL, 4XM, 4XN, 4XO, 4XP, 4XQ, 4XR, 4XS, 4XT, 4XU, 4XV, 4XW, 4XZ, 4YA, 4YB, 4YC, 4YD, 4YE, 4YF, 4YG, 4YH, 4YI, 4YJ, 4YK, 4YL, 4YM, 4YN, 4YO, 4YP, 4YQ, 4YR, 4YS, 4YT, 4YU, 4YV, 4YW, 4YZ, 4ZA, 4ZB, 4ZC, 4ZD, 4ZE, 4ZF, 4ZG, 4ZH, 4ZI, 4ZJ, 4ZK, 4ZL, 4ZM, 4ZN, 4ZO, 4ZP, 4ZQ, 4ZR, 4ZS, 4ZT, 4ZU, 4ZV, 4ZW, 4ZX, 4ZY, 4ZZ

water & sanitation

EOH
 Environmental Services
 REPUBLIC OF SOUTH AFRICA

NOTICE OF ENVIRONMENTAL IMPACT ASSESSMENT
Proposed Weathered Dolomite Barrow Pits in the Inguzwa Hill Local Municipality, OR Tambo District Municipality, Eastern Cape

Notice is hereby given in terms of Regulation 41(2) published in Government Notice No. R 982 under Chapter 9 of the National Environmental Management Act (No. 107 of 1998, NEMA) of the intent to submit an Environmental Impact Assessment (EIA) application to the Department of Mineral Resources (DMR).

Proposed Project Activities and Location
 The Department of Water and Sanitation (DWS), in association with the OR Tambo District Municipality, propose to implement a proposed water supply project within the OR Tambo District Municipality in the Eastern Cape. A component of this project is the construction of the Inguzwa Hill Barrow Pits. The project will consist of the construction of dolomite barrow pits for the storage of water.

NEMA Listed Activities:
 A full Stoppage and EIA is triggered by the following listed activities:
 - (DRP 104 No. 17) Any activity including the operation of any activity which requires a mining right as contemplated in Section 22 of the Mineral and Petroleum Resources Development Act (Act No. 28 of 2002, MPRDA), including activities for which an exemption has been issued in terms of section 105(1) of the MPRDA.

Other listed activities that are triggered: GNR 043 No. 12, GNR 044 No. 15
 EOH Coastal & Environmental Services (EOH CES) has been appointed by DWS as the Environmental Assessment Practitioner (EAP) to undertake the EIA for the proposed barrow pits in terms of the EIA Regulations (2014).

A copy of the draft Stoppage Report will be available for public review until 14 December 2015 on the EOH CES website (www.eohces.co.za), at the CONCES office, East London and at the Local public library.

For more information or submission of written comments by post, phone, fax or e-mail, contact: Ms Wandu Duku / Ms Callie Smith, PO Box 9140, East London, 6010. Tel: 044 720 7800, Fax: 044 720 8352, e-mail: randu.duku@eoh.co.za, callie.smith@eoh.co.za



Do you have a story? Call Daily Dispatch 043 702 2000

Charl yearns to get his fortunes on right track

South African star aims to start his push at the SA Open

BY DAVID ISAACSON

CHARL Schwartzel's confidence has taken a knock after two tough years on tour, but he says he is in a better position than he was in at the start of the 2015 SA Open.

The 2011 Masters champion was speaking yesterday at the announcement of BMW as the title sponsor of the Randburg Open at the Johannesburg Golf Club from January 7-10.

"I've made a few steps in terms of my game, but I don't think I'm any better than I was a year or two ago," he said.

"But there is a factor of having two years where you're not playing well that breaks your confidence," Schwartzel said. "I'm excited to come back. It's a good chance to actually re-assess my game, but there are a lot of good players out there and I haven't finished it off yet."

"I'm not a positive that I've come back and not so much of a negative," said Schwartzel, ranked 54 in the world. He intends enjoying a holiday before diving back into action next year.

At the past two editions he has shown leads in the final round. Schwartzel lost to Englishman Andy Sullivan in a playoff for the 2015 crown after squandering a five-shot lead going into the final round.

The previous time he was three strokes up at one stage before imploding. He would have every reason to hate the tight Edenvale layout, but Schwartzel says he likes it.

"I'm excited to come back. It's a good chance to actually re-assess my game, but there are a lot of good players out there and I haven't finished it off yet."

"I'm not a positive that I've come back and not so much of a negative," said Schwartzel, ranked 54 in the world. He intends enjoying a holiday before diving back into action next year.

Late venue switch for Mile race

BY BOB NORRIS

THE Puma Run-a-Mile Series hit East London this weekend and will be the first in the series with Durban and Johannesburg to follow.

The East London event has had to make a late move from the race hosts.

The course will now be made up of two 800m loops within the suburb of Bunkers Hill.

should be no different. For all the Nelson Mandela Parkrun Fraternity who can't get to Sunrise-on-Sea, Kidds Beach or Stutterheim, the mile should be a great outing where they can all catch up.

Thursday November 12, 2015 **CLASSIFIED/SPORT 19**

Fresh Kings crisis looms as players look to pull out

RUGBY

By GEORGE BYRON

A MASS exodus of the top EP Kings players is on the cards after the new contract of salaries gave them the right to cancel their contracts and walk out on the cash-strapped franchise.

An SA Rugby Players Association (SA RPA) deadline to sign players' December salaries by midnight on Tuesday expired without payment which has opened the door for many players to move on.

Those without the opportunity to move on are now not allowed to attend training sessions.

It is known there is interest in several key players from around the world.

Among those expected to be made lucrative offers are: Liam Grogan, Tim Agaba, Sylvain Matheis, Shane Green, Thomasalakha Gaba, Tommy Seymour and Luther Odwa.

And explosive centre Tim Whitfield, who captained the Kings while Luke Watson was injured, has confirmed he is leaving the franchise.

His departure will be a big loss as the Kings prepare for a return to Super Rugby next year. Whitfield led the team when they were white Kings players at Kings Park in the Currie Cup.

"I'm moving on. Not sure where to, but my 10-day notice period has finished and I am free to go. I feel it's the right time for me to move on," said Whitfield.

There has been talk that some Kings management were unhappy that the team were the ambassadors in an open show of unity as the team crisscrossed the franchise.

There was frantic activity between Grogan and some Kings players on Tuesday as the papers deadline was approached. Some Kings players were expected to sign on Tuesday but that did not happen.

"Grogan spoke to the players yesterday [Tuesday] and advised them of their options. Some of them who have options elsewhere can now exercise their legal right to cancel their contracts."

"I have had an open line of communication with some of the Kings players and they have not heard anything from the Kings. No commitment and nothing at all in terms of payment from the Kings side. I was those things sorted out. Not only for the players but for the game in the region."

"I think the Kings' off-season remuneration has been proposed until Monday."

There are some Kings players with new contracts who only get their first pay at the end of this month and they will be expected to attend training.

There is also a good chance that some will turn up to gauge the mood in the Kings camp after a traumatic end-of-season tour.

As the main crisis continues to drag on, EP executives Checco Watson says he is "very, very close" to striking a multimillion rand sponsorship deal for the Kings with a joint effort and naming conglomerate in Australia.


He would not elaborate further on the massive sponsorship, thought to be in the region of R20m, that could breathe new life into the Kings just three months before they play their opening Super Rugby match.

er 12


all Today - 3:30pm on SBC

GOLF
 News - 2pm on SBC and on S55 LIVE
 European Tour BMW Masters - 5am on S55 LIVE
 PGA Tour: CHL Classic at Mayakoba - 8pm on S57 LIVE

RUGBY
 European Challenge Cup: Harlequins v



water & sanitation
Department
Water and Sanitation
REPUBLIC OF SOUTH AFRICA



EOH
Coastal & Environmental Services

NOTICE OF ENVIRONMENTAL IMPACT ASSESSMENT

Proposed Weathered Dolerite Borrow Pits in the Ingquza Hill Local Municipality, OR Tambo District Municipality, Eastern Cape

Notice is hereby given in terms of Regulation 41(2) published in Government Notice No. R 982 under Chapter 5 of the National Environmental Management Act (No. 107 of 1998; NEMA) of the intent to submit an Environmental Impact Assessment (EIA) application to the Department of Mineral Resources (DMR).

Proponent, Project Activities and Location:
The Department of Water and Sanitation (DWS), in association with the OR Tambo Water Services Authority, propose to implement a regional water supply project within the OR Tambo District Municipality in the Eastern Cape. A component of this scheme is the construction of the Zulu Dam on the Xura River. Two downstream weathered dolerite borrow pits are required for construction of the dam wall.

NEMA Listed Activities:
A Full Scoping and EIA is triggered by the following listed activities:
- GNR 984 No. 17: Any activity including the operation of that activity which requires a mining right as contemplated in Section 22 of the Mineral and Petroleum Resources Development Act (Act No. 28 of 2002; MPRDA), including activities for which an exemption has been issued in terms of Section 106 of the MPRDA.

Other listed activities that are triggered: GNR 983 No. 22, GNR 984 No. 15.

EOH Coastal & Environmental Services (EOH CES) has been appointed by DWS as the Environmental Assessment Practitioner (EAP) to undertake the EIA for the proposed borrow pits in terms of the EIA Regulations (2014).

A copy of the draft Scoping Report will be available for public review until 14 December 2015 on the EOH CES website (www.cesnet.co.za), at the EOH CES office in East London and at the Lusikisiki public library.

For more information or submission of written comments by post, phone, fax or e-mail, contact: Ms Nande Suka / Ms Caitlin Smith, PO Box 8145, East London, 5210, Tel: 043 726 7809, Fax: 043 726 8352, e-mail: nande.suka@ech.co.za / caitlin.smith@ech.co.za

Recent advert published in the Daily Dispatch on 12 November 2015.

Background Information Document:

ENVIRONMENTAL IMPACT ASSESSMENT



Proposed by:
Department of Water and Sanitation.

Return address for comments:
Environmental Consultant:
EOH Coastal & Environmental Services
Nande Suka
25 Tecoma Street, Berea, 5214
P.O Box 8145
Nahoon, 5210
Tel: (043) 726 7809
Fax: (043) 726 8352
Email: nande.suka@eoh.co.za



AIM OF THIS DOCUMENT

The purpose of this document is to ensure that people that are interested in or affected by the proposed project are provided with information about the proposal, the process being followed and provided with an opportunity to be involved in the EIA process.

Registering as an Interested and/or Affected Party (I&AP) allows individuals or groups the opportunity to contribute ideas, issues, and concerns relating to the project. I&APs also have an opportunity to review all of the reports and submit their comments on those reports. All of the comments that are received will be included in the reports that are submitted to the Competent Authority.

THE PROPONENT

The proponent for this project is the national Department of Water and Sanitation (DWS). The DWS is the custodian of South Africa's water resources. It is primarily responsible for the formulation and implementation of policy governing this sector. It also has an overriding responsibility for water services provided by local government.

PROJECT DESCRIPTION

DWS in association with the OR Tambo Water Services Authority, propose to implement a regional water supply project within the OR Tambo District Municipality in the Eastern Cape. A component of this scheme is the construction of the Zalu Dam on the Xura River. Two downstream weathered dolerite borrow pits are required for construction of the dam wall (Figure 1). The borrow pits are approximately 10 km north-west of Lusikisiki in the Ingquza Hill Local Municipality.

THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

EOH Coastal & Environmental Services (EOH CES) was established in 1990 as a specialist environmental consulting company.

EOH CES has considerable experience in terrestrial, marine and freshwater ecology, the Social Impact Assessment (SIA) process, State of Environment Reporting (SOER), Integrated Waste Management Plans (IWMP), Environmental Management Plans (EMPs), Spatial Development Frameworks (SDF), public participation, as well as the management and co-ordination of all aspects of the Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA) processes. EOH CES has been active in all of the above fields, and in so doing have made a positive contribution towards environmental management and sustainable development in the Eastern Cape, South Africa and many other African countries. We believe that a balance between development and environmental protection can be achieved by skilful, considerate and careful planning.

THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

According to the Environmental Impact Assessment (EIA) regulations (2014), promulgated under the National Environmental Management Act (No. 107 of 1998), listed activities need to be assessed. In this case the following project activities require that a Full Scoping and EIA be carried out:

Table 1: Listed Activities which require Environmental Authorisation

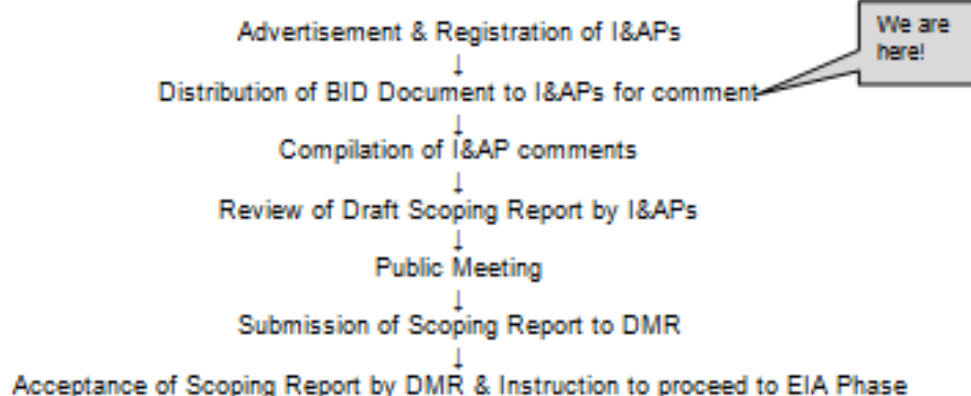
ACTIVITY NUMBER	LISTED ACTIVITY
GNR 983 No. 22	The decommissioning of any activity requiring (i) a closure certificate in terms of Section 43 of the Mineral and Petroleum

	Resources Development Act (Act No. 28 of 2002; MPRDA).
GNR 984 No. 15	The clearance of an area of 20 hectares or more of indigenous vegetation.
GNR 984 No. 17	Any activity including the operation of that activity which requires a mining right as contemplated in Section 22 of the MPRDA, including activities for which an exemption has been issued in terms of Section 106 of the MPRDA.

APPROACH TO THIS SCOPING AND EIA REPORT

The EIA for the proposed project is presently in the SCOPING phase. This phase serves primarily to inform the public and relevant authorities (Department of Mineral Resources) about the proposed project and to determine any impacts. These impacts will then be extensively addressed by specialists in the field during the EIA phase. Only after the full EIA report has been submitted will a decision be made by the relevant authorities.

SCOPING PROCESS



THE ENVIRONMENTAL IMPACT ASSESSMENT PHASE

This phase is more complex and more detailed than the Scoping phase, because it focuses on undertaking specialist studies that may be identified during the Scoping phase. These studies provide specialist input into the EIA process on assessing impacts based on scientific information. I&APs will be consulted again during this phase, and will be given an opportunity to comment on the Draft Environmental Impact Report (EIR) that will contain the specialist reports. During this phase an Environmental Management Programme must also be prepared for the project.

The final EIR is submitted to the Department of Mineral Resources (DMR) who, after considering the report, will make a decision on whether or not to authorise the development. The authorisation of a development carries a number of legally binding conditions, which will be contained in the Environmental Authorisation document. This document will be circulated to all registered I&APs within two weeks of receipt from DMR.

POTENTIAL IMPACTS AND BENEFITS

EOH will assess the impacts of the proposed activity on the environment. Impacts will be assessed for the various alternatives; including the preferred alternative and the "No-Go" alternative. Impacts will be assessed for the planning and design, construction, operation and decommissioning phase.

HOW CAN YOU BE INVOLVED?

A **Public Participation Process (PPP)** is being conducted as part of the EIA. The aim of the PPP is to allow everyone who is interested in, or likely to be affected by the proposed development to provide input into the process.

The PPP will include:

- Advertisements in the Daily Dispatch
- Notice boards on site
- Circulation of the BID (this document) to all identified I&APs and stakeholders
- Comments period
- Review of the reports by all registered I&APs and stakeholders
- A public meeting (If required)

If you consider yourself an interested and/or affected person/party, it is important that you become and remain involved in the PPP. In order to do so please follow the steps below in order to ensure that you are continually informed of the project developments and will ensure your opportunity to raise issues and concerns pertaining to the project.

STEP 1: Please register by responding to our notification and invitation, with your name and contact details (details provided on cover page and below). As a registered I&AP you will be informed of all meetings, report reviews and project developments throughout the EIA process.

STEP 2: Attend any meetings that will be held during EIA process. As a registered I&AP, you will be invited to these meetings.

EOH is required to engage with all private and public parties that may be interested and/or affected by the proposed borrow pits, in order to distribute information for review and comment in a transparent manner.

In the same light, it is important for I&APs to note the following:

1. In order for EOH to continue engaging with you, please **ENSURE** that you register on our database by contacting the person below.
2. As the EIA process is regulated by specific review and comment timeframes, it is your responsibility to submit your comments within these timeframes.

Please send your enquiries and/or comments to:

Nande Suka
25 Tecoma Street,
Berea,
East London, 5214
P.O Box 8145
Nahoon, East London, 5210
Tel: (043) 726 7809/8313
Fax: (043) 726 8352
Email: nande.suka@eoh.co.za

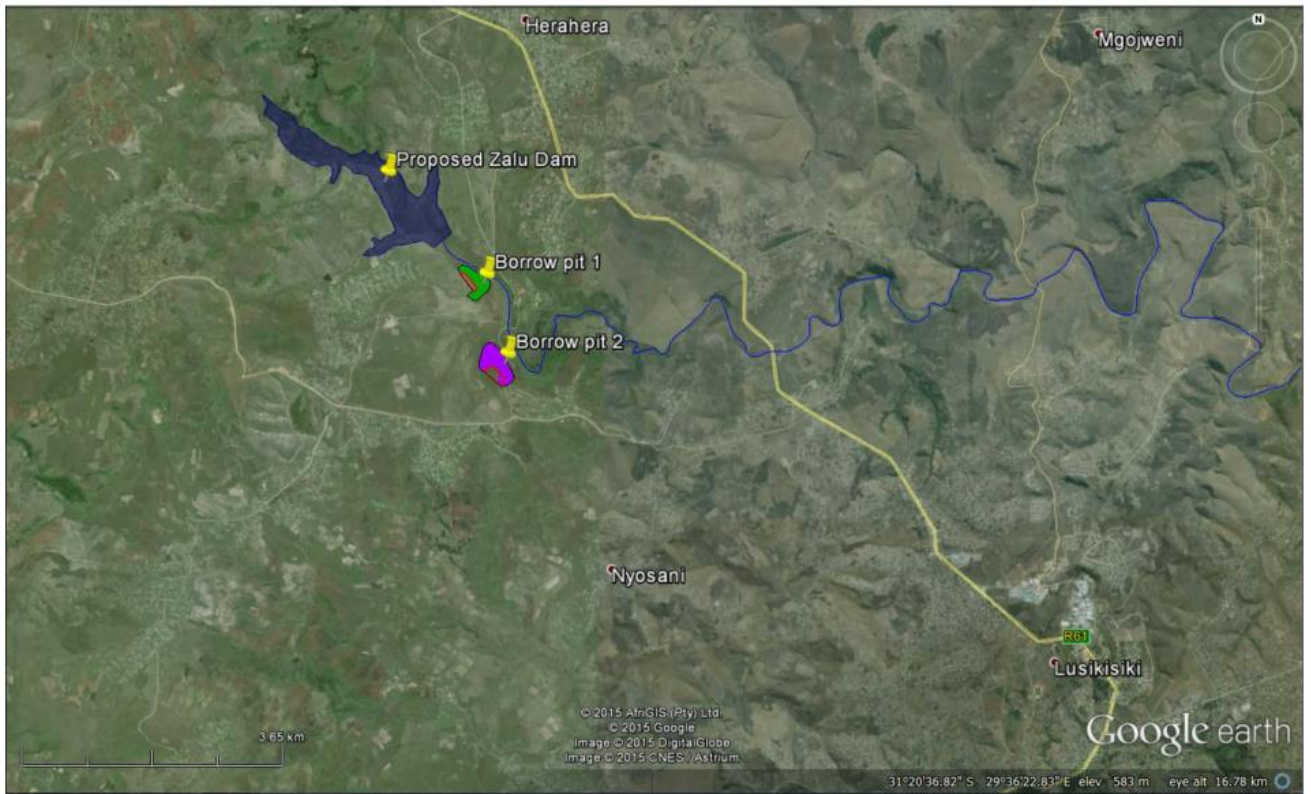


Figure 1. Locality map for the proposed borrow pits.

**I hereby wish to register as an Interested and Affected Party (I&AP) for the Proposed
Weathered Dolerite Borrow Pits
EIA process**

Name: _____

Organization: _____

Postal address: _____

Email: _____

Phone #: _____ Fax #: _____

My initial comments, issues or concerns are:

I would like to receive all future correspondence in: (please circle)

ENGLISH / XHOSA

Other individuals, stakeholders, organisations or entities that should be registered are:

Name: _____

Organisation: _____

Postal address: _____

Email: _____

Phone #: _____ Fax #: _____

Please return details to: **Nande Suka**: P.O. Box 8145, Nahoon, East London, 5210
Telephone: (043) 726 7809 Fax: (043) 726 8352 Email: nande.suka@eoh.co.za

Letter of Notification of EIA and Draft Scoping Report for Public Review



Coastal & Environmental Services

11 October 2015

Dear Stakeholder and I&AP,

NOTICE: PROPOSED WEATHERED DOLERITE BORROW PITS, INGQUZA HILL LOCAL MUNICIPALITY, EASTERN CAPE

This letter of notification serves to inform you, in terms of Regulation 41 (2) published in Government Notice No. R 982 under Chapter 5 of the National Environmental Management Act (No. 107 of 1998), as amended in 2014, of the intention to carry out an Environmental Impact Assessment (EIA) for two proposed borrow pits. EOH Coastal and Environmental Services (EOH CES) has been appointed as the Environmental Assessment Practitioner (EAP) to undertake the EIA for the proposed borrow pits in terms of the EIA Regulations (2014).

Proponent: The proponent for this project is the national Department of Water and Sanitation (DWS). The DWS is the custodian of South Africa's water resources. It is primarily responsible for the formulation and implementation of policy governing this sector. It also has an overriding responsibility for water services provided by local government.

Activity: DWS in association with the OR Tambo Water Services Authority, propose to implement a regional water supply project within the OR Tambo District Municipality in the Eastern Cape. A component of this scheme is the construction of the Zalu Dam on the Xura River. Two downstream weathered dolerite borrow pits are required for construction of the proposed Zalu dam wall. The borrow pits are located approximately 10 km north-west of Lusikisiki in the Ingquza Hill Local Municipality.

The development necessitates a Full Scoping and EIA for review and approval by the relevant competent authority, namely the Department of Mineral Resources (DMR).

Locality: For further information, please refer to the Background Information Document attached to this letter.

Public Participation: A critical element of the EIA process is Public Participation. The objective is to contact, notify and inform members of the community who may be interested and/or affected by the proposed activity in order that any such party may fully participate, interact and inform the EIA process.

Coastal and Environmental Services (Pty) Ltd
T +27 43 726 7809 | F: +27 43 726 8352
25 Tecoma Street, Berea, East London, 5214 | PO Box 8145, East London, 5210
reg no: 2012/151672/07
www.eoh.co.za | www.cesnet.co.za

Directors: A Bohbot, JW King, and AM Aviz



Coastal & Environmental Services

Please note that the draft Scoping Report will be available for public review until 14 December 2015 on the EOH CES website (www.oesnet.co.za), at the EOH CES office in East London and at the Lusikisiki Public Library.

Consultant: For more information, registration as an Interested and Affected Party (I&AP), or the submission of written comments, please contact the person listed on the following page via telephone, fax, post or email within 30 days of this notice.

EOH Coastal & Environmental Services
Attention: Ms Nande Suka
PO Box 8145, Nahoon
East London, 5210
Tel: 043 726 7809
Fax: 043 726 8352
E-mail: nande.suka@eoh.co.za

Kind regards,

Nande Suka
Environmental Consultant
EOH Coastal and Environmental Services

Proof of notification of Draft Scoping Report for Public Comment

Email:

From: Caitlin Smith <c.smith@cesnet.co.za>
Sent: 12 November 2015 04:36 PM
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Subject: Lusikisiki Regional Water Supply Scheme: Weathered Dolerite Borrow Pits- Availability of Draft Scoping Report
Attachments: BID_October 2015.pdf; Letter of Notification.pdf

Dear Stakeholders/Interested & Affected Parties,

Please find the attached letter of notification and background information document, with details of the proposed Weathered Dolerite Borrow Pits in the Ingquza Hill Local Municipality. These borrow pits form part of the Lusikisiki Regional Water Supply Scheme. Please note that the Draft Scoping Report for the borrow pits is now available for public comment.

I trust you will find everything in order.



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M Mafanya	Ingquza Hill LM	083 424 8945	
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T Ngaka	Mrhotshozweni	0834462003	
M Mfolozi		0605632039	
M Ngwane	Ndimbaneni	0605660775	
F Mgwaza		0734343813	
N Nabo		0735367890	
X Sonwabo	Bwala A/A	0764674031	
N M		0737765798	
G Mtirara		0735013081	
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N Noluthando		0735306707	

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N Mandela		0835079510	
N Ngoyi		0782325914	
N M		0739866933	
N M		0786796071	
Aviwe M	Ndimbaneni	0780029096	
Mgwane P	Ndimbaneni	0734275158	
M Sisoko	Ndimbaneni	0603290557	
N Nomgobo		0783430843	
M Voyo		0838846649	
G Mphuthumi		0737018540	
L Miya	Mrhotshozweni	0780706664	
T Ngoza	Mrhotshozweni	0739813433	
F Luyolo	Mrhotshozweni	0710740320	
Siboniso		0786278448	
Babalwa		0733344312	
L Mafanja	Mrhotshozweni	0786117745	
T Witbooi	Ndimbaneni	0732038639	
M Witbooi	Ndimbaneni	0730072861	
J Mahambehlala	Ndimbaneni	0738485781	
N Rosetta	Mrhotshozweni	0732394274	
T Ngwane	Ndimbaneni	0782103191	
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A Maleya	Ndimbaneni	0731132772	
L Mzam	Ndimbaneni	0834750243	
N Ngwane	Ndimbaneni	0783390107	
M Mahlikihla	Mthimbe	0834971702	
A Mavovana	Mthimbe	0718410187	
M V Bomboto	Mthimbe	0797065696	
D M Mphali		0734805993	

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Z Gongo	Mthimbe	0734144307	
S Mathe	Mthimbe	0833732680	
M Mtshetha	Mthimbe	0781593024	
Z Gulwana	Mthimbe	0833247950	
N Manaya	Mthimbe	0835328191	
E T Gxotho	Mthimbe	0791016038	
N Mzomi		0780865614	
N Mzomi		0781940090	
M Ngwane		0782249885	
B Madotyeni		0786656265	
N Sapho	Mthimbe	0833525762	
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N Mgwako	Mthimbe	0730818019	
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A N Yengwa		0794845155	
B Vusani		0738843288	
B Vusani		0738662379	
M Nomvete		0782201928	
M Jjimba		0781981827	
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N Manciya	Mthimbe	0791148282	
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D Nontlahla	Mthimbe	0786529625	
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Nomthuhzi		0727500955	
Z Duntsula	Mthimbe	0835623256	
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S Tshitshi	Mthimde	0785363563	
N Nota	Mthimde	0833514435	
N Makatana	Mthimde	0820991033	
N Ngebe	Mthimde	0837641763	
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M Bunzi	Mthimde	0836842208	
V Phulani	Mthimde	0783291552	
D Noziwendu	Mthimde	0720799951	
B Gxottho	Mthimde	0785196160	
S Mathe	Mthimde	0787154432	
S Sxakata	Mthimde	072291102	
S Nkomayitshhe	Mthimde	0838611580	
N Majjja	Mthimde	0603049493	
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P Sulwana	Mthimde	0730688662	
A Phuzi	Mthimde	0738446263	
P Khuthala		0737803128	
M Nana	Mthimde	0710697921	
M Nkululeko		0604083161	
S Makanya	Mthimbe	0780893994	
N Ngwane		0739596131	
P Luthando	Dumezweni	0733074361	
N Sivuyile	Dumezweni	0836962664	
Pansomso	Dumezweni	0780459326	
M Malizo	Mthimde	0733166345	
L Zaphe	Mthimde	0833375169	
L Mlakalaka		0717493021	
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N Myekethe		0739860780	
Mafaka		0793518618	
Manyatha		0732030063	
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Selani		0729785047	
Nothembile		0734737388	
Ngolomi		0738073123	
Qokweni		0785108024	
N Nosiphiwo	Mthimde	0731000719	
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Nowezile Maijebisi		0729742912	
Nozamile Zabhoyani		0820683568	
Nomlhunzi Mathubeni		0603522550	
N Majjja		0783972922	
Mantlani Mabeno		0784897674	
M Molwande	Mthimde	0717142889	
Gxobo Phumlani	Mthimde	0785842948	
Ludiya Lunga	Mthimde	0838740476	
Khangomso M	Mthimde	0834833231	
S Khanyile	Mthimde	0781118550	
M Sondisilo	Mthimde	0723078732	
S Mawande	Mthimde	0781115850	
Sihawu	Mthimde	0785387321	
B Gunuza	Mthimde	0832470957	
M Jjimba	Mthimde	0782698162	
Mcebisi S		0630416319	
Mzwandile	Dumezweni	0833440071	
Sizwe		0789868866	

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Sulwana Azola	Mthimde	0834793144	
M Sifisio		0733606882	
M Lindile	Dumezweni	0737054918	
S Dingi	Mthimde	0739573137	
Stembiso	Mthimde	0734568053	
S Manyukana	Mthimde	0717926398	
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B Mkize	Mthimde	0718298807	
S Mkize	Mthimde	0784137236	
I&AP	Zalu	0835292585	
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Ms Feziwe Mshiywa	Port St Johns LM	0475641207	fmshiywa@psimunicipality.gov.za
Mr Bahlekile Keikelame	Department of Rural Development and Land Reform	0437007000	Bahlekile.Keikelame@drdlr.gov.za
	Department of Rural Development and Land Reform		Sazimzi.Nibe@drdlr.gov.za

Letter of Notification of Draft Environmental Impact Assessment Report for Public Review



Coastal & Environmental Services

31 May 2016

NOTICE: DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT FOR THE PROPOSED WEATHERED DOLERITE BORROW PITS, INGQUZA HILL LOCAL MUNICIPALITY, EASTERN CAPE

DMR Ref. no.: EC 30/5/1/3/3/2/1/00047 BPEM

Dear Stakeholder and I&AP,

Please note that the Draft Environmental Impact Assessment Report (EIR) for the Proposed Weathered Dolerite Borrow Pits in the Ingquza Hill Local Municipality is now available for public review until 1 July 2016.

A copy of the report is available on the EOH CES website (www.cesnet.co.za), at the EOH CES office in East London and at the Lusikisiki Public Library.

Kind regards

Caitlin Smith
Environmental Consultant

EOH Coastal and Environmental Services
Email: caitlin.smith@eoh.co.za
Tel: 043 726 7805

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reg no. 2012/751672/07
www.eoh.co.za | www.cesnet.co.za

Directors: A Buttol, M King and AM Ails

Proof of notification of draft EIA report for Public Comment

Email:

Environmental Impact Assessment Report – September 2016

From: Caitlin Smith <c.smith@cesnet.co.za>
Sent: 31 May 2016 04:16 PM
To: 'hermien.pieterse@aecom.com'; 'johan.rossouw@aecom.com'; 'jmyburgh@ages-group.com'; 'sharlene.matthews@agrie.co.za'; 'moller@lantic.net'; 'cthompson@amatolawater.co.za'; 'nmuller@amatolawater.co.za'; 'cthompson@amatolawater.co.za'; 'chuma@asgisa-ec.co.za'; 'luckyz@cocta.gov.za'; 'qondile.paliso@deaet.ecape.gov.za'; 'siyabulela.mtonjeni@deaet.ecape.gov.za'; 'thozi.manyisana@agr.ecprov.gov.za'; 'thobaniV@daff.gov.za'; 'mxolisima@daff.gov.za'; 'MMogorosi@environment.gov.za'; 'dmthembu@environment.gov.za'; 'Deidre.Watkins@dmr.gov.za'; 'fourief@dwa.gov.za'; 'goldenhuyst@dwa.gov.za'; 'kanisep@dwa.gov.za'; 'lucasa@dwa.gov.za'; 'minil@dwa.gov.za'; 'mullineux@dwa.gov.za'; 'mwakab@dwa.gov.za'; 'Thompson@dws.gov.za'; 'vanniekerkp@dwa.gov.za'; 'westonb@dwa.gov.za'; 'mugumom@dwa.gov.za'; 'ndzunguc@dwa.gov.za'; 'makhanyap@dwa.gov.za'; 'mbambig@dwaf.gov.za'; 'komga@ecac.co.za'; 'smase@ecdc.co.za'; 'baphelele@ecsecc.org'; 'siv@ecsecc.org'; 'nmaxongo@ecphra.org.za'; 'smokhanya@ecphra.org.za'; 'tmbangeni@ecdc.co.za'; 'mdodan@eskom.co.za'; 'mtshau@eskom.co.za'; 'mafumba@eskom.co.za'; 'nmdiya@ihlm.gov.za'; 'lusindisop@webmail.co.za'; 'shthoka@ruraldevelopment.gov.za'; 'zzhememela@ruraldevelopment.gov.za'; 'vuyani.mapiya@ecpta.co.za'; 'esthermam@daff.gov.za'; 'dmthembu@environment.gov.za'; 'pekane.mashiane@dhs.gov.za'; 'owenhlazo@yahoo.com'; 'charles.kumbula@misa.gov.za'; 'sifisok@ortambodm.gov.za'; 'mandisam@ortambodm.gov.za'; 'mzaiyiae@ortambodm.gov.za'; 'zhewu@psjmunicipality.co.za'; 'osopela@psjmunicipality.co.za'; 'zukiswa.macingwane@mpilo.ecprov.gov.za'; 'Bongiwe.mbomboshe@socdev.ecprov.gov.za'; 'sisanda.fiyani@deaet.ecape.gov.za'; 'machimanea@dwa.gov.za'; 'lizor@cogta.gov.za'; 'ntandazov@cogta.gov.za'; 'babalwa.shushu@otp.ecprov.gov.za'; 'patsy@itsnet.co.za'; 'makhosi.mthembu@ecpta.co.za'; 'sinothi.ndlovu@umgeni.co.za'; 'ntsiki.baai@umgeni.co.za'; 'david.stephen@umgeni.co.za'; 'dmangqo@psjmuni.co.za'; 'silassotshongaye@gmail.com'; 'ngdiki@gmail.com'; 'mthuthuzelivena@gmail.com'; 'fonokm@gmail.com'; 'zemtiki@gmail.com'; 'rmzweni@gmail.com'; 'tshoto@webmail.co.za'; 'siyamthanda.mzaza@yahoo.com'; 'ntsebz@gmail.com'; 'xolilemoni@gmail.com'; 'nolwazin2000@yohao.com'; 'mndenyaneyan@ihlm.gov.za'; 'ngxamile@ihlm.gov.za'; 'minkungu@yahoo.com'; 'n92vato@gmail.com'; 'thembisile2@gmail.com'; 'bongeka2@gmail.com'; 'n.siko@gmail.com'; 'Mike.denison@wessa.co.za'; 'eladmin@wessa.co.za'; 'Van Jaarsveld Sanet (VanJaarsveldS@dws.gov.za)'; 'nmdiya@ihlm.gov.za'; 'fmshiywa@psjmunicipality.gov.za'; 'BDJKeikelame@ruraldevelopment.gov.za'; 'Supercon@vodamail.co.za'; 'mzintlavaquarry@gmail.com'; 'Fourie Lizna (ELS) (FourieL4@dws.gov.za)'; 'Bahlekile.Keikelame@drdlr.gov.za'; 'pntshobo@ihlm.gov.za'; 'm.tenyane@ihlm.gov.za'; 'nmdiya@ihlm.gov.za' (nmdiya@ihlm.gov.za)
Cc:
Subject: Lusikisiki Regional Water Supply Scheme: Weathered Dolerite Borrow Pits- Availability of Environmental Impact Assessment Report (EC 30/5/1/3/3/2/1/00047 BPEM)
Attachments: Letter of notification release of Draft EIR.pdf

Dear Stakeholders/Interested & Affected Parties,

Please note that the Draft Environmental Impact Assessment Report for the abovementioned borrow pits is now available for public comment.

I trust you will find everything in order.



Caitlin Smith, Pr.Sci.Nat.
 Senior Environmental Consultant
 EOH Coastal & Environmental Services
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 East London | Eastern Cape | South Africa
 tel: +27 (43) 726 7809 | fax: +27 (43) 726 8352 | cell: +27 (73) 457 4885
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Consulting | Technology | Outsourcing

SMS:

Contacts for sms notification of release of Draft EIR

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073 858 2831
082 843 3887
083 562 3717
083 462 3892
071 865 3038
073 782 1459
083 668 5540
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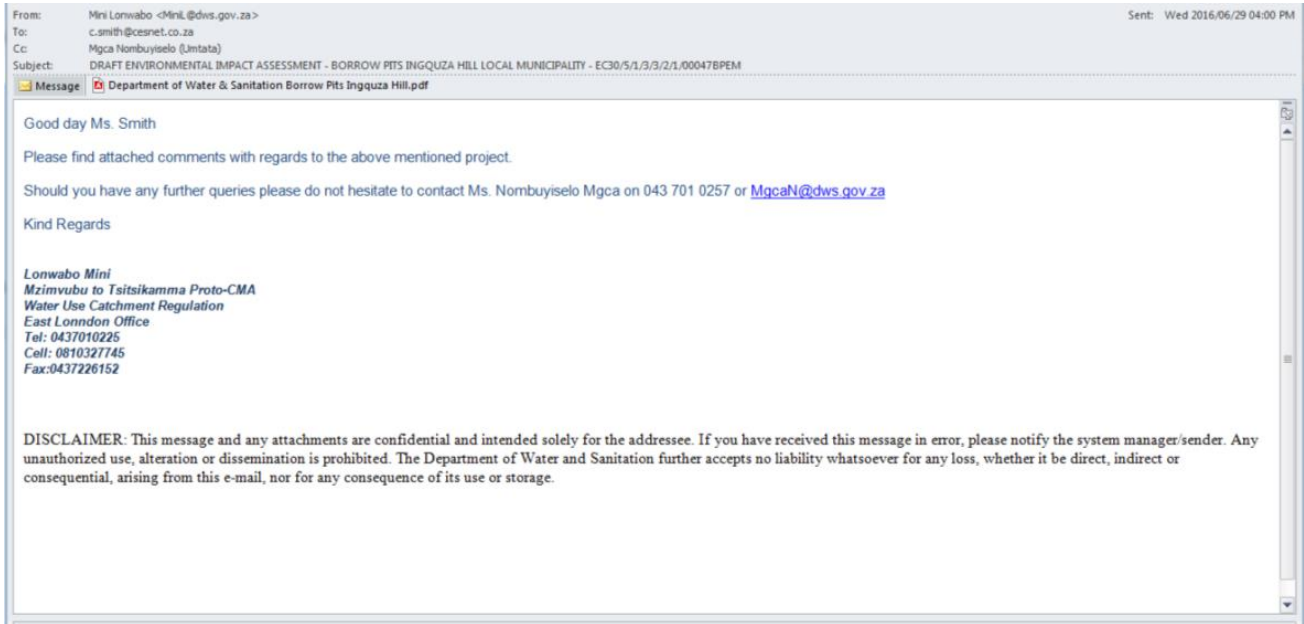
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Comment from DWS:





water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

P.O. Box 7019, East London 5200

☎ 043-701 0225

Enquiries: Mr. L Mini

E-mail : MiniL@dws.gov.za

Fax : 043 722 6152

Ref: EC
30/5/13/3/2/1/00047BPEM

The Manager
EOH Coastal & Environmental Services
25 Tecoma Street
Berea
EAST LONDON
5214

Attention: Ms. Caitlin Smith

NOTICE: DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT FOR THE PROPOSED WEATHERED DOLERITE BORROW PITS, INGQUZA HILL LOCAL MUNICIPALITY, EASTERN CAPE

The Department of Water and Sanitation has no objections to the proposed activity provided the following are adhered to:

1. No prospecting mining activity should occur in close proximity to a water resource.
2. No prospecting activity within the 1: 100 year flood line.
3. Confine any polluted water systems away from the clean water systems.
4. Collect the water arising within any dirty area, including water seeping from mining operations, outcrops or any other activity, into a dirty water system.
5. Design, construct, maintain and operate any **dirty water system** at the mine or activity so that it is not likely to spill into any clean water system more than once in 50 years.
6. Design, construct, maintain and operate any **dam or tailings dam** that forms part of a dirty water system to have a **minimum freeboard of 0.8 metres** above full supply level, unless otherwise specified in terms of Chapter 12 of the Act.
7. Silt fences should be used to prevent soil eroding from nearby mining activities reaching watercourses.
8. Solid waste should be disposed of at a licensed waste disposal site.
9. All procedures and equipment used must be in accordance with the Occupational Health and Safety Act & Regulations of South Africa.

10. The developer must exercise suitable precautions with the storage, handling and transport of all materials that could adversely affect the environment. Such precautions may include the use of bund walls. If pollution of any surface or groundwater occurs, it shall immediately be reported to this Department and appropriate mitigation measures must be employed.
11. Storage of material, chemicals, fuels, etc must not pose a risk to the surrounding environment and this includes surface and groundwater.
12. Such storage areas must be located outside the 1:100 year floodline of any watercourse and must be fenced to prevent unauthorised access into the area.
13. Temporary bunds must also be constructed around chemical or fuel storage areas to contain possible spillages.

CHEMICAL TOILETS SHOULD BE:

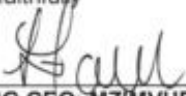
- Placed outside areas susceptible to flooding.
- Maintained in an sound, clean sanitary condition free of insects, overflowing , leakages and other harmful conditions.
- Not create public health hazard or nuisance.
- Liquids used as disinfectants do not completely disinfect, therefore waste water from chemical toilets should not be discharged to a water resource.
- If not going to be used for a long time, empty and keep clean.

All activities carried out should comply with the requirements of the National Water Act (Act 36 of 1998).

Notwithstanding the above, the responsibility rests with the applicant to identify any sources or potential sources of pollution from his undertaking and to take appropriate measures to prevent any pollution of the environment.


Should you need more clarity regarding the above please do not hesitate to contact this office.

Yours faithfully



ACTING CEO: MZIMVUBU TO TSITSIKAMMA PROTO CMA
DATE: 29 June 2016

Proof of delivery of draft EIR at DWS:

 <p>EOH Coastal & Environmental Services</p> <p>25 Tecoma Street, Berea, East London, 5201 P O Box 8145, Nahoon, East London, 5201</p> <p>Tel: +27 (43) 726 7809; Fax: +27 (43) 726 8352 Email: cesel@cesnel.co.za</p> <p>Also in Grahamstown, Johannesburg, Port Elizabeth, Cape Town and Maputo www.cesnel.co.za</p>		DOCUMENT TRANSMISSION NOTE	
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		Document Title	Draft EIR with specialist reports
		Transmitted to	DWS East London
		Transmitted by	Caitlin Smith
Date transmitted	1 June 2016		
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237

INTERNATIONAL SERVICES	GLOBAL DOCUMENT EXPRESS	<input type="checkbox"/>	DOMESTIC SURCHARGES	OVERNIGHT EXPRESS	<input checked="" type="checkbox"/>	DOMESTIC SURCHARGES	SAME DAY	<input type="checkbox"/>
	GLOBAL PARCEL EXPRESS	<input type="checkbox"/>		IN CITY DELIVERY	<input type="checkbox"/>		DAWN DELIVERY BY 08h30	<input type="checkbox"/>
	AIRFREIGHT	<input type="checkbox"/>		BUDGET CARGO	<input type="checkbox"/>		SATURDAY DELIVERY	<input type="checkbox"/>
	GLOBAL MAIL	<input type="checkbox"/>		ROAD FREIGHT	<input type="checkbox"/>		AFTER HOURS	<input type="checkbox"/>

Special Instructions:

Customer Reference:
237
237

Contents:	Pieces	Description	Dimensions	Vol. Mass	Act. Mass
	1		40 x 30 x 2		1.00 1.3

Insurance: Yes No Declared Value Insurance 0

WE HAVE SEEN AND AGREE TO THE STANDARD CONDITIONS OF CARRIAGE OF GLOBEFLIGHT

PRINT NAME: *Lynn Grant*

SIGNATURE: *[Signature]*

DATE: 31.05.2016 TIME: _____

RECEIVED BY GLOBEFLIGHT WORLDWIDE

PRINT NAME: P. NOKHELE

SIGNATURE: *[Signature]*

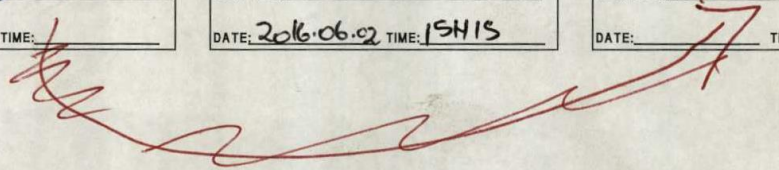
DATE: 2016.06.02 TIME: 15H15

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DATE: _____ TIME: _____



16.2 Appendix B: Environmental Impact Assessment

Impact assessment

Impacts associated with the planning and design phase of the proposed borrow pits.

ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SPATIAL SCALE (EXTENT)	TEMPORAL SCALE (DURATION)	CERTAINTY SCALE (LIKELIHOOD)	SEVERITY / BENEFICIAL SCALE	SIGNIFICANCE PRE-MITIGATION	MITIGATION MEASURES	SIGNIFICANCE POST-MITIGATION
PLANNING & DESIGN PHASE									
<i>GENERAL IMPACTS</i>									
Compliance with relevant environmental legislation and policy	During the planning and design phase, failure to comply with existing policies and legal obligations could lead to the project conflicting with local, provincial and national policies, legislation etc. This could result in legal non-compliance, fines, overall project failure or delays in mining activity and undue disturbance to the natural environment.	DIRECT CUMULATIVE	Localised	Long-term	Possible	Severe	HIGH NEGATIVE	<ul style="list-style-type: none"> All relevant legislation and policy must be consulted and the proponent must ensure that the project is compliant with such legislation and policy. These should include (but are not restricted to): MPRDA, NEMA, Local and District Spatial Development Frameworks, Eastern Cape Biodiversity Conservation Plan (ECBCP), Local Municipal bylaws. 	LOW NEGATIVE
Design of the borrow pits	During the planning and design phase, inappropriately designed borrow pits could lead to subsidence, face collapses, erosion and stormwater issues during mining.	DIRECT	Localised	Long-term	Possible	Severe	HIGH NEGATIVE	<ul style="list-style-type: none"> The borrow pits must be designed by an appropriately qualified engineer. No mining activity must occur within 32 meters of any watercourses. Mining activity should not, as far as is possible take place within the 1:100 year floodline. Also refer to the Ecological Impact Assessment mitigation measures 	LOW NEGATIVE
Stormwater	During the planning and design phase, inappropriate stormwater design may lead to an increase in surface soil erosion and subsequently sedimentation of the surrounding rivers and streams.	DIRECT CUMULATIVE	Study area	Long-term	Probable	Severe	HIGH NEGATIVE	<ul style="list-style-type: none"> Appropriate stormwater structures must be designed and implemented. All stormwater structures must be designed in line with DWS requirements. A dirty water system must be designed to collect any dirty water generated from mining activities so that it is not likely to spill into any clean water system. 	LOW NEGATIVE
Visual intrusion	During the planning and design phase, inappropriately designed borrow pits may be visually intrusive to the communities surrounding the borrow pit sites.	DIRECT CUMULATIVE	Localised	Short-term	Probable	Moderately severe	MODERATE NEGATIVE	<ul style="list-style-type: none"> The borrow pit design must ensure that the visual impact of the borrow pits is minimized where possible. 	LOW NEGATIVE
Hazardous substances	During the planning and design phase, the inadequate planning for the storage, handling and spillage of hazardous substances could result in the contamination of soils and nearby water sources.	DIRECT	Localised	Long-term	Possible	Moderately severe	MODERATE NEGATIVE	<ul style="list-style-type: none"> An appropriate hazardous waste management plan must be developed prior to mining activities commencing. 	LOW NEGATIVE
Waste management	During the planning and design phase, the inadequate planning for the storage and removal of waste from the site could result in the contamination of the surrounding environment.	DIRECT	Localised	Medium-term	Possible	Moderately severe	MODERATE NEGATIVE	<ul style="list-style-type: none"> Measures must be taken to ensure that waste generated on site will be stored and disposed of in an appropriate manner. 	LOW NEGATIVE
Access control	During the planning and design phase, the inadequate planning of access control measures to the proposed borrow pit sites could result in unauthorised people accessing the sites, which poses a safety hazard.	DIRECT	Localised	Short-term	Possible	Moderately severe	MODERATE NEGATIVE	<ul style="list-style-type: none"> Adequate access control measures must be developed to restrict access to the borrow pit sites to unauthorised people. 	LOW NEGATIVE
<i>HERITAGE IMPACT ASSESSMENT</i>									
Impact on sites of archaeological	During the planning and design phase, poor planning and consideration of the	DIRECT INDIRECT	Localised	Long-term	Possible	Moderately severe	MODERATE NEGATIVE	<ul style="list-style-type: none"> All access roads, site establishment activity and planned mining activities must avoid the 	LOW NEGATIVE

ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SPATIAL SCALE (EXTENT)	TEMPORAL SCALE (DURATION)	CERTAINTY SCALE (LIKELIHOOD)	SEVERITY / BENEFICIAL SCALE	SIGNIFICANCE PRE-MITIGATION	MITIGATION MEASURES	SIGNIFICANCE POST-MITIGATION
and cultural significance	identified heritage sites could result in the loss of sites of archaeological and cultural significance.							identified heritage sites.	
<i>ECOLOGICAL IMPACT ASSESSMENT</i>									
Loss of natural vegetation	During the planning and design phase, poor site planning and demarcation of the borrow pit sites could result in the unnecessary loss of natural vegetation.	DIRECT	Localised	Medium term	Possible	Moderately severe	MODERATE NEGATIVE	<ul style="list-style-type: none"> The borrow pit sites must be selected so that any sensitive ecological features are avoided. The borrow pit sites must be clearly demarcated prior to the site establishment and mining phases to prevent the unnecessary clearing of natural vegetation outside of the designated borrow pit sites. 	LOW NEGATIVE
Loss of SCC	During the planning and design phase, the mining layout at both Borrow areas may lead to the destruction of habitats and the loss of identified and unidentified plant and animal SCC.	DIRECT	Localised	Permanent	Definite	Moderately severe	MODERATE NEGATIVE	<ul style="list-style-type: none"> Borrow pit design should avoid areas where plant and animal SCC have been identified. If unavoidable, permits must be obtained from the relevant departments in order to remove plant and animal SCC from the development area prior to mining. 	LOW NEGATIVE
Damage to riverine systems	During the planning and design phase, the inappropriate design of stormwater management may cause the degradation of watercourses, associated natural habitats and sensitive aquatic systems.	DIRECT	Localised	Medium-term	Probable	Severe	HIGH NEGATIVE	<ul style="list-style-type: none"> The mining engineer must ensure that appropriate stormwater structures are included in the borrow pit design to manage stormwater and to minimise erosion and sedimentation of watercourses. The mining engineer must ensure that borrow pits situated on slopes incorporate stormwater diversion. The mining engineer must ensure that all stormwater structures are designed in line with both DMR and DWS requirements. If any planned mining takes place inside or within 50 meters of any river, stream or drainage system, or within 500m of a wetland, authorisation must be obtained from DWS. Additional conditions from DWS may be applied in order to protect these systems. 	MODERATE NEGATIVE
Soil erosion	During the planning and design phase, inappropriate stormwater design may lead to an increase in surface soil erosion.	DIRECT	Localised	Medium-term	Possible	Moderately severe	MODERATE NEGATIVE	<ul style="list-style-type: none"> Appropriate stormwater structures must be designed and implemented. All infrastructure situated on slopes must incorporate stormwater diversions. 	LOW NEGATIVE
Control of alien species	During the planning and design phase, the lack of an appropriate Rehabilitation and Alien Management Plan will result in the invasion of alien vegetation species in areas impacted on by the borrow pits.	DIRECT INDIRECT	Study site	Short-term	Probable	Moderately Severe	MODERATE NEGATIVE	<ul style="list-style-type: none"> A Rehabilitation and Alien Management Plan must be developed prior to any activities associated with the borrow pits commencing. 	LOW NEGATIVE

Impacts associated with the site establishment phase of the proposed borrow pits.

ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SPATIAL SCALE (EXTENT)	TEMPORAL SCALE (DURATION)	CERTAINTY SCALE (LIKELIHOOD)	SEVERITY / BENEFICIAL SCALE	SIGNIFICANCE PRE-MITIGATION	MITIGATION MEASURES	SIGNIFICANCE POST-MITIGATION
<i>SITE ESTABLISHMENT PHASE</i>									
<i>GENERAL IMPACTS</i>									
Legislation and policy compliance	During the site establishment phase, failure to comply with existing policies and legal obligations could lead to the project conflicting with local, provincial and national policies, legislation etc. This could result in legal non-compliance, fines, overall project failure or delays in	DIRECT CUMULATIVE	Localised	Long-term	Possible	Severe	HIGH NEGATIVE	<ul style="list-style-type: none"> All relevant legislation and policy must be complied with during site establishment. These should include (but are not restricted to): MPRDA, NEMA, NWA, NFA, Local and District Spatial Development Frameworks, Eastern Cape Biodiversity Conservation Plan (ECBCP), Local Municipal bylaws. 	LOW NEGATIVE

ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SPATIAL SCALE (EXTENT)	TEMPORAL SCALE (DURATION)	CERTAINTY SCALE (LIKELIHOOD)	SEVERITY / BENEFICIAL SCALE	SIGNIFICANCE PRE-MITIGATION	MITIGATION MEASURES	SIGNIFICANCE POST-MITIGATION
	site establishment and undue disturbance to the natural environment.								
Stormwater	During the site establishment phase, the inadequate provision of stormwater control measures could result in the erosion of surrounding soils and the sedimentation of nearby water resources.	DIRECT CUMULATIVE	Study area	Long-term	Probable	Severe	HIGH NEGATIVE	<ul style="list-style-type: none"> Appropriate stormwater structures must be installed during site establishment All stormwater structures installed must be in line with DWS requirements. 	LOW NEGATIVE
Visual intrusion associated with the establishment of the borrow pit sites	During the site establishment phase, site establishment activity and the presence and use of large machinery on site and along access roads will result in a visual disturbance of the landscape.	DIRECT CUMULATIVE	Localised	Short-term	Probable	Moderately severe	MODERATE NEGATIVE	<ul style="list-style-type: none"> All site establishment activity must take place during normal working hours (i.e. 7 – 5pm). All site establishment activity and equipment must be limited to the demarcated areas. 	LOW NEGATIVE
Demarcation of the borrow pit sites	During the site establishment phase, inadequate demarcation and fencing off of the borrow pit sites could lead to unnecessary environmental disturbance.	DIRECT	Localised	Medium-term	Possible	Severe	HIGH NEGATIVE	<ul style="list-style-type: none"> The boundaries of the borrow pit sites must be adequately demarcated to restrict site establishment and other (eating, washing and ablution) activities. All plant, equipment and other materials must remain within the demarcated boundaries. The mining related activities should as far as possible not take place within the 1:100 year floodline. Refer to the mitigation measures outlined in the Ecological Impact Assessment. 	LOW NEGATIVE
Dust and noise	During the site establishment phase, dust pollution caused by site establishment activities and increased traffic can cause a nuisance to surrounding communities.	DIRECT INDIRECT	Localised	Short-term	Probable	Moderately severe	MODERATE NEGATIVE	<ul style="list-style-type: none"> Cleared surfaces for site establishment must be dampened whenever possible and especially in dry and windy conditions to avoid excessive dust generation. Any soil excavated, and not utilised for rehabilitation, must be removed from site or covered and no large mounds of soil should be left behind after mining activities have ceased. Refer to the mitigation measures described Social Impact Assessment. 	LOW NEGATIVE
	During the site establishment phase, noise pollution caused by increased traffic volumes and site establishment activities could potentially be a nuisance to surrounding communities.	DIRECT INDIRECT	Localised	Short-term	Probable	Moderately severe	MODERATE NEGATIVE	<ul style="list-style-type: none"> Site establishment activities, which include the movement of related vehicles, must be restricted to normal working hours (7:00am – 17:00pm). Refer to the mitigation measures described Social Impact Assessment. 	LOW NEGATIVE
Access control	During the site establishment phase, inadequate access control measures could result in unauthorised people entering the site, which poses a safety risk.	DIRECT	Localised	Short-term	Possible	Moderately severe	MODERATE NEGATIVE	<ul style="list-style-type: none"> Access to the borrow pit sites must be restricted to authorised personnel only The borrow pit sites and camp sites must be fenced off and access control must be implemented at all times. 	LOW NEGATIVE
HERITAGE IMPACT ASSESSMENT									
Impact on sites of archaeological and cultural significance	During the site establishment phase, there could be accidental damage to already identified heritage features.	DIRECT	Localised	Medium-term	Possible	Moderately severe	MODERATE NEGATIVE	<ul style="list-style-type: none"> If any graves/heritage features are damaged during site establishment then site establishment must stop immediately. Any damage to heritage features must be reported to the ECO, Heritage Specialist and SAHRA. 	LOW NEGATIVE
	During the site establishment phase, potential unidentified heritage features may be uncovered and damaged.	DIRECT	Localised	Medium-term	Possible	Moderately severe	MODERATE NEGATIVE	<ul style="list-style-type: none"> If human graves are uncovered during site establishment then all activity must stop immediately. The police and ECPHRA must to be notified 	LOW NEGATIVE

ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SPATIAL SCALE (EXTENT)	TEMPORAL SCALE (DURATION)	CERTAINTY SCALE (LIKELIHOOD)	SEVERITY / BENEFICIAL SCALE	SIGNIFICANCE PRE-MITIGATION	MITIGATION MEASURES	SIGNIFICANCE POST-MITIGATION
								<p>immediately.</p> <ul style="list-style-type: none"> If any other archaeological artefacts are uncovered during site establishment then site establishment must stop and these should be reported to the ECO, Heritage Specialist and SAHRA/ECPHRA immediately. 	
<i>PALEONTOLOGICAL IMPACT ASSESSMENT</i>									
Impact on sites of paleontological significance	During the site establishment phase, potential unidentified fossils may be uncovered and damaged.	DIRECT	Localised	Medium-term	Possible	Moderately severe	MODERATE NEGATIVE	<ul style="list-style-type: none"> If fossils are uncovered during the site establishment phase, all activity must cease immediately. The ECO, the appointed Palaeontologist and ECPHRA must be notified immediately. The Palaeontologist must apply for permits from SAHRA to collect any fossils have been uncovered. 	LOW NEGATIVE
<i>ECOLOGICAL IMPACT ASSESSMENT</i>									
Soil erosion	During the site establishment phase, the extensive clearing of ground cover may lead to soil erosion.	DIRECT INDIRECT CUMULATIVE	Study site	Short-term	Possible	Moderately severe	MODERATE NEGATIVE	<ul style="list-style-type: none"> Bank restoration, re-vegetation and stabilisation must be implemented once site establishment is complete and must include the use of gabions for bank stabilisation if required. 	LOW NEGATIVE
Control of alien species	During the site establishment phase, the clearing of existing natural vegetation creates 'open' habitats that are susceptible to the establishment of undesirable alien plant species in areas that are typically very difficult to eradicate and may pose a threat to natural ecosystems.	DIRECT INDIRECT	Study site	Short-term	Probable	Moderately severe	MODERATE NEGATIVE	<ul style="list-style-type: none"> A Rehabilitation and Alien Management Plan must be developed and implemented during the site establishment phase to reduce the establishment and spread of undesirable alien plant species. Alien plants must be removed from the site through appropriate methods such as hand pulling, application of chemicals, cutting etc. This must be done under the supervision of the ECO. 	LOW NEGATIVE
<i>SOCIAL IMPACT ASSESSMENT</i>									
Influx of job seekers	During the site establishment phase, there may be an increase in community conflicts within communities and between locals and outsiders resulting from tension over perceived preferential treatment where migration workers may receive unfair benefits.	DIRECT INDIRECT CUMULATIVE	Study site	Short-term	Possible	Moderately severe	MODERATE NEGATIVE	<p>A project steering committee consisting of the DWS, contractor (community liaison person), recruitment agency, community leaders, elders, youth, ward councillors and the IHLM LED must be established in order to:</p> <ul style="list-style-type: none"> Conduct an audit of the affected communities in term of employment capacity. Identify potential workers from the affected communities. Identify possible conflicts in and between communities. Recommend support programmes that would assist with conflict minimisation and resolution. 	LOW NEGATIVE
	During the site establishment phase, there may be increased social pathologies such as intra-household violence, women abuse, rape, teenage pregnancies and crime.	DIRECT INDIRECT CUMULATIVE	Study site	Long-term	Possible	Moderately severe	MODERATE NEGATIVE	<p>Crime:</p> <ul style="list-style-type: none"> The role of Traditional Authorities in exerting control over land allocation in order to prevent densification of people around the mining areas should be supported. The DWS and contractor must encourage settlement in Lusikisiki by providing daily transport for "outside" workers who settle in the town of Lusikisiki, to and from the mining sites to minimise the potential crime factor in the rural areas. All mine workers must be clearly identifiable 	LOW NEGATIVE

ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SPATIAL SCALE (EXTENT)	TEMPORAL SCALE (DURATION)	CERTAINTY SCALE (LIKELIHOOD)	SEVERITY / BENEFICIAL SCALE	SIGNIFICANCE PRE-MITIGATION	MITIGATION MEASURES	SIGNIFICANCE POST-MITIGATION
								and wear easily recognisable uniforms. They need to carry identification cards issued by the contractor. <ul style="list-style-type: none"> • The SAPS must have access to mining sites. • Local communities should be encouraged to report suspicious activity to the community liaison or nearest environmental site officer. • The contractor must prevent loitering around the mining camp by providing transport to and from the camp sites. • All mining and camp sites must be fenced and secure. Increased prostitution and sexual behaviour: <ul style="list-style-type: none"> • National and local awareness programmes that discourage promiscuity, especially at schools in the project area should be supported. • Condoms must be made easily accessible to all mine workers. 	
	During the site establishment phase, there may be an increase and spread of HIV/AIDs and other communicable diseases.	DIRECT INDIRECT CUMULATIVE	Study site	Long-term	Probable	Severe	HIGH NEGATIVE	<ul style="list-style-type: none"> • An HIV/AIDs, non-discrimination, awareness, prevention and health care support, policy must be implemented. • Condoms must be made easily accessible to all mine workers. • An HIV/AIDs education and behaviour change programme for all contracted mine workers should be developed. • The above program must extend to the communities located near the mining site. • Existing public health care centres and programmes such as TAC must be involved in HIV/AIDs campaigns and monitoring of HIV/AIDs prevalence should be undertaken in collaboration with these agencies. • Voluntary counselling and testing should be encouraged for all workers. 	LOW NEGATIVE
	During the site establishment phase, the demand for more services will stimulate investment into local towns and will create a market place in Lusikisiki for local resources.	DIRECT INDIRECT CUMULATIVE	Study site	Medium-term	Probable	Beneficial	MODERATE POSITIVE	<ul style="list-style-type: none"> • DWS is limited in its capacity to enhance the benefits of this impact, as the development of the communities and town will occur in response to the needs and demands of mine workers. The proponent can play role in facilitating the skills required to recognise the need and respond appropriately. The proponent must link the Provincial Department of Economic Development and Local Municipal LED programmes with small to medium enterprises (including communities) in the area so that a state of “readiness” to optimise economic benefits is achieved. This may involve training in the following sectors: business, tourism, catering etc. 	HIGH POSITIVE
Impact on health and general quality of life	During the site establishment phase, upgrading of roads will occur in order for mining vehicles to access the borrow pit sites.	DIRECT	Study area	Long-term	Definite	Beneficial	MODERATE POSITIVE	<ul style="list-style-type: none"> • No mitigation measures are required 	MODERATE POSITIVE
	During the site establishment phase, an	DIRECT	Project area	Short-term	Probable	Severe	HIGH	<ul style="list-style-type: none"> • Service providers associated with the IHLM and 	MODERATE

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	increased demand on existing infrastructure facilities and social services will occur which will place pressure on social service provision, such as hospitals and clinics and schools.	INDIRECT CUMULATIVE					NEGATIVE	PSJLM, clinics, schools and the SAPS must be made aware of an increase in demand, both in the town of Lusikisiki and in the surrounding rural areas, and therefore the increased pressure to provide services for new households. <ul style="list-style-type: none"> This will require direct communication with the local municipalities, ORTDM, the Department of Health, South African Police Service and the Department of Education. The channels of communication must be established as permanent points of contact throughout the site establishment phase of the project. Regular monitoring of the schools and clinics in order to determine whether there are sufficient resources must be undertaken. When resources are deemed insufficient, DWS must communicate, through established channels, with the relevant departments for assistance. 	NEGATIVE
	During the site establishment phase, noise and dust generated by site establishment vehicle activity and blasting in the borrow pit sites will be generated	DIRECT	Study site	Short-term	Probable	Moderately severe	MODERATE NEGATIVE	<ul style="list-style-type: none"> During windy periods un-surfaced and un-vegetated areas should be dampened down. Vegetation should be retained where possible as this will reduce dust travel. Excavations and other clearing activities must only be done during agreed working times and permitting weather conditions to avoid drifting of sand and dust into neighbouring areas. A speed limit of 30km/h must not be exceeded on dirt roads. Any complaints or claims emanating from the lack of dust control must be attended to immediately. Drilling, blasting and movement of heavy machinery must be limited to normal working hours (7 AM to 5 PM). Ensure there is a facility for nearby residents to make complaints. These must be addressed and recorded. Communities must have access to a grievance reporting mechanism, e.g. through a project steering or liaison committee. 	LOW NEGATIVE
	During the site establishment phase, there may be reduced safety due to high vehicle activity and potential run-away fires will.	DIRECT INDIRECT CUMULATIVE	Project area	Short-term	Possible	Severe	HIGH NEGATIVE	Traffic safety: <ul style="list-style-type: none"> All affected communities must be informed of the formal mining routes. All vehicle operators and drivers must undergo regular training, clearly outlining the high safety risk to local rural communities Signage making communities aware of the high safety risk due to heavy mining vehicles on the road must be erected at appropriate locations. Traffic calming devices such as speed bumps should be considered on rural access roads. Fire safety: <ul style="list-style-type: none"> Fires outside mining camps must be prohibited. Fires that are lit must be in a contained area 	MODERATE NEGATIVE

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								and safety precautions must be followed. The fire must be monitored for cinders and extinguished when no longer needed. <ul style="list-style-type: none"> • Fire fighting equipment must be stored onsite. • The mining campsite must be surrounded by a firebreak. • Education of fire risks must form part of the mine-worker training. 	
Loss of land as result of the borrow pit construction	During the site establishment phase, there will be a loss of access to natural resources such as: medicinal plant and food harvesting, hunting, fuel wood collection, thatch grass harvesting, livestock grazing, etc. will be permanently.	DIRECT	Project area	Long-term	Probable	Moderately severe	MODERATE NEGATIVE	<ul style="list-style-type: none"> • The process for land acquisition by DWS must be conducted through the traditional authorities operating in the areas as they have jurisdiction over land allocations. • Individual landowners must be identified and engaged. • All the properties must be professionally assessed and valued by professional independent evaluators registered with South African Institute of Valuers and the South African Council for Property Valuers. • Valuations, and the process of evaluation, must be shared with the landowners and will form the basis for on-going negotiations with them. 	LOW NEGATIVE
Stimulation of economic growth	During the site establishment phase, job opportunities will be available for local communities.	DIRECT	Study site	Short-term	Probable	Very severe	HIGH NEGATIVE	<ul style="list-style-type: none"> • Equal jobs opportunities for women and men must be promoted. • Culture and tradition must be considered when planning the division of labour for mining. • Employment must be managed by a recruitment agency/office that uses a selection system that ensures recruitment of semi and unskilled workers from all local impacted communities in accordance with recent government policies related to local procurement. This must ensure a fair and equitable recruitment process. • Where appropriate, employees involved in the site establishment phase should be incorporated into the permanent maintenance staff for the mining phase; and • Particular attention must be paid to employment opportunities for women and disabled persons. 	HIGH POSITIVE
	During the site establishment phase, buying power of people living in the area will increase due to increased individual and household income. This will increase the demand for goods and services, which will present an opportunity for local businesses to diversify and expand.	DIRECT INDIRECT CUMULATIVE	Regional	Short-term	Possible	Very severe	HIGH NEGATIVE	<ul style="list-style-type: none"> • The proponent must ensure that the principal of utilising local business resources (suppliers and SMMEs) in accordance with recent government policies related to local procurement (State of the nation address, 2015) forms part of the procurement specifications. Examples of local business resources that must be considered: <ul style="list-style-type: none"> – Catering services – Transport services – Quarries/borrow pits (where necessary) – Small civils – Accommodation – Security – Hygiene services 	HIGH POSITIVE

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	During the site establishment phase, skills training opportunities will be available for local labourers such as brick laying and building training.	DIRECT	Study site	Medium-term	Possible	Moderately severe	MODERATE NEGATIVE	– Fencing • Implement a skills development programme which includes training in business, project management, monitoring and evaluation.	HIGH POSITIVE

Impacts associated with the mining phase of the proposed borrow pits.

ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SPATIAL SCALE (EXTENT)	TEMPORAL SCALE (DURATION)	CERTAINTY SCALE (LIKELIHOOD)	SEVERITY / BENEFICIAL SCALE	SIGNIFICANCE PRE-MITIGATION	MITIGATION MEASURES	SIGNIFICANCE POST-MITIGATION
MINING PHASE									
<i>GENERAL IMPACTS</i>									
Compliance with relevant environmental legislation and policy	During the mining phase, failure to comply with existing policies and legal obligations could lead to the project conflicting with local, provincial and national policies, legislation etc. This could result in legal non-compliance, fines, overall project failure or delays in mining activity and undue disturbance to the natural environment.	DIRECT CUMULATIVE	Localised	Long-term	Possible	Severe	HIGH NEGATIVE	<ul style="list-style-type: none"> The proponent must ensure that mining is compliant with the relevant legislation and policy. These should include (but are not restricted to): MPRDA, NEMA, Local and District Spatial Development Frameworks, Eastern Cape Biodiversity Conservation Plan (ECBCP), Local Municipal bylaws. 	LOW NEGATIVE
Storm water	During the mining phase, inadequate stormwater control could result in soil erosion and impact surface water quality.	DIRECT CUMULATIVE	Localised	Long-term	Possible	Severe	HIGH NEGATIVE	<ul style="list-style-type: none"> Water runoff must be controlled and the stormwater management plan implemented. All polluted water systems must be separated from clean water systems. All water collected within any dirty area, including water seeping from mining operations, out crops or any other activity must be collected into a dirty water system. Silt fences must be used to prevent soil eroding from nearby mining activities reaching water courses. 	LOW NEGATIVE
Visual intrusion associated with mining activities	During the mining phase, the mining activities could result in a negative impact on the aesthetic value of the study area and immediate surrounds.	DIRECT CUMULATIVE	Study area	Long-term	Possible	Moderately severe	MODERATE NEGATIVE	<ul style="list-style-type: none"> Mining activities should only take place during normal work hours (7am to 5pm). Mining activities must be limited to the designated area and not encroach into surrounding areas. 	LOW NEGATIVE
Sanitation facilities	During the mining phase, inappropriate siting and servicing of sanitation facilities could result in contamination of surface and ground water.	DIRECT	Localised	Medium-term	Possible	Severe	HIGH NEGATIVE	<ul style="list-style-type: none"> Sanitation facilities must NOT be located near any water resources or water drainage areas and must be placed outside of areas susceptible to flooding. Sanitation facilities must be located within the borrow pit footprint. The facilities must be regularly serviced to reduce the risk of surface or groundwater pollution. Waste water from chemical toilets must not be discharged into any water resources. If toilets are not going to be used for a while, they must be emptied and cleaned. 	LOW NEGATIVE
Demarcation of the borrow pit sites	During the mining phase, encroachment of mining activities onto areas outside the borrow pit footprints could result in unnecessary environmental disturbance.	DIRECT	Localised	Medium-term	Possible	Severe	HIGH NEGATIVE	<ul style="list-style-type: none"> The boundaries of the borrow pit sites must be adequately demarcated to restrict mining and other (eating, washing and ablution) activities. All plant, equipment and other materials must remain within the demarcated boundaries. 	LOW NEGATIVE
Spillage of	During the mining phase, spillage of any	DIRECT	Localised	Long-term	Possible	Moderately severe	MODERATE	<ul style="list-style-type: none"> All oils, fuel and other maintenance equipment 	LOW

ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SPATIAL SCALE (EXTENT)	TEMPORAL SCALE (DURATION)	CERTAINTY SCALE (LIKELIHOOD)	SEVERITY / BENEFICIAL SCALE	SIGNIFICANCE PRE-MITIGATION	MITIGATION MEASURES	SIGNIFICANCE POST-MITIGATION
hazardous substances	hazardous substances such as fuel, chemicals, etc. could result in ground and surface water contamination.						NEGATIVE	and supplies must be stored in a secure area with a compacted surface. <ul style="list-style-type: none"> • Temporary bunds must be constructed around chemical or fuel storage areas to contain potential spillages. • Storage areas should be located outside of the 1:100 year floodline of any watercourse and must be fenced to prevent unauthorised access into the area. • Spill kits must be kept on-site and maintained. • If pollution of any surface or groundwater occurs, it must be immediately reported to the Department of Water and Sanitation and appropriate mitigation measures must be employed. • Cement, concrete and chemicals must be mixed on an impermeable surface and provisions should be made to contain spillages or overflows into the soil. Mixed cement/concrete must not be allowed to flow into any watercourses. • No cement must be mixed within 100m of a watercourse. • Any storage tanks containing hazardous materials must be placed in bunded containment areas with sealed surfaces. The bund walls must be high enough to contain 110% of the total volume of the stored hazardous material. • Contaminated soil must be contained and disposed of off-site at an approved landfill site. • Any hazardous substances must be stored at least 100m from any of the water bodies on site. • Drip trays must be placed under all stationary machinery to avoid soil contamination from oil and fuel leaks. • Drip trays must be placed under vehicles during refuelling. • Vehicles must be washed in a designated and bunded wash bay to avoid soil contamination. 	NEGATIVE
Waste management	During the mining phase, littering on site may attract vermin, detract from the visual appeal of the area and pollute the surrounding areas.	DIRECT	Localised	Medium-term	Possible	Moderately severe	MODERATE NEGATIVE	<ul style="list-style-type: none"> • Sufficient waste containers must be available. • No waste must be buried on site. • Waste must be collected on a regular basis and disposed of at a licensed landfill site. 	LOW NEGATIVE
Dust and noise	During the mining phase, dust pollution caused by mining activities and increased traffic can cause a nuisance to surrounding communities.	DIRECT INDIRECT	Localised	Short-term	Probable	Moderately severe	MODERATE NEGATIVE	<ul style="list-style-type: none"> • Exposed surfaces for mining activities must be dampened whenever possible and especially in dry and windy conditions to avoid excessive dust generation. • Refer to the mitigation measures described Social Impact Assessment. 	LOW NEGATIVE
	During the mining phase, noise pollution caused by increased traffic volumes and mining activities, including blasting, could potentially be a nuisance to surrounding communities.	DIRECT INDIRECT	Localised	Short-term	Probable	Moderately severe	MODERATE NEGATIVE	<ul style="list-style-type: none"> • Mining activities and blasting, which include the movement of related vehicles, must be restricted to normal working hours (7:00am – 17:00pm). • Refer to the mitigation measures described 	LOW NEGATIVE

ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SPATIAL SCALE (EXTENT)	TEMPORAL SCALE (DURATION)	CERTAINTY SCALE (LIKELIHOOD)	SEVERITY / BENEFICIAL SCALE	SIGNIFICANCE PRE-MITIGATION	MITIGATION MEASURES	SIGNIFICANCE POST-MITIGATION
								Social Impact Assessment.	
Access control	During the mining phase, inadequate access control measures could result in unauthorised people entering the site, which poses a safety risk, especially during blasting and excavating activities.	DIRECT	Localised	Short-term	Possible	Severe	HIGH NEGATIVE	<ul style="list-style-type: none"> Access to the borrow pit sites must be restricted to authorised personnel only The borrow pit areas must be fenced off and access control must be implemented at all times. 	LOW NEGATIVE
<i>HERITAGE IMPACT ASSESSMENT</i>									
Identification of archaeological and sites of cultural significance	During the mining phase, sites of archaeological or cultural significance might be uncovered and damaged.	DIRECT	Localised	Long-term	Possible	Moderately severe	MODERATE NEGATIVE	<ul style="list-style-type: none"> If human graves are uncovered during mining then all activity must stop immediately. The police and ECPHRA must be notified immediately. If any other archaeological artefacts are uncovered during mining activity then mining must stop and these should be reported to the ECO, Heritage Specialist and SAHRA/ECPHRA immediately. 	LOW NEGATIVE
<i>PALEONTOLOGICAL IMPACT ASSESSMENT</i>									
Impact on sites of paleontological significance	During the mining phase, potential unidentified fossils may be uncovered and damaged.	DIRECT	Localised	Short-term	Possible	Moderately severe	MODERATE NEGATIVE	<ul style="list-style-type: none"> If fossils are uncovered during the site establishment phase, all activity must cease immediately. The ECO, the appointed Palaeontologist and ECPHRA must be notified immediately. The Palaeontologist must apply for permits from SAHRA to collect any fossils have been uncovered. 	LOW NEGATIVE
<i>ECOLOGICAL IMPACT ASSESSMENT</i>									
Loss of natural vegetation	During the mining phase, both Borrow areas will lead to the temporary loss of natural but degraded Ngongoni grassveld during the mining phase.	DIRECT	Study site	Long-term	Definite	Moderately severe	MODERATE NEGATIVE	<ul style="list-style-type: none"> The entire site must be rehabilitated to natural Ngongoni Veld after completion of all mining activities. 	MODERATE NEGATIVE
	During the mining phase, the clearing of vegetation outside the borrow pit sites will lead to the unnecessary loss of natural vegetation.	DIRECT	Localised	Short-term	Possible	Highly severe	HIGH NEGATIVE	<ul style="list-style-type: none"> Mining activities must be limited to the designated footprint of the borrow pit sites i.e. mining minerals, stockpiles, vehicular storage, borrow pit camps etc., must only occur in the designated mining area. The borrow pit sites must be demarcated prior to mining commencing. The mining footprint must be approved by an ECO to ensure that natural vegetation is not unnecessarily damaged. 	LOW NEGATIVE
Loss of SCC	During the mining phase, the uncontrolled clearing of areas outside the borrow pit areas may lead to the unnecessary loss of identified and unidentified plant and animal SCC.	DIRECT INDIRECT CUMULATIVE	Localised	Short-term	Possible	Highly severe	HIGH NEGATIVE	<ul style="list-style-type: none"> No SCC must be removed outside the approved demarcated borrow pit areas. No vegetation removal must occur outside the approved demarcated borrow pit area. The contractor's workers must not poach or trap wild animals. The contractor's workers must not harvest natural vegetation. 	LOW NEGATIVE
	During the mining phase, mining activities will lead to the loss of identified and unidentified plant and animal SCC.	DIRECT INDIRECT CUMULATIVE	Study site	Long-term	Definite	Moderately severe	MODERATE NEGATIVE	<ul style="list-style-type: none"> The developer must develop a Vegetation and Animal Relocation Plan that must be approved by the appointed ECO and incorporated into the site EMP. All SCC must be removed according to the approved Vegetation and Animal Relocation Plan Permits must be obtained for all SCC prior to 	LOW NEGATIVE

ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SPATIAL SCALE (EXTENT)	TEMPORAL SCALE (DURATION)	CERTAINTY SCALE (LIKELIHOOD)	SEVERITY / BENEFICIAL SCALE	SIGNIFICANCE PRE-MITIGATION	MITIGATION MEASURES	SIGNIFICANCE POST-MITIGATION
								commencement of site establishment activities onsite.	
Damage to riverine systems	During the mining phase, mining activities may cause increased levels of erosion, sedimentation and pollution of the surrounding watercourses.	DIRECT INDIRECT CUMULATIVE	Localised	Long-term	Possible	Highly severe	HIGH NEGATIVE	<ul style="list-style-type: none"> • If any mining activity occurs within 50 meters of a river, stream or drainage system, or within 500m of a wetland, authorisation must be obtained from DWS. • No mining must be done within 32 meters of any waterbody. • Silt fences should be used to prevent soil eroding from nearby mining activities reaching watercourses. • Wet cement must not be allowed to come into contact with any watercourse. • Borrow pit staff must not use any open water body or natural water source adjacent to the mining site for the purposes of bathing, washing of clothing or for any site establishment related activities. • All mine-water and contaminated runoff must be directed away from the watercourses. 	LOW NEGATIVE
Soil erosion	During the mining phase, the extensive clearing of ground cover may lead to soil erosion.	DIRECT INDIRECT CUMULATIVE	Study are	Long-term	Possible	Moderately severe	MODERATE NEGATIVE	<ul style="list-style-type: none"> • Bank restoration, re-vegetation and stabilisation must be implemented and inspected regularly during mining and must include the use of gabions for bank stabilisation if required. 	LOW NEGATIVE
Control of alien species	During the mining phase, the clearing of existing natural vegetation creates 'open' habitats that are susceptible to the establishment of undesirable alien plant species in areas that are typically very difficult to eradicate and may pose a threat to natural ecosystems.	DIRECT INDIRECT CUMULATIVE	Study site	Long-term	Probable	Moderately severe	MODERATE NEGATIVE	<ul style="list-style-type: none"> • A Rehabilitation and Alien Management Plan must be developed and implemented during the mining phase to reduce the establishment and spread of undesirable alien plant species. • Alien plants must be removed from the site through appropriate methods such as hand pulling, application of chemicals, cutting etc. This must be done under the supervision of the ECO. 	LOW NEGATIVE
Rehabilitation of disturbed areas	During the mining phase, the failure to adequately rehabilitate areas post-mining could lead to a large scale alien plant invasion and potential displacement of indigenous vegetation.	DIRECT INDIRECT CUMULATIVE	Study site	Long-term	Probable	Moderately severe	MODERATE NEGATIVE	<ul style="list-style-type: none"> • All impacted areas must be rehabilitated back to Ngongoni veld after mining. • Only topsoil from the immediate area must be used for rehabilitation. If none available alternative methods must be investigated and implemented like hydro-seeding, planting etc. • All mined areas must be restored as per the Rehabilitation and Alien Management Plan. 	LOW NEGATIVE
SOCIAL IMPACT ASSESSMENT									
Influx of job seekers	During the mining phase, there may be an increase in community conflicts within communities and between locals and outsiders resulting from tension over perceived preferential treatment where migration workers may receive unfair benefits.	DIRECT INDIRECT CUMULATIVE	Study site	Long-term	Possible	Slightly severe	LOW NEGATIVE	<p>A project steering committee consisting of the DWS, contractor (community liaison person), recruitment agency, community leaders, elders, youth, ward councillors and the IHLM LED must be established in order to:</p> <ul style="list-style-type: none"> • Conduct an audit of the affected communities in term of employment capacity. • Identify potential workers from the affected communities. • Identify possible conflicts in and between communities. • Recommend support programmes that would assist with conflict minimisation and resolution. 	LOW NEGATIVE

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	During the mining phase, there may be increased social pathologies such as intra-household violence, women abuse, rape, teenage pregnancies and crime.	DIRECT INDIRECT CUMULATIVE	Study site	Long-term	Possible	Moderately severe	MODERATE NEGATIVE	<p>Crime:</p> <ul style="list-style-type: none"> The role of Traditional Authorities in exerting control over land allocation in order to prevent densification of people around the mining areas should be supported. The DWS and contractor must encourage settlement in Lusikisiki by providing daily transport for “outside” workers who settle in the town of Lusikisiki, to and from the mining sites to minimise the potential crime factor in the rural areas. All mine workers must be clearly identifiable and wear easily recognisable uniforms. They need to carry identification cards issued by the contractor. The SAPS must have access to the borrow pit sites. Local communities should be encouraged to report suspicious activity to the community liaison or nearest environmental site officer. The contractor must prevent loitering around the mining camp by providing transport to and from the camp sites. All mining and camp sites must be fenced and secure. <p>Increased prostitution and sexual behaviour:</p> <ul style="list-style-type: none"> National and local awareness programmes that discourage promiscuity, especially at schools in the project area should be supported. Condoms must be made easily accessible to all mine workers. 	LOW NEGATIVE
	During the mining phase, there may be an increase and spread of HIV/AIDs and other communicable diseases.	DIRECT INDIRECT CUMULATIVE	Study site	Long-term	Possible	Slightly severe	LOW NEGATIVE	<ul style="list-style-type: none"> An HIV/AIDs, non-discrimination, awareness, prevention and health care support, policy must be implemented. Condoms must be made easily accessible to all mine workers. An HIV/AIDs education and behaviour change programme for all contracted mine workers should be developed. The above program must extend to the communities located near the mining site. Existing public health care centres and programmes such as TAC must be involved in HIV/AIDs campaigns and monitoring of HIV/AIDs prevalence should be undertaken in collaboration with these agencies. Voluntary counselling and testing should be encouraged for all workers. 	LOW NEGATIVE
	During the mining phase, the demand for more services will stimulate investment into local towns and will create a market place in Lusikisiki for local resources.	DIRECT INDIRECT CUMULATIVE	Study site	Medium-term	Probable	Moderately severe	MODERATE POSITIVE	<ul style="list-style-type: none"> DWS is limited in its capacity to enhance the benefits of this impact, as the development of the communities and town will occur in response to the needs and demands of mine workers. The proponent can play role in facilitating the skills required to recognise the need and respond appropriately. The 	HIGH POSITIVE

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								proponent must link the Provincial Department of Economic Development and Local Municipal LED programmes with small to medium enterprises (including communities) in the area so that a state of “readiness” to optimise economic benefits is achieved. This may involve training in the following sectors: business, tourism, catering etc.	
Impact on health and general quality of life	During the mining phase, upgrading of roads will occur in order for mining vehicles to access the borrow pit sites.	DIRECT	Study site	Long-term	Definite	Beneficial	MODERATE POSITIVE	<ul style="list-style-type: none"> No mitigation measures are required 	MODERATE POSITIVE
	During the mining phase, an increased demand on existing infrastructure facilities and social services will occur which will place pressure on social service provision, such as hospitals and clinics and schools.	DIRECT INDIRECT CUMULATIVE	Project area	Long-term	Possible	Slightly severe	LOW NEGATIVE	<ul style="list-style-type: none"> Service providers associated with the IHLM and PSJLM, clinics, schools and the SAPS must be made aware of an increase in demand, both in the town of Lusikisiki and in the surrounding rural areas, and therefore the increased pressure to provide services for new households. This will require direct communication with the local municipalities, ORTDM, the Department of Health, South African Police Service and the Department of Education. The channels of communication must be established as permanent points of contact throughout the mining phase of the project. Regular monitoring of the schools and clinics in order to determine whether there are sufficient resources must be undertaken. When resources are deemed insufficient, DWS must communicate, through established channels, with the relevant departments for assistance. 	LOW NEGATIVE
	During the mining phase, noise and dust generated by vehicle activity and blasting in the borrow pit sites will be generated	DIRECT	Study site	Short-term	Possible	Moderately severe	MODERATE NEGATIVE	<ul style="list-style-type: none"> During windy periods un-surfaced and un-vegetated areas should be dampened down. Vegetation should be retained where possible as this will reduce dust travel. Excavations and other clearing activities must only be done during agreed working times and permitting weather conditions to avoid drifting of sand and dust into neighbouring areas. A speed limit of 30km/h must not be exceeded on dirt roads. Any complaints or claims emanating from the lack of dust control must be attended to immediately. Drilling, blasting and movement of heavy machinery must be limited to normal working hours (7 AM to 5 PM). Ensure there is a facility for nearby residents to make complaints. These must be addressed and recorded. Communities must have access to a grievance reporting mechanism, e.g. through a project steering or liaison committee. 	LOW NEGATIVE
	During the mining phase, there may be reduced safety due to high vehicle activity and potential run-away fires will.	DIRECT INDIRECT CUMULATIVE	Project area	Short-term	Possible	Severe	HIGH NEGATIVE	Traffic safety: <ul style="list-style-type: none"> All affected communities must be informed of the formal mining routes. 	MODERATE NEGATIVE

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								<ul style="list-style-type: none"> All vehicle operators and drivers must undergo regular training, clearly outlining the high safety risk to local rural communities Signage making communities aware of the high safety risk due to heavy vehicles on the road must be erected at appropriate locations. Traffic calming devices such as speed bumps should be considered on rural access roads. <p>Fire safety:</p> <ul style="list-style-type: none"> Fires outside the mining camps must be prohibited. Fires that are lit must be in a contained area and safety precautions must be followed. The fire must be monitored for cinders and extinguished when no longer needed. Fire fighting equipment must be stored onsite. The mining campsite must be surrounded by a firebreak. Education of fire risks must form part of the mine-worker training. 	
Loss of land as result of the borrow pit construction	During the mining phase, there will be a loss of access to natural resources such as: medicinal plant and food harvesting, hunting, fuel wood collection, thatch grass harvesting, livestock grazing, etc. will be permanently.	DIRECT	Project area	Long-term	Probable	Moderately severe	MODERATE NEGATIVE	<ul style="list-style-type: none"> The process for land acquisition by DWS must be conducted through the traditional authorities operating in the areas as they have jurisdiction over land allocations. Individual landowners must be identified and engaged. All the properties must be professionally assessed and valued by professional independent evaluators registered with South African Institute of Valuers and the South African Council for Property Valuers. Valuations, and the process of evaluation, must be shared with the landowners and will form the basis for on-going negotiations with them. 	LOW NEGATIVE
Stimulation of economic growth	During the mining phase, job opportunities will be available for local communities.	DIRECT INDIRECT CUMULATIVE	Local	Long-term	Possible	Slightly beneficial	LOW NEGATIVE	<ul style="list-style-type: none"> Equal jobs opportunities for women and men must be promoted. Culture and tradition must be considered when planning the division of labour for mining. Employment must be managed by a recruitment agency/office that uses a selection system that ensures recruitment of semi and unskilled workers from all local impacted communities in accordance with recent government policies related to local procurement. This must ensure a fair and equitable recruitment process. Where appropriate, employees involved in the mining phase should be incorporated into the permanent maintenance staff for the mining phase; and Particular attention must be paid to employment opportunities for women and disabled persons. 	LOW POSITIVE
	During the mining phase, buying power of people living in the area will increase due	DIRECT INDIRECT	Regional	Long-term	Possible	Slightly beneficial	LOW POSITIVE	<ul style="list-style-type: none"> The proponent must ensure that the principal of utilising local business resources (suppliers 	MODERATE POSITIVE

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	to increased individual and household income. This will increase the demand for goods and services, which will present an opportunity for local businesses to diversify and expand.	CUMULATIVE						and SMMEs) in accordance with recent government policies related to local procurement (State of the nation address, 2015) forms part of the procurement specifications. Examples of local business resources that must be considered: <ul style="list-style-type: none"> – Catering services – Transport services – Quarries/borrow pits (where necessary) – Small civils – Accommodation – Security – Hygiene services – Fencing 	
	During the mining phase, skills training opportunities will be available for local labourers such as brick laying and building training.	DIRECT	Study site	Medium-term	Possible	Moderately severe	MODERATE NEGATIVE	<ul style="list-style-type: none"> • Implement a skills development programme which includes training in business, project management, monitoring and evaluation. 	MODERATE POSITIVE

Impacts associated with the decommissioning/closure phase of the proposed borrow pits.

ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SPATIAL SCALE (EXTENT)	TEMPORAL SCALE (DURATION)	CERTAINTY SCALE (LIKELIHOOD)	SEVERITY / BENEFICIAL SCALE	SIGNIFICANCE PRE-MITIGATION	MITIGATION MEASURES	SIGNIFICANCE POST-MITIGATION
DECOMMISSIONING PHASE									
<i>GENERAL IMPACTS</i>									
Final rehabilitation and decommissioning	During the decommissioning phase failure to decommission and rehabilitate the borrow pit sites properly could result in soil erosion, storm water issues, safety risks and invasion of alien plant species.	DIRECT	Localised	Long-term	Possible	Severe	HIGH NEGATIVE	<ul style="list-style-type: none"> • All infrastructure, equipment, machinery and other items used during the mining period must be removed from the borrow pit sites. • Waste material of any description, including receptacles, scrap, rubble and tyres, must be removed entirely from the mining area and disposed of at a recognized landfill facility. No waste must be buried or burned on the site. • The borrow pits, access roads, storm water control areas and any other affected areas must be rehabilitated. • The site must be covered with locally occurring grass and shaped/ levelled correctly. • All exposed areas must be re-vegetated where possible. • Mining areas must be inspected weekly for soil stability (up to 6 months after mining ceases). • Alien invasive plant species must be eradicated as per the Rehabilitation and Alien Management Plan. • The closed borrow pits must pose no safety risks. • Rehabilitation must be completed in such a manner that the land can be optimally used post-mining. • Final rehabilitation must be completed within a period specified by the Regional Manager (DMR). 	LOW NEGATIVE
Closure	During the decommissioning phase failure to comply with the closure requirements could result in unnecessary environmental degradation and failure to	DIRECT	Localised	Long-term	Possible	Severe	HIGH NEGATIVE	<ul style="list-style-type: none"> • Closure must comply with the MPRDA (Act 28 of 2002), NEMA (Act 107 of 1998) and the NEMA Regulations (2014) requirements for mine closure. 	LOW NEGATIVE

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	obtain a closure certificate from DMR.							<ul style="list-style-type: none"> A closure plan must be compiled using the guidelines described in Appendix 5 of the NEMA Regulations (2014) and submitted to DMR. A closure certificate must be obtained from the Minister of Mineral Resources. 	
<i>ECOLOGICAL IMPACT ASSESSMENT</i>									
Control of alien species	During the decommissioning and closure phase the lack of an effective alien vegetation management plan may lead to the large scale alien plant invasion.	DIRECT INDIRECT CUMULATIVE	Study site	Long-term	Probable	Moderately severe	MODERATE NEGATIVE	<ul style="list-style-type: none"> A Rehabilitation and Alien Management Plan must be developed and implemented during the decommissioning and closure phase to reduce the establishment and spread of undesirable alien plant species. Alien plants must be removed from the site through appropriate methods such as hand pulling, application of chemicals, cutting etc. This must be done under the supervision of the ECO. 	LOW NEGATIVE
Rehabilitation of disturbed areas	During the decommissioning and closure phase the failure to adequately rehabilitate areas post-mining could lead to a large scale alien plant invasion and potential displacement of indigenous vegetation.	DIRECT INDIRECT CUMULATIVE	Study site	Long-term	Probable	Moderately severe	MODERATE NEGATIVE	<ul style="list-style-type: none"> All impacted areas must be rehabilitated back to Ngongoni veld after mining. Only topsoil from the immediate area must be used for rehabilitation. If none available alternative methods must be investigated and implemented like hydro-seeding, planting etc. All mined areas must be restored as per the Rehabilitation and Alien Management Plan. 	LOW NEGATIVE

No-go impacts associated with the proposed borrow pits.

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<i>NO-GO</i>									
Not constructing the borrow pits	Not constructing the borrow pits will result in no change in the current ecological landscape or the social climate.	INDIRECT CUMULATIVE	Study Area	Permanent	Definite	Very beneficial	HIGH BENEFICIAL	<ul style="list-style-type: none"> No mitigation 	HIGH BENEFICIAL

16.3 APPENDIX C: Specialist Volume

Heritage Impact Assessment

Ecological Impact Assessment

Social Impact Assessment

Paleontological Impact Assessment

16.4 Appendix D: Environmental Management Programme

16.5 Appendix E: Quantum Calculation for Financial Provision