

Prepared on behalf of

Mbhashe Local Municipality

by

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1 Report Release Notice

<i>Report Status</i>	<i>Date</i>	<i>Authorised</i>
1. Internal Draft	March 22, 2011	Ms Lee-Anne Proudfoot
2. Client Draft	March 22, 2011	Mr. Conroy van der Riet
3. Public Report	April 14, 2011	Mr Conroy van der Riet
4. DMR Report	May 24, 2011	Mr Conroy van der Riet

This Environmental Management Plan Report has been prepared by BESC the trading name of Biotechnology & Environmental Specialist Consultancy cc, with all reasonable skill, care and diligence within the terms of the Contract with the client, incorporating our Standard Terms and Conditions of Business and taking account of the resources devoted to it by agreement with the client.

BESC disclaims any responsibility to the client and others in respect of any matters outside the scope of the above.

This Environmental Management Plan Report is exclusive to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own risk.

2 Limitations

BESC has prepared this report for the sole use of **MBHASHE LOCAL MUNICIPALITY** in accordance with generally accepted consulting practises and for the intended purposes as stated in the agreement under which this work was completed. This report may not be relied upon by any other party without the explicit written agreement of **MBHASHE LOCAL MUNICIPALITY** and **BESC**. No other warranty, expressed or implied, is made as to the professional advice included in this report.

The conclusions and recommendations contained in this report are based upon information provided by others and the assumption that all relevant information has been provided by those bodies from whom it has been requested. Where field investigations have been carried out, they have been restricted to a level of detail required to achieve the stated objectives of the work.

All items listed in BESC's Standard Terms and Conditions of Business are applicable to this report.

3 Limiting Conditions

This report was compiled from information obtained from the following sources:

1. Numerous site visits and assessments
2. Public participation
3. Information on biophysical environment - BESC
4. Information on Borrow pit - UWP Consulting
5. Contour Data / Surveyor Information - Norton Survey cc

4 Special conditions

None

5 Natural Science Professions Act

The Principal of BESC, Dr Malcolme Logie, is registered with the:

- South African Council for Natural Scientific Professions (SACNASP), in accordance with the Natural Sciences Professions Act (Act 27 of 2003), as a *Professional Natural Scientist - Environmental Scientist*. As such work undertaken by BESC in Environmental Management complies with the requirement of the Act, which states, “*only individuals registered may practice in a consulting capacity.*”
- The South African Institute of Ecologist & Environmental Scientist, and is registered as a *Professional Member - Environmental Scientist*.
- Certification Board of the Environmental Assessment Practitioners of South Africa (EAPSA), as a *Certified Environmental Assessment Practitioner*
- International Association of Impact Assessors - South Africa
- Senior Lead Auditor: Bureau Veritas (Safety, Health, Environment & Quality)
- Lead Auditor: TUV (Safety, Health, Environment)
- Lead Auditor: British Standard Institute (Safety, Health, Environment)

Senior Environmental Consultants:

Ms Lee-Anne Proudfoot, is registered with the:

- South African Council for Natural Scientific Professions (SACNASP), in accordance with the Natural Sciences Professions Act (Act 27 of 2003), as a *Professional Natural Scientist - Environmental Scientist*. As such work undertaken by BESC in Environmental Management complies with the requirement of the Act, which states, “*only individuals registered may practice in a consulting capacity.*”
- International Association of Impact Assessors - South Africa

6 Primary Legislative Specifications

Primary Environmental Legislation governing the Scope of Work undertaken is:

- GN R.1273: Mineral and Petroleum Resources Development Act, 2002, No. 28 of 2002.
- GN R. 527: Mineral and Petroleum Resources Development Act, 2002, (No. 28 of 2002): Mineral and Petroleum Resources Development Regulations, 2004.
- GN R.385: Regulations in terms of Chapter 5 of the National Environmental Management Act, 1998;

for the proposed utilisation of the borrow pit.

The permitting of the materials sources required for the project will be undertaken in accordance with the Minerals and Petroleum Resources Development Act (M&PRDA) (No. 28 of 2002). It must be noted that the applicant (Mbhashe Local Municipality), as an organ of state, is exempt from the provisions of sections 16, 20, 22 and 27 of the M&PRDA in respect of any activity to remove any mineral for the construction and maintenance of dams, harbours, roads and railway lines and for purposes incidental thereto, as allowed for by the said Act in section 106 (1). As such the utilisation of any material sources is only subject to the preparation, submission and approval of an Environmental Management Plan compiled in accordance with requirements of the M&PRDA.

7 Introduction

UWP Consulting has been appointed for the provision of engineering services for the construction of the Phase 2B: Qwaninga Water Supply. **BESC** have been appointed by **UWP Consulting** on behalf of **the Mbashe Local Municipality** to undertake the necessary investigations and applications in order to obtain authorisation from the relevant authorities for the proposed works. To this end, an Environmental Management Plan as defined and required by the Minerals and Petroleum Resources Development Act (M&PRDA) (No. 28 of 2002) has been prepared for the proposed utilization of the borrow pit. It must be noted that the Phase 2B: Qwaninga Water Supply project is an Amathole District Municipality initiative as the declared water services authority for the local municipality.

It is proposed that the materials for the construction of the water supply project be sourced from the existing borrow pit identified. As mentioned previously, the utilization of the material sources required for the project will be undertaken in accordance with the Minerals and Petroleum Resources Development Act (M&PRDA) (No. 28 of 2002). Since the proponent for the proposed project is an Organ of State, exemption has been received from the application process in terms of the exemption provisions in Section 106(1) in the Act. As such, an Environmental Management Plan for the utilization of the borrow pits is required in accordance with Section 39(2) and Regulation 52 of the M&PRDA.

The purpose of the Environmental Management Plan is to identify and assess potential impacts associated with the project through a process of stakeholder and public consultation and environmental investigations, and to provide sufficient detail on the project to the Department of Minerals Resources (DMR), in order to allow DMR to make an informed decision on the project.

It is also appropriate to highlight at this point that the Department of Mineral Resources may, in their Decision, reserve their rights to initiate criminal proceedings against the Consulting Engineer, contractor and/or any sub-contractors.

7.1 Objectives of the Environmental Management Plan

The overall objectives of the Environmental Management Plan are defined as follows:

- To fulfil the requirements of Sections 39 of the Minerals and Petroleum Resources Development Act;
- To fulfil the criteria described in regulations 52 of the Minerals and Petroleum Resources Development Regulations, 2004, Government Notice No. 527.
- To inform the public and key stakeholders of the Project and to provide them with an opportunity to express any concerns or issues and to participate in the process;
- To identify and assess potential impacts associated with the activity. A “fatal flaw” constitutes an impact of HIGH significance and which cannot be managed to an acceptable level;
- Identify proposed mitigation and management measures to minimize adverse impacts and benefits; and
- Planned monitoring and performance assessment of the environmental management plan.

7.2 Integrated Environmental Management

The Integrated Environmental Management (IEM) procedure, which is outlined in Chapter 5 of the National Environmental Management Act (Act 107 of 1998) (NEMA), provides a framework for the integration of environmental issues into the planning, design, decision-making and implementation of plans and development proposals. The general objectives of Integrated Environmental Management are to:

- Promote the integration of the principles of environmental management in the making of all decisions, which may have a significant effect on the environment;
- Identify, predict and evaluate the actual and potential impacts on the environment, socio-economic conditions and cultural heritage; the risks and consequences and alternatives and options for mitigation of activities, with a view to minimising negative impacts and maximizing benefits and promoting compliance with the principles of environmental management;
- Ensure that the effects of activities on the environment received adequate consideration before actions are taken in connection with them
- Ensure adequate and appropriate opportunity for public participation in decisions that may affect the environment;
- Ensure the consideration of environmental attributes in management and decision-making which may have a significant effect on the environment; and
- Identify and employ modes of environmental management best suited to ensure that the particular activity is pursued in accordance with the principles of environmental management.

7.3 Project Details

Applicant:

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Landowner

The borrow pit falls within the former Transkei and is located on Communal Land - Qwaninga LOC 15. The Department of Rural Development and Land Reform is the legal custodian of the identified land.

8 Project Description

8.1 Study Area

The borrow pit is located approximately 10 km south east of Willowvale, situated in the Eastern Cape. Willowvale is situated approximately 30 km south east of Idutywa. Willowvale and the borrow pit fall within the jurisdiction of the Mbashe Local Municipality and the Amathole District Municipality. The borrow pit is located at the following GPS co-ordinates: 32.31817°S and 28.54535°E. The nearest village to the borrow pit is Guxuxu.

The borrow pit is accessed via an unpaved/gravel road which has its intersection with the main road from Willowvale to Kobb Inn. The intersection is approximately 10 km south east of Willowvale, and the borrow pit is located approximately 3 km down this unpaved/gravel access road. The GPS co-ordinate for the turnoff to the access road is: 32.30714°S and 28.58346°E

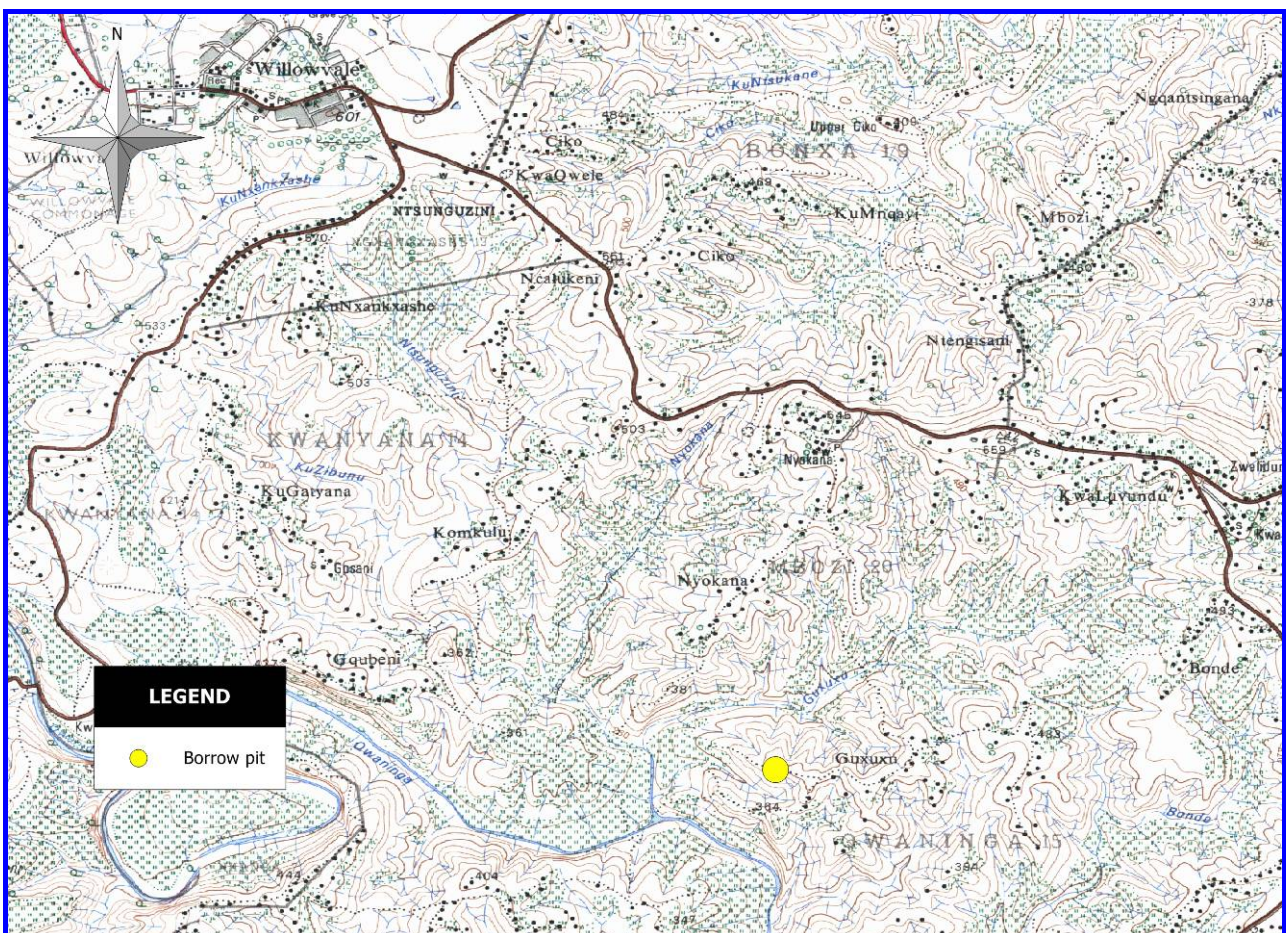


Figure 1: The location of the borrow pit

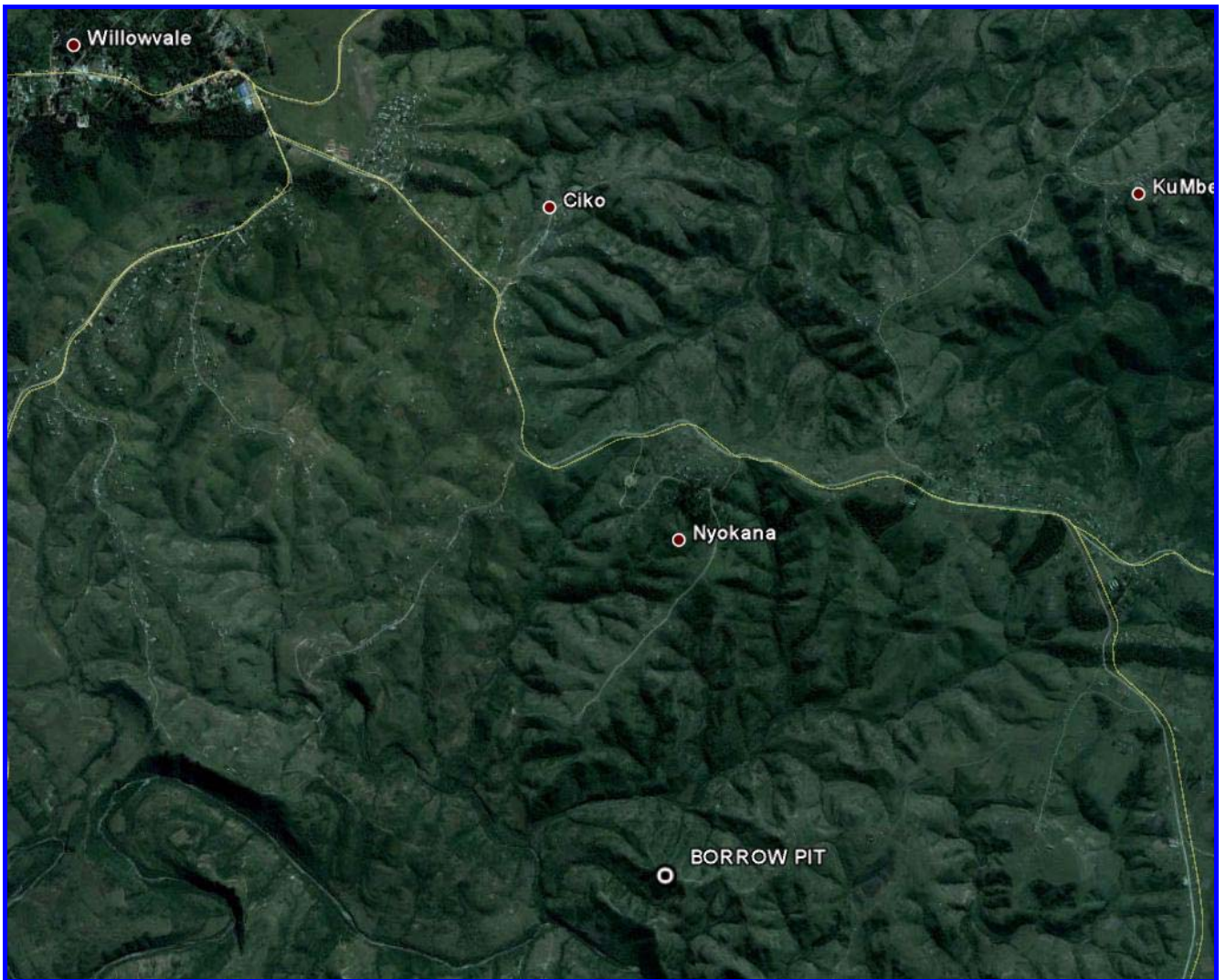


Figure 2: Aerial Image

8.2 Current Land Use

The borrow pit is existing and has been previously used for road construction/upgrading activities etc.

8.3 Surrounding Land Use

The surrounding land use includes Communal, Rural Agricultural Land and Natural Landscape.

8.4 Proposal

As mentioned above, it is proposed to source construction material from the identified borrow pit for the Phase 2B: Qwaninga Water Supply project. The borrow pit is located at the following GPS co-ordinates: 32.31817°S and 28.54535°E.

Table 1: Borrow pit Summary Table

Information		Borrow pit
Ownership		Communal Land
Type of Material		Shale
Size of the area to be mined		Approximately 0.797 ha
Existing or new		Existing
Co-ordinates	South	32.31817°
	East	28.54535°
Distance from Main Access Road		5 m
River Catchment		Qwaninga River
Nearest Village		Guxuxu
Distance to Nearest Houses		140 m
Presence of servitudes		None
Proposed End Use		Stock Watering Dam/Closure & Rehabilitation

8.5 Borrow pit

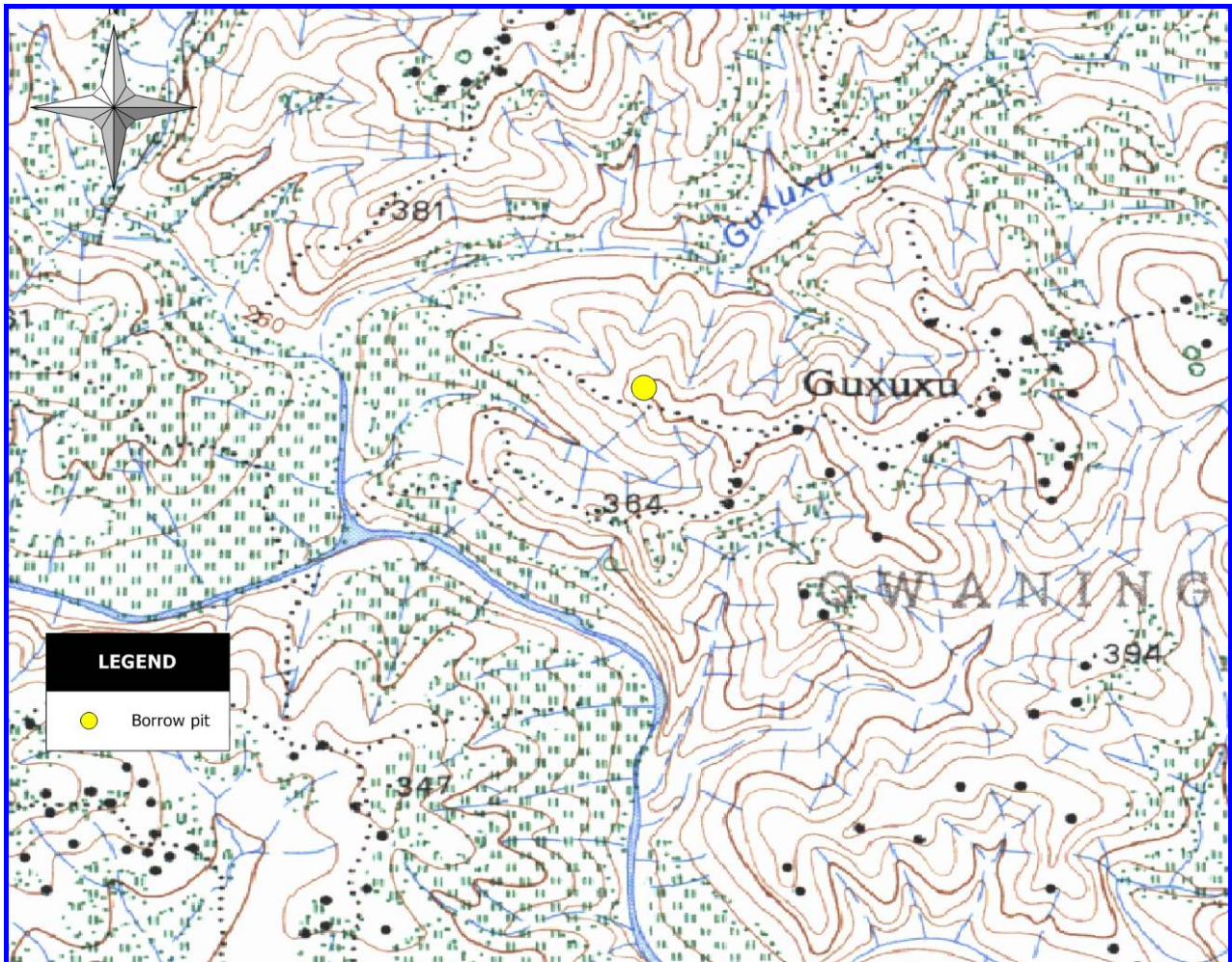


Figure 3: Topographical Location of the Borrow pit - 1:50 000 map



Figure 4: Borrow pit

General Description

The Borrow pit is an existing borrow pit which has been used in the past. It is located on the pinnacle/spur of a north -facing hill. It comprises of a shallow excavation. The site is accessed by an unpaved/gravel road which has its intersection with the Kobb Inn Road and is located +/- 140 m from the nearest houses located in the village Gxuxu. It is the intension that the borrow pit will be deepened within the existing footprint of the borrow pit and extended in a northerly direction as indicated on the mining plan in SECTION 18. It will not be necessary to relocate any households; however noise control and dust control measures will need to be implemented.

Prior to mining the access road will be demarcated to prevent vehicles damaging natural vegetation. The existing access to the borrow pit will be utilised to allow for trucks to access the working face. The entire mining area will be fenced to prevent unauthorized access of both humans and animals. The area to be fenced will be bigger than the area to be mined to allow for a storage area for topsoil.

Site preparation will consist of the stripping of topsoil and overburden into stockpiles, which are to be stored separately. Existing topsoil stockpiles will be shifted out of the way to allow for mining of the material beneath. The topsoil and overburden material will be stockpiled on site and after the mining is complete this material will be spread over again. Once the whole area is open the stockpile can be moved around so as not to interfere with the mining process.

The material will be excavated from the floor of the borrow pit and if possible loaded directly onto haul trucks. The material to be mined will be shale. It is proposed that the extent of the area to be mined (existing and new) will be approximately 0.797 ha.

Stormwater control is viewed as a critical component of the borrow pit development. It is suggested that diversion berms with energy dissipation beds should be installed down slope of the mining area to filter out any sediment washed off the site during heavy rainfall.

Proposed Rehabilitation Measures:

On completion of mining, the preferred end use is the rehabilitation of the borrow pit to a stock watering dam for the purposes of the surrounding community. In this respect as per DMR's minimum requirements the proposed banks of the sides of the borrow pit will need to be adequately sloped and contoured and the banks of the dam will need to be topsoiled, seeded and re-vegetated. The borrow pit must be rehabilitated to protect against erosion. Slopes must at least be sloped to a ratio of 1:3 to prevent any harm to animals/livestock. The banks of the end use stock watering dam must be spread

with topsoil, be fertilized and seeded with an indigenous grass mix which includes quick-growing pioneers and climax species. As a result of the mining activities, other areas adjacent to the borrow pit which have been disturbed must also be spread with topsoil, be fertilized and seeded with an indigenous grass mix. Access will be provided to the rehabilitated stock watering dam. For this end use to be sufficient it must be proved that surface water will accumulate in the borrow pit for a stock watering purpose.

Should the rehabilitation be completed and within the 2 year rehabilitation period it can be seen that the borrow pit does not accumulate surface water in order to be utilised as a stock watering dam, then the bottom of the borrow pit will need to be topsoiled, seeded and re-vegetated.

The faces must be sloped to a 1:2 - 1:3 slope in order to make the slopes/borrow pit safe and as per DMR's minimum requirements overburden and then topsoil (imported if required) must be spread over the surface of the mining area. The access roads must be ripped. The entire area disturbed will be fertilized and seeded with an indigenous grass mix which as above will include quick-growing pioneers and climax species. The stormwater berms will be retained on closure to maintain a free draining site and protect against erosion. All structures must have a 'natural' look and facilities for plants to grow in.

All areas where the slopes are 1:3 to 1:6 should be logged or otherwise stepped (using stabilisation cylinders or similar) in order to prevent soil erosion. Logs/ cylinders should be laid in continuous lines following the contours and spaced vertically 0.8-1.2 m apart, depending on the steepness of the slope. These logs/ cylinders must be secured by means of steel pegs and wire in rocky areas, and treated wooden pegs in other areas.

Inspections will be undertaken during the project liability period (one year after completion of the contract) to ensure that no erosion has taken place and to monitor the success of the revegetation. Should any damage occur, the necessary repair works will be undertaken. The intention is to establish an 80% grass cover within two years of rehabilitation. Should this not be achieved, it may be necessary to lightly rip, fertilise and reseed the site. The fence will be maintained by the contractor until the end of the contracts liability period.

9 Legal Requirements

9.1 National Acts and Regulations

9.1.1 The Constitution of South Africa, Act No 106 of 1996

Chapter 2 of the Bill of Rights that forms part of The Constitution of South Africa provides for an 'environmental right', and in terms of Section 7, the State is obliged to respect, promote and fulfil the rights in the Bill of Rights. An obligation is therefore placed on the State to give effect to the environmental right and this is achieved through the right of everyone:

- To an environment that is not harmful to their health or well-being,
- To have the environment protected, for the benefit of present and future generations, though reasonable legislative and other measures that:
 - Prevent pollution and ecological degradation,
 - Promote conservation,
 - Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

9.1.2 Mineral and Petroleum Resources Development Act

The Minerals and Petroleum Resources Development Act, 2002 (Act No 28 of 2002) was developed to ensure that provision is made for equitable access to, and sustainable development of, South Africa's mineral and petroleum resources and to provide insight, guidance and control for matters connected thereto. It seeks to provide management tools that ensure that all mining operations are undertaken in an environmentally sound manner according to government approved documents that hold the applicant responsible for any environmental degradation that their mining actions might cause. It also seeks to expand opportunities for historically disadvantaged South Africans and promote employment and welfare of SA citizens. It ensures that holders of mining and production rights contribute towards the socio-economic development of the areas in which they operate.

9.1.3 Mineral and Petroleum Resources Regulations

Regulations in terms of Section 107(1) of the Act were published in Government Notice No. R. 526 on the 23rd April 2004. The regulations provide details of the procedures to be followed in applying for or renewing mining and prospecting rights and permits and for the closure of mining operations as provided and described in the Mineral and Petroleum Resources Development Act (M&PRDA).

Mbhashe Local Municipality, as an organ of state, has applied for exemption from certain provisions of the Act, as allowed in terms of Section 106(1). Utilization of any material sources is therefore subject to the preparation, submission and approval of an Environmental Management Plan compiled in accordance with Section 39(2) and Regulation 52 of the M&PRDA.

9.1.4 Mineral and Petroleum Resources Development Amendment Act

The Mineral and Petroleum Resources Development Act, 2009 (Act No 49 of 2009) was gazetted on 21 April 2009 in order to amend the Mineral and Petroleum Resources Development Act, 2002, so as to make the Minister the responsible authority for implementing environmental matters in terms of the National Environmental Management Act, 1998 and specific environmental legislation as it relates to prospecting, mining, exploration, production and related activities or activities incidental thereto on a prospecting, mining, exploration or production area; to align the Mineral and Petroleum Resources Development Act with the National Environmental Management Act, 1998 in order to provide for one environmental management system, to remove ambiguities in certain definitions; to add functions to the Regional Mining Development and Environmental Committee; to amend the transitional arrangements so as to further afford statutory protection to certain existing old order rights; and to provide for matters connected therewith.

Any provision related to prospecting, mining, exploration and production and related activities come into operation only 18 months after the commencement of the M&PDRA Amendment Act.

9.1.5 National Environmental Management Act

The National Environmental Management Act (Act 107 of 1998) (NEMA), has largely superseded the Environment Conservation Act (Act 73 of 1989), and now serves as a framework for environmental management, in which development must be socially, environmentally and economically sustainable.

Section 2(1) of NEMA sets out a range of environmental principles that are to be applied by all organs of state when taking decisions that significantly affect the environment. Included amongst the key principles is the directive that all development must be socially, economically and environmentally sustainable, and that environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably. Therefore the proposed development must to consider the following principles:

- Environmental management must be integrated, taking into account the effects of decisions on all aspects of the environment and on all people;

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- Environmental justice must be pursued to ensure that adverse impacts are not distributed in a manner so as to unfairly discriminate against any person, particularly vulnerable or disadvantaged persons;
 - Equitable access to environmental resources, benefits and services to meet basic human needs and to ensure that human well-being is pursued;
 - The participation of Interested & Affected Parties (I&AP's) in environmental governance must be promoted;
 - Community well-being and empowerment must be promoted through environmental education;
 - The social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated, and decisions must be appropriate in light of these considerations; and
 - Decisions must be taken in an open and transparent manner.

In terms of the current regulations, Section 1 of Government Notice R544 (2010), Section 1 of Government Notice R545 (2010) and Section 1 of Government Notice R546 (2010), provides a schedule of activities which may have a substantial detrimental effect on the environment, and which require authorisation by the DWEA (formerly DEAT) before they may commence. With regards to the proposed utilisation of the identified borrow pits, no listed activities requiring environmental authorisation have been triggered.

9.1.6 National Environmental Management Amendment Act

On 1 May 2009 the National Environmental Management Amendment Act, 2008 (Act No. 62 of 2008) ("the NEMA Amendment Act"), came into operation. The NEMA Amendment Act has implications on the way in which the Environmental Impact Assessment ("EIA") process is implemented.

It serves to amend the National Environmental Management Act, 1998, so as to insert certain definitions and to substitute others; to further regulate environmental authorisations; to empower the Minister of Minerals and Energy to implement environmental matters in terms of the National Environmental Management Act, 1998, in so far as it relates to prospecting, mining, exploration, production or related activities on a prospecting, mining, exploration or production area; to align environmental requirements in the Mineral and Petroleum Resources Development Act, 2002, with the National Environmental Management Act, 1998, by providing for the use of one environmental system and by providing for environmental management programmes, consultation with State departments, exemptions from certain provisions of the National Environmental Management Act, 1998, financial provision for the remediation of environmental damage, the management of residue stockpiles and residue deposits, the recovering

of cost in the event of urgent remedial measures and the issuing of closing certificates as it relates to the conditions of the environmental authorisation; and to effect certain textual alterations; and to provide for matters connected therewith.

9.1.7 Environment Conservation Act

The Environmental Conservation Act (Act 73 of 1989) aimed “to provide for the effective protection and controlled utilization of the environment and for matters incidental thereto”, and predated NEMA as the country’s primary environmental statute. Much of the ECA was repealed with the promulgation of NEMA, with the environmental impact assessment regulations in turn being repealed when the regulations under NEMA mentioned in the previous section were adopted. The foundation before this promulgation consisted of Parts V and VI of the ECA that related to the “control of activities which may have detrimental effect on the environment”.

In addition, section 25 of the Act makes provision for the regulations regarding noise, vibration and shock. These regulations are provided for Noise Control.

9.1.8 National Water Act

The National Water Act (Act 36 of 1998) (NWA) provided fundamental law relating to water resources. The preamble to the Act recognises that the ultimate aim of water management is to achieve sustainable use of water for the benefit of all users, and that the protection of the quality of water resources is necessary to ensure sustainability of the nation’s water resources in the interests of all water users. The purpose of the Act is stated, in Section 2 as, *inter alia*:

- Promoting the efficient, sustainable and beneficial use of water in the public interest;
- Facilitating social and economic development;
- Protecting aquatic and associated ecosystems and their biological diversity; and
- Reducing and preventing pollution and degradation of water resources.

9.1.9 National Forests Act

The principles of the National Forests Act (Act 84 of 1998) (NFA) pertain to:

- The protection of natural forests (except under exceptional circumstances where the Minister determines that the proposed new land use is preferable in terms of its economic, social or environmental benefits);
- The conservation of a minimum area of each woodland type; and
- The management of forests to ensure sustainability of resources (wood, soil, biological diversity, etc).

No person may cut, disturb, damage or destroy any indigenous living tree in, or remove or receive any such tree from, a natural forest except in terms of-

- (a) A license issued under subsection (1) or section 23; or
- (b) An exemption from the provisions of this subsection published by the Minister in the Gazette on the advice of the Council.

The Minister may declare to be a natural forest a group of indigenous trees whose crowns are not largely contiguous; or where there is doubt as to whether or not their crowns are largely contiguous, if he or she is of the opinion based on scientific advice, that the trees make up a forest which needs to be protected in terms of this Part.

The Minister declares a forest to be a natural forest by publishing a notice in the Gazette; and publishing a notice in two newspapers circulating in the area; and airing a notice on two radio stations broadcasting to the area.

The Minister may issue a licence to cut, damage or destroy any indigenous, living tree in. or remove or receive any such tree from a natural forest.

9.1.10 Conservation of Agricultural Resources

The Conservation of Agricultural Resources Act (Act 13 of 1983) makes provision for the actions required with regard to any plant species depend on the *category* in which the plant appears of the amended regulations, and might differ from province to province. In certain cases, special conditions were added that apply only to that specific species.

Category 1 plants, or declared weeds

These are prohibited plants that will no longer be tolerated, neither in rural nor urban areas, except with the written permission of the executive officer or in an approved biocontrol reserve. These plants may no longer be planted or propagated, and all trade in their seeds, cuttings or other propagative material is prohibited. They may not be transported or be allowed to disperse.

Plant species were included in this list for one or more of the following reasons: they might pose a serious health risk to humans or livestock, cause serious financial losses to land users, be able to invade undisturbed environments and transform or degrade natural plant communities, use more water than the plant communities they replace or be particularly difficult to control.

Most of the plants in this category produce copious numbers of seeds, are wind or bird dispersed or have highly efficient means of vegetative reproduction. Whereas some of these plants were introduced inadvertently, have no obvious function to fulfil in South Africa and are generally regarded as undesirable, many of them are popular garden or landscaping plants. What they all have in common, however, is the fact that their harmfulness outweighs any useful properties they might have. Care was taken not to include a plant in this category if part of the population of South Africa would suffer because of its absence. The ornamentals in this category ought to be reasonably easy to replace with less invasive substitutes.

Plant invaders of Category 2

These are plants with the proven potential of becoming invasive, but which nevertheless have certain beneficial properties that warrant their continued presence in certain circumstances. CARA makes provision for Category 2 plants to be retained in special areas demarcated for that purpose, but those occurring outside demarcated areas have to be controlled. The exception is that Category 2 plants may also be retained or cultivated in biological control reserves, where the plants will serve as host plants for the breeding of biological control agents. The growing of Category 2 plants in a demarcated area qualifies as a water use, and is subject to the requirements of section 21 of the National Water Act, 1998 (Act No. 36 of 1998).

An area can only demarcated for the growing of Category 2 plants by the Executive Officer. The land user needs to obtain a water use license; the plants have to primarily serve a commercial or utility purpose, such as a woodlot, shelter belt, building material, animal fodder, soil stabilization, medicinal or own consumption; the conditions under which they are cultivated, have to be controlled; all reasonable steps have to be taken to curtail the spreading of seeds or vegetatively reproducing material outside the demarcated area, and all specimens outside the demarcated area have to be controlled. The Executive Officer has the power to impose additional conditions to ensure the adequate control of Category 2 plants in demarcated areas.

Seed or other propagative material of Category 2 plants may only be sold to, and acquired by, land users of areas demarcated for the growing of that species, or for the establishment of a biocontrol reserve. Category 2 plants may not occur within 30 m from the 1:50 year flood line of watercourses or wetlands, unless authorization has been obtained in terms of the National Water Act. The Executive Officer has the power to grant exemption from some of the above requirements.

Plant invaders of Category 3

These plants are undesirable because they have the proven potential of becoming invasive, but most of them are nevertheless popular ornamentals or shade trees that will take a long time to replace. A few of them were placed into this category instead of into category 1 because they do not cause problems in all situations. In terms of Regulation 15 of CARA, Category 3 plants will not be allowed to occur anywhere except in biological control reserves, unless they were already in existence when these regulations went into effect. The conditions on which these already existing plants may be retained are that they do not grow within 30 m from the 1:50 year flood line of watercourses or wetlands, that all reasonable steps are taken to keep the plant from spreading, and that the Executive Officer has the power to impose additional conditions or even prohibit the growing of Category 3 plants in any area where he has reason to believe that these plants will pose a threat to the agricultural resources.

Propagative material of these plants, such as seeds or cuttings, may no longer be planted, propagated, imported, bought, sold or traded in any way. It will, however, be legal to trade in the wood of Category 3 plants, or in other products that do not have the potential to grow or multiply. The Executive Officer will have the power to grant exemption from some of the above requirements.

Control methods

The amended regulations stress that, when controlling plants that occur in areas where they are not allowed, methods should be used that are appropriate for the species concerned as well as to the ecosystem in which they occur. One or a combination of the following control methods may be used: uprooting, felling, cutting, burning, treatment with registered herbicides, biological control or any other recognized and appropriate method. Repetitive follow-up actions will be mandatory until the required control has been achieved.

The aim of control is to reach a point where, ideally, the plants concerned do no longer occur in that particular area or, at least, where the plants can no longer grow, produce viable seeds or spores, coppice, sprout or produce root suckers, reproduce vegetatively, propagate themselves in any other way, or spread into other areas. If this is not possible, the plants have to be contained and their multiplication limited as far as possible.

When controlling weeds and invaders, damage to the environment has to be limited to the minimum. CARA does not specify the types of environmental damage that might be caused by control actions, but a few examples would be:

1. The removal of or herbicidal damage to non-target plants
2. The chemical pollution of soil or water or any other threat to non-target organisms
3. The irresponsible use of fire
4. The creation of a fire hazard by allowing flammable material to accumulate in fire-sensitive areas
5. Unnecessary or irresponsible disturbance of the soil, especially on riverbanks or slopes
6. Failure to rehabilitate denuded areas so as to prevent soil erosion and invasion by other undesirable species
7. Any other action that might upset the ecological balance of the environment.

Biological control of weeds is subject to rigorous regulations, and will be recognized by CARA as a valid control method only if it is practiced in accordance with all these regulations. Biological control involves the use of host-specific natural enemies of weeds or invaders from the plant's country of origin, to either kill or remove the invasive potential of these plants. It may only be initiated by and carried out under the supervision of an academic or research institute or organization established by legislation, which practises and researches biological control of weeds and invader plants. In order to prevent the waste of biocontrol research effort, money and natural enemies, CARA also lays down certain rules for the protection of biological control agents. In areas where biological control is effective, no additional control methods should be used that would harm the biocontrol agents. Provision is made for certain areas to be set aside as biological control reserves, i.e. areas in which a number of invasive plants are maintained as host plants for the biological control agents, to ensure the continued presence of the agents in that area. Only the Executive Officer may designate a biological control reserve, on condition that it is used by a biocontrol expert to rear and redistribute biocontrol agents. In such a biological control reserve, no measures may be applied that would render the biocontrol agents ineffective.

Nothing contained in Regulation 15 may be used as a reason for ignoring or circumventing any other laws.

9.1.11 National Environmental Management: Biodiversity Act

The Biodiversity Act (Act 10 of 2004) falls within the framework of the National Environmental Management Act and provides for:

- The management and conservation of biological diversity and of components of such biodiversity;
- Protection of species and ecosystems that warrant National protection;
- Sustainable use of indigenous biological resources;
- The fair and equitable sharing of benefits arising from bio-prospecting including indigenous biological resources; and
- The establishment of a National Biodiversity Institute.

Furthermore it gives affect to ratified international agreements relating to biodiversity which are binding on the Republic, it provides for co-operative governance in biodiversity management and conservation, and provides for a South African National Biodiversity Institute to assist in achieving the objectives of this Act.

9.1.12 Provincial Nature Conservation Ordinance

Protected indigenous plants in general are currently controlled under the relevant provincial Ordinances or Acts dealing with nature conservation. The Eastern Cape falls under the Cape Nature and Environmental Conservation Ordinance (1974). In terms of this Ordinance, a permit must be obtained from Department of Economic Affairs Environment and Tourism (DEDEA) to remove or destroy any plants listed as 'endangered', and a letter of consent form the landowner must be obtained to remove or destroy any plants listed as 'protected' in the Ordinance.

9.1.13 Eastern Cape Environment Conservation Bill, 2003

To provide for the consolidation and the repeal of certain laws relating to environmental conservation applicable in the Province, including the Sea-shore Act, 1935, Mountain Catchment Areas Act, 1970, and the Environmental Conservation Act, 1989; to provide for the declaration of Provincial protected areas; to provide for the management of biodiversity in the Province; to provide for Provincial coastal management; to regulate air quality and waste management in the Province; and to provide for matters connected therewith.

This bill provides a number of schedules which protect endangered flora and for which a permit is required. According to Chapter 12, "Miscellaneous provisions relating to endangered flora" 112(1)

Subject to the provisions of this Act, no person may - in respect of flora listed in Schedule 4, without a possession permit (iii) pick, uproot, damage or destroy any endangered flora.

9.1.14 National Heritage Resources Act

The purpose of the National Heritage Resources Act (Act 25 of 1999) is to:

- Introduce an integrated and interactive system for the management of the national heritage resources;
- Promote good government at all levels, and empower civil society to nurture and conserve their heritage resources so that they may be bequeathed to future generations;
- Introduce an integrated system for the identification, assessment and management of the heritage resources of South Africa;
- Control the export/import of nationally significant heritage objects;
- Enable the province to establish heritage authorities which must adopt powers to protect and manage certain categories of heritage resources; and
- Provide for the protection and management of conservation worthy places and areas by local authorities.

Part 2 of the Act provides for the protection and preservation of structures, sites of archaeological and palaeontological sites, meteorite sites, burial grounds and graves, public monuments and memorials. It also includes the procedures and requirements for heritage resources management.

9.1.15 National Environment Management: Air Quality Act

The Atmospheric Pollution Prevention Act has been repealed by the National Environmental Management: Air Quality Act, 2004 (Act No 39 of 2004). The purpose of the National Environmental Management: Air Quality Act (Act 39 of 2004) is to regulate air quality in order to protect the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development while promoting justifiable economic and social development; to provide for national norms and standards regulating air quality monitoring, management and control by all spheres of government; for specific air quality measures; and for matters incidental thereto.

9.1.16 Explosives Act, 1956 (Act No 26 of 1956)

For blasting, a permit must be obtained from the Department of Mineral Resources in accordance with this Act.

9.1.17 Occupational Health and Safety Act

The Occupational Health and Safety Act, 1993 (No 85 of 1993) provides for the health and safety of persons at work; for the health and safety of persons in connection with the use of plant and machinery; and the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work. A number of regulations are published under this Act, including:

- Environmental Regulations for Workplaces (GN R2281 of 1987-10-16)
- Regulations for Hazardous Chemical Substances (GN R1179 of 1995-08-25)
- Asbestos Regulations, 2002 (GN R155 of 2002-02-10)
- Explosives Regulations (GN R109 of 2003-01-17)

9.1.18 Mine Health and Safety Act

The Mine Health and Safety Act, 1996 (No 26 of 1996) provides for the protection of health and safety of employees and other persons at mines and serves -

- To promote a culture of health and safety;
- To provide for the enforcement of health and safety measures;
- To provide for appropriate systems for employee, employer and state participating in health and safety matters;
- To provide effective monitoring systems and inspections, investigations and inquiries to improve health and safety;
- To promote training and human resource development;
- To regulate employers' and employees' duties to identify hazards and eliminate, control and minimise the risk to health and safety;
- To entrench the right to refuse to work in dangerous conditions; and
- To give effect to public international law obligations of the Republic relating to mine health and safety.

9.2 Plans, Policies & Guiding Principles

9.2.1 Provincial Spatial Development Plan

The Eastern Cape has approved a Provincial Spatial Development Plan. The plan supports the view that the focus of development should be on developing nodes and areas where economic opportunities can be stimulated, particularly in the central and eastern areas of the province. The plan identifies key spatial development issues, main development nodes and zones where development should be encouraged. It aims to encourage consolidated settlement through the improved provision of infrastructure and facilities in targeted areas reinforcing the strategic advantages offered by coastal tourism nodes. For the coast in general the plan discourages linear development and places emphasis on the establishment of nodal developments to build on existing strengths and minimize environmental impacts. The plan also outlines environmentally sensitive areas where development should not be permitted. These are:

- State forests
- Dune forests and estuaries
- Within 30 meters of watercourses along major rivers
- Game reserves and nature sanctuaries
- Slopes steeper than 1:6
- Historic heritage sites
- River basin catchment areas

9.2.2 Amathole District Municipality - Integrated Development Plan

The Amathole District Municipality published its Integrated Development Plan. Amathole District Municipality is a “C” municipality located in the Eastern Cape Province that has an extensive coast and a large rural hinterland. There are eight local “B” municipalities (Amahlati, Buffalo City, Great Kei, Mbashe, Mnquma, Ngqushwa, Nkonkobe, and Nxuba) located within its boundary.

The district wide strategies contained in this Integrated Development Plan were developed jointly with the local “B” municipalities and other stakeholders. This has ensured integration between this Integrated Development Plan for the Amathole District Municipality and the Integrated Development Plan’s of the local “B” municipalities. As part of this approach, five strategic clusters (Infrastructure, Local Economic Development, Environment, Social Needs, Institution and Finance) were identified. Strategies, programmes and projects were developed within each cluster and then integrated through a budget alignment process as part of the integration phase of the Integrated Development Plan.

The key themes emerging from this IDP are:

- Developing environmental strategies to enhance sustainable development;
- Extending basic infrastructure;
- Increasing economic growth through access to economic opportunity, with an increasing focus on agriculture;
- Responding to the social needs of communities with emphasis on health and HIV/AIDS;
- Transforming the municipal institution to meet the developmental challenges of local government.

9.2.3 Mbashe Local Municipality - Integrated Development Plan, 2008 - 2009

Mbashe municipality is situated in the south eastern part of the Eastern Cape Province, and is bound by the coast line flowing from Qhora River in the south to Mncwasa River in the north along the Indian Ocean. Mbashe comprise the three towns of Dutwya, Gatyana and Xhora and numerous rural settlements. The area also boasts the head offices of the Amakhosa kingdom at Nqadu Great Place. Mbashe is 3030.47 km in area, consisting of 26 wards and having 51 councillors.

The Municipal Systems Act (MSA) 32 of 2000 makes provision for the preparation and annual review of an integrated development plan (IDP). The IDP is three principal strategic plan through which a municipality should guide all its planning, budgeting, management and decision making regarding resource allocation and prioritization for development. The IDP supersedes all other plans of a municipality.

The municipality has developed an Integrated Development Plan, 2008 - 2009. This IDP identified that in terms of its service delivery profile for water and sanitation Amathole District Municipality is declared as the Water Services Authority (WSA) in terms of the powers and functions devolved by the Local Government Municipal Structures Act, 117 of 1998. There are significant people without access to a basic water supply (97%) within the municipal area.

9.2.4 DWAF - Best Practice Guidelines

The Department of Water Affairs & Forestry developed a series of Best Practice Guidelines (BPG's) for mines that was released in 2009 in line with the international Principles and Approaches towards sustainability. These guidelines have been grouped as follows:

- BPG's dealing with aspects of DWAF's water management hierarchy, namely,
 - H1: Integrated Mine Water Management
 - H2: Pollution Prevention and Minimization of Impacts

- H3: Water Reuse and Reclamation
- H4: Water Treatment
- BPG's dealing with General water management strategies, techniques & tolls, namely,
 - G1: Storm Water Management
 - G2: Water and Slat Balances
 - G3: Water Monitoring Systems
 - G4: Impact Prediction
 - G5: Water Management Aspects for Mine Closure
- BPG's dealing with specific mining activities or aspects, namely,
 - A1: Small-Scale Mining
 - A2: Water Management for Mine Residue Deposits
 - A3: Water Management in Hydrometallurgical Plants
 - A4: Pollution Control Dams
 - A5: Water Management for Surface Mines
 - A6: Water Management for Underground Mines

The development of the guidelines is an inclusive consultative process that incorporates the input from a wide range of experts, including specialist within the and outside the mining industry and government.

The BPG's form the following main functions:

- Utilization by the mining sector as input for compiling water use license applications (and other legally required documents such as EIA's, EMP's, closure plans, etc) and for drafting license conditions.
- Serve as a uniform basis for negotiations through the licensing process prescribed by the National Water Act.
- Used specifically by DWAF personnel as a basis for negotiation with the mining industry, and likewise by the mining industry as a guideline as to what the DWAFG considers as best practice in resource protection and waste management.
- Inform Interested & Affected Parties on good practice at mines.

9.2.5 Department of Environmental Affairs Guidelines

The Department of Environmental Affairs has also produced a series of guidelines to assist potential applicants and interested and affected parties (I&AP's) to understand what is required of them and what is required of them and what their role may be. The guidelines are intended to guide only and should be read in conjunction with NEMA and the regulations. They are not intended to be a substitute for the

provisions of NEMA or the regulations in any way. The guidelines form part of the department's Integrated Environmental Management Guideline Series and consist of -

- Guideline 5: Companion to the National Environmental Management Act Environmental Impact Assessment Regulations of 2010
- Guideline 6: Environmental management framework
- Guideline 7: Public Participation

10 Environmental Setting

10.1 Landform & Geology

10.1.1 General Description:

The sedimentary rocks of the area range from Late Carboniferous or Early Permian to early Triassic in age, and include strata belonging to the Dwyka Formation, the Ecca group and the Beaufort group. Numerous dykes and sills of intrusive dolerite of Jurassic age are present, while scattered Quaternary alluvium and coastal sand deposits cover the older rocks in places. Heavy mineral sands along the coast represent the only potentially economic deposit. These sands contain illmenite, rutile, zircon and small amounts of monazite. The most important deposits are situated at Morgan Bay, Sandy Point and Kobonqaba, where some lesser deposits are found in the beach sands at Kwelera and Glen Gariff.

10.1.2 Structural Geology:

For most of the area, the strata dip at low angles towards the north, northwest and west. Steeper north-easterly dips are encountered in down faulted blocks along the coast where a series of roughly east-west trending faults with downthrows towards the south have brought down younger strata. These faults all pinch out rapidly inland and are presumably associated with the break-up of the Supercontinent, Gondwanaland, in the Late Jurassic or Early Cretaceous period.

10.2 Archaeology, Palaeontology & Heritage Sites

The site area falls within the Adelaide Sub-Group which is Permian (255 million years) to Triassic (237 million years) in age. The first discovery of vertebrate fossils in the Karoo Supergroup was made in 1849 in Fort Beaufort. Since then numerous fossils have been collected. The Adelaide Sub-group contains vertebrate fossils of the *Cistecephalus* and *Daptocephalus* assemblage zones. The anomodont reptile, *Oudenodon baini* is fairly common throughout the succession. Occasional specimens of *Lystrosaurus* occur in red mudstone near the top of the succession. Fragments of silicified wood occur throughout the Adelaide Subgroup.

Twenty-one cultural sites of significance have been identified for the Mbashe Local Municipality (MLM). Of these sixteen are man-made artefacts comprising of graves, rock art, old buildings, Forts and chief's great place, while four are referred to as natural artefacts comprising of the Umbongo Mountains, Mbanyana Falls and the Site of cattle killings /Nongqawuse's Site of Prophecies. The Phalo Cultural route does cross from neighbouring Mnquma LM into MLM.

The study area falls within the Mzimvubu to Keiskamma Water Management Area. This water management area consists of three large drainage basins and the catchments of a number of smaller rivers that lie between the major drainage basins and the Indian Ocean. The major drainage basins are the Great Kei (Drainage Region S), the Mbashe (part of Drainage Region T), and the Mzimvubu (part of Drainage Region T). The entire MLM area falls within the Mbashe River Basin primary catchment, within Water Management Area (WMA) 12. The most important rivers within this catchment are Qora, Shixini, Nqabara, Mbashe, Xora and Mncwasa all within MLM. The study area falls within the Drainage Region T9 - Southern Wild Coast - which are the Coastal catchments between the Kei and Mbashe catchments and Qora River is the main river in the T9 drainage.

There is a great variation of the quantity of rainfall throughout the WMA. The mean annual precipitation (MAP) along the coastal region ranges from a low of 600 mm in the west to a high of 1 208 mm in the east, and varies from 400 mm to 1 200 mm in the central plateau and along the northern edge of the WMA. The rainfall is generally higher in the east than in the west.

10.4 Climate

Due to its location at the confluence of several climatic regimes, the most important of which are temperate and subtropical, the Eastern Cape has a complex climate. There are wide variations in temperature, rainfall and wind patterns, largely as a result of movements of air masses, altitude, mountain orientation and distance from the Indian Ocean. Exceptionally high temperatures may be experienced during berg wind conditions, which occur frequently during the winter, with maximums of well over 30°C not being uncommon. Extreme temperatures also occur during summer, with little accompanying wind. Areas closer to the coast experience cooling due to onshore sea breezes.

The climate of the coastal lowlands of the region is generally moderate, warm temperate and humid and does not experience wide fluctuations in temperature due to the influence of the warm Agulhas current.

No climate data is available for the immediate area; however in general the climate for the MLM lies within the transitional zone between the subtropical Kwazulu-Natal coast and the warm temperate Eastern Cape. The climate ranges from cool, humid and subtropical at the coast to hot and sub-arid inland. Maximum temperatures in summer fall mainly within the 25-27°C range, with the areas on the coast and the north western regions reaching up to 29°C. Small isolated regions in MLM have maximum temperatures of less than 25°C in summer. The winter minimum temperatures for coastal region are generally above 8°C, while inland the minimum temperature can drop to between 2-4°C in winter.

Rainfall varies from more than 1000mm per annum in the northern coastal regions, to between 600-800mm per annum in the north western inland regions. Most of the rainfall (70%) occurs during October - March.

10.5 Fauna

10.5.1 Reptiles

Of the 421 reptiles recorded from South Africa at least 144 of these occur within the Eastern Cape, and comprise eleven chelians (including sea-turtles, terrapins and tortoises), eighty-two lizards, and forty-six snakes. Reptiles form an important component of vertebrate diversity within the area. This is particularly true in light of their low mobility and high habitat specificity, particularly lizards and tortoises.

Approximately 60 species of reptiles may occur in the area. Whilst some are wide-ranging species (e.g. snakes such as the boomslang and puff adder), others have relatively restricted distributions. Sensitive and localised species may include the common slug-eating snake (*Duberria lutrix*) and the giant legless skink (*Acontias plumbeus*). Venomous snakes in the area include the Boomslang (*Dispholidus typus*), Ringhals (*Hemachatus haemachatus*), Cape Cobra (*Naja nivea*), Common Night Adder (*Causus mombeatus*) and Puff Adder (*Bitis arietans*); however there are few bites to humans and livestock.

The Province contains 19 threatened reptiles, of which 18 are endemic to the Eastern Cape, none of which are included in the SA RDB for reptiles and amphibians.

Species such as the Natal Black Snake (*Macrelaps microlepidotus*), occurring in coastal forests, reaches its southern limit in the East London area, the Green Sea turtle (*Chelonia mydas* - SA RDB status -vulnerable), the Loggerhead Sea Turtle (*Caretta caretta* -SA RDB status - vulnerable), the Hawksbill Sea Turtle (*Eretmochelys imbricate* - SA RDB status - vulnerable) and the Leatherback Sea Turtle (*Dermochelys coriacea* - SA RDB status - vulnerable) occur in the Eastern Cape coastal waters.

10.5.2 Amphibians

There are 102 amphibian species recorded in South Africa and about 47% of these occur in the Eastern Cape. A total of 22 species of amphibian have been recorded from the Amathole District Municipality. Most are wide-ranging species, e.g. Ranger's Toad (*Bufo rangeri*), Clicking Stream Frog (*Strongylopus grayii*), Painted Reed Frog (*Hyperolius marmoratus*, etc.), but a few have either relatively restricted distributions in the region or are regional endemics. The amphibians of the province are an important component of the vertebrate diversity of the province. There are six threatened and four endemic frog

species in the Eastern Cape Province. One species, *Heleophryne hewitti*, is critically endangered and known for only four rivers in the Elandsberg range.

The endemic Kloof Frog (*Natalobatrachus bonebergi*), reaches its southern distribution at Dwesa Nature Reserve. It was not assessed in the previous SA Red Data Book, but is now considered Endangered due to degradation of its restricted, specialized forest kloof habitat.

The Giant African Bullfrog (*Pyxicephalus adspersus*) is a Near Threatened amphibian that is likely to occur in the MLM. Although there is no evidence of substantial range contraction, the species is known to be declining in numbers and is Vulnerable to habitat loss, particularly due to the loss of temporary summer pans in which it exclusively breeds. It is also increasingly subject to human exploitation for food in rural communities in the Limpopo Province, although southern populations are not known to be similarly exploited.

In addition, the Water lily frog (*Hyperolius pusillus*), reaches its southern limit at Dwesa- Cwebe Nature Reserve.

10.5.3 Mammals

A total of three hundred and thirty eight mammals are recorded for South Africa, of which 128 (44%) are recorded from the Eastern Cape. Of this 128 species, only one species is endemic to the Eastern Cape. This species is the Giant Golden Mole (*Chrysospalax trevelyani*) that inhabits the indigenous forests of the Eastern Cape and is locally abundant in some regions. A list of recorded mammal species of the Eastern Cape region is presented in Appendix F. Species which have been extirpated within historical times in the Eastern Cape include the cheetah, hunting dog, hippopotamus, lion, warthog and red hartebeest. These have however been extensively reintroduced into the province in provincial and private game reserves. Within the area 80 species have been recorded which comprise 11 insectivores, 19 bats, 3 primates, 2 lagomorphs, 19 rodents, 15 carnivores, antbear, 2 hyrax, bushpig, and 5-6 small antelope. The few large megaherbivores surviving in the region include the ubiquitous bushbuck (*Tragelaphus scriptus*), common duiker (*Sylvicapra grimmia*), and Cape Grysbok (*Raphicerus melanotis*). In addition, Chacma baboon (*Papio ursinus*), Vervet Monkey (*Ceropithecus aethiops pygerythrus*), bush pig (*Potamochoerus porcus koiropotamus*) and a variety of small carnivores (viverids, genets, Cape Clawless Otter, etc) survive in small pockets. All are non-threatened, and many have successfully adapted to surviving in peri-urban areas, where some may become pests.

In the Eastern Cape area the dominant small mammal species associated with Coastal Grasslands and Acacia Savannah are *Rhabdomys pumilio* (Striped mouse) and *Otomys irroratus* (vlei rat). Other relatively common animals include various mole species, mole rats, *Orycteropus afer* (Aardvark) and *Cynictis penicillata* (Yellow Mongoose).

Fifteen threatened large- to medium-sized mammals occur in the Eastern Cape Province (Table 3).

Table 2: Terrestrial mammal Red Data Book (RDB) species.

SPECIES	COMMON NAME	CONSERVATION STATUS
<i>Lycaon pictus</i>	Wild dog	Endangered
<i>Hyaena brunnea</i>	Brown hyena	Rare
<i>Proteles cristatus</i>	Aardwolf	Rare
<i>Felis nigripes</i>	Black-footed cat	Rare
<i>Felis serval</i>	Serval	Rare
<i>Panthera pardus</i>	Leopard	Rare
<i>Philantomba monticola</i>	Blue duiker	Rare
<i>Mellivora capensis</i>	Honey badger	Vulnerable
<i>Felis lybica</i>	African wild cat	Vulnerable
<i>Orycteropus afer</i>	Aardvark	Vulnerable
<i>Equus zebra</i>	Cape Mountain zebra	Vulnerable
<i>Diceros bicornis</i>	Black rhinoceros	Vulnerable
<i>Ourebia ourebi</i>	Oribi	Vulnerable
<i>Manis temminckii</i>	Pangolin	Vulnerable
<i>Felis nigripes nigripes</i>	Small-spotted cat	Rare

10.5.4 Birds

The former Transkei region has a rich avifauna, with nearly 500 species recorded from the region (approximately half of the species recorded from the subcontinent). They include numerous sensitive and threatened species. The coastal mosaic of grassland and forest habitats serves as an important area for montane species in winter. Many Intra-African summer migrants also use the region both for breeding and in transit to more southerly areas. The Eastern Cape Province contains 62 threatened bird species (Appendix H). Many of them are associated with wetlands or are grassland species, highlighting the declining condition of these ecosystems. As can be expected from this highly mobile group there are no Eastern Cape endemic birds, although nine bird species are South African endemics. Only *Accipiter melanoleucus* (Black sparrow hawk) has Red Data Book status, but this species is no longer considered threatened. A list of recorded bird species of the Eastern Cape region is presented in Appendix G.

10.5.5 Invertebrates

Although no regional Red Data Book exists for many invertebrate groups, a number of species in diverse groups have been identified as being of conservation concern and are discussed below.

- A number of rare butterflies from the Pondoland region are included in the South African Butterfly Red Data Book (Henning and Henning, 1989), including:
 - Pondoland Charaxes (*Charaxes pondoensis*) - Rare, Port St. Johns, Mkambati NR. Amakoza Rocksitter (*Durbania amakosa albescens*), Rare, Margate.
 - Southern Aslauga (*Aslauga australis*) - Rare, East London, Mbashe River, Doutza Pass, Port St. John's.
 - Bicolored Abantis (*Abantis bicolor*) - Rare, East London, Mbashe River, Port St. John's.
- Pulmonate Molluscs - Two terrestrial slugs have been indicated as candidates for inclusion in the IUCN 'Red List' of threatened species (Herbert, 1997). These include:
 - Chlamydephorus burnupi - known from a few scattered localities in KwaZulu-Natal, and with a single record from Port St. Johns.
 - Chlamydephorus dimidius - known from a few scattered localities in KwaZulu-Natal, and with a single southern record from Mtamvuna Gorge.
- Cicadas - Due to their long, unusual life cycles, cicadas are known to be sensitive to habitat fragmentation (Rodenhouse et al., 1997). These large, noisy and enigmatic insects show high levels of endemism and a number of new, highly-localised species have been described from the former Transkei region (Villet, 1997, 1999). Both are recorded from coastal forest, thicket and forest fringes.
 - *Stagira pondoensis* is known only from Port St John and nearby Vernon Crookes Nature Reserve in KwaZulu-Natal.
 - *Nyara thanatolica* occurs at Port St Johns and Bosbokstrand. This taxon is taxonomically more important as it is a monotypic genus.
- Millipedes - Like cicadas, millipedes often show high levels of endemism. Moreover, the distribution of endemism is often discordant with that of other groups (Burgess et al., 1998). Although there is no updated review of southern African millipedes highlighting threatened taxa, a new species has recently been described from forest habitat in the Lusikisiki District (Alderweireldt, 1998).
- Archaeid spiders - The Afrotropical Archaeidae is a small family of very rare spiders known from southern Africa, Madagascar and Australia. In the subcontinent is represented by two genera and 12 species. *Eriauchenius coronatus* is known from only two specimens and is endemic to the Vernon Crookes Nature Reserve where it inhabits grassland at the forest-grassland ecotone. Two endemic species of *Afrarchaea* have been described (Lotz 2007) from leaf litter in isolated coastal forests in the Eastern Cape, including *A. haddadi* (Komga, Kei Mouth) and *A. woodae* (Komga and Cwebe Nature Reserve).

10.6 Flora

10.6.1 Eastern Cape Biodiversity Conservation Plan

The Eastern Cape is globally recognized for its high biodiversity value and scenic beauty. It has the highest biome diversity of any province, with no less than seven biomes: Forest, Fynbos, Nama Karoo, Savanna, Succulent Karoo and Thicket. The Province is also unique among provinces in that it overlaps with three centres of biological endemism: the Albany Centre, the Drakensberg Centre and the Pondoland Centre. The centre of concern for BCM is the Albany Centre

Recognizing the need to ensure that important natural resources are conserved, the Department of Economic Development and Environment Affairs (DEDEA) together with the Department of Water Affairs and Forestry (DWAF) collaborated to draw up the Eastern Cape Biodiversity Conservation Plan (ECBCP).

The ECBCP addresses the urgent need to identify and map critical biodiversity areas and priorities for conservation in the Province. Critical Biodiversity Areas (CBAs) are “terrestrial and aquatic features in the landscape that are critical for conserving biodiversity and maintaining ecosystem functioning”.

The ECBCP is a broad-scale biodiversity plan. Its aim is to integrate information from existing biodiversity plans (STEP, SKEP, C.A.P.E., the NSBA, DWAF Forest Conservation Planning, Wild Coast Conservation Plan, Pondoland Systematic Conservation Plan, Grasslands Programmes and the Maloti Drakensberg Transfrontier project), and to fill in the gaps, thereby providing a single, user friendly, biodiversity land use decision support tool for the whole Province (CBA maps). In turn it also provides land use planning guidelines, recommending biodiversity-friendly activities in priority areas. The ECBCP is intended for use by technical users and decision-makers in the spheres of planning (for example integrated development planning & spatial development frameworks (IDP/SDF)), development and environment. Mapped information can be used both reactively and strategically to guide future development away from sensitive and priority biodiversity areas.

However, it is important to note the following: the “ECBCP has no legal status”, (it has however been designed to serve as the basic biodiversity layer in Strategic Environmental Assessments, State of Environment Reports, SDFs, Environmental Management Frameworks and Bioregional Plans), “the ECBCP itself is not a bioregional plan”, “the information should always be verified with a site visit”, “the ECBCP is not a substitute for a full evaluation” and “the ECBCP should not be used for urban and fine-

scale planning” (as it is a broad framework plan) (*Eastern Cape Biodiversity Conservation Plan Handbook, 2007*).

10.6.2 General vegetation description

The landscape within the river valleys of the Eastern Cape can be described as undulating, with steep river valleys and flat-topped ridges. Valley thicket, which is the predominant vegetation type, is found in river valleys with savanna and open grasslands on the plateaus and spurs between the rivers. The grasslands and savanna have been greatly impacted upon by settlements and grazing of domestic animals.

The Borrow pit falls within the Bhisho Thornveld as according to Mucina & Rutherford (2006) (Figure 6). The Bhisho Thornveld is found in the Eastern Cape: From near Mthatha in a band parallel to but inland of the coast to north of East London, turning to run along the southern side of the Amathole Mountains as far as Fort Beaufort. It is also on dissected hills and low mountains around Grahamstown, especially to the southwest, and in a few fragments in valleys northeast of the Amathole Mountains. Altitude mostly 200 - 700 m. The vegetation unit is located on undulating to moderately steep slopes, sometimes shallow, incised drainage valleys. Open savanna characterised by small trees of *Acacia natalia* with short to medium, dense, sour grassy understorey, usually dominated by *Themeda triandra* when in good condition. A diversity of woody species also occurs, often increasing under conditions of overgrazing.

In terms of its conservation status, it is classified as least threatened. The conservation target of this unit is 25%. Some 20% of the unit is transformed mainly for cultivation, urban development and plantations. Only 0.2% is statutorily conserved in the Doubledrift and Thomas Baines Nature Reserves. About 2% is conserved in private reserves such as Shamwari Game Reserve, Rockdale Game Ranch and Fourie Safaris Game Farm.

Table 3: Important Taxa - Bhishe Thornveld

Tall Trees		
<i>Acacia natalitia</i>		
Tall Shrubs		
<i>Tephrosia capensis</i>		
Low Shrubs		
<i>Anthospermum rigidum subsp pumilum</i>	<i>Chrysocoma ciliata</i>	<i>Felicia muricata</i>
Graminoids		
<i>Eragrostis plana</i>	<i>Heterpogon contortus</i>	<i>Hyparrhenia hirta</i>
<i>Sporobolus africanus</i>	<i>Themeda triandra</i>	<i>Aristida junciformis subsp junciformis</i>
<i>Bulbostylis humilis</i>	<i>Cynodon dactylon</i>	<i>Digitaria diagonalis</i>
<i>Digitaria eriantha subsp eriantha</i>	<i>Elionurus muticus</i>	<i>Eragrostis capensis</i>
<i>Eragrostis chloromelas</i>	<i>Eragrostis curvula</i>	<i>Kyllinga alata</i>
<i>Microchloa caffra</i>	<i>Paspalum dilatatum</i>	<i>Schoenoxiphium sparteum</i>
Herbs		
<i>Centella asiatica</i>	<i>Commelina africana</i>	<i>Gazania linearis</i>
<i>Gerbera ambigua</i>	<i>Helichrysum miconiifolium</i>	<i>Helichrysum nudifolium</i>
<i>Helichrysum rugulosum</i>	<i>Senecio retrorsus</i>	<i>Spermacoce natalensis</i>
<i>Wahlenbergia stellarioides</i>	<i>Zornia capensis</i>	
Geophytic Herb		
<i>Hypoxis argentea</i>	<i>Moraea polystachya</i>	<i>Pellaea calomelanos</i>

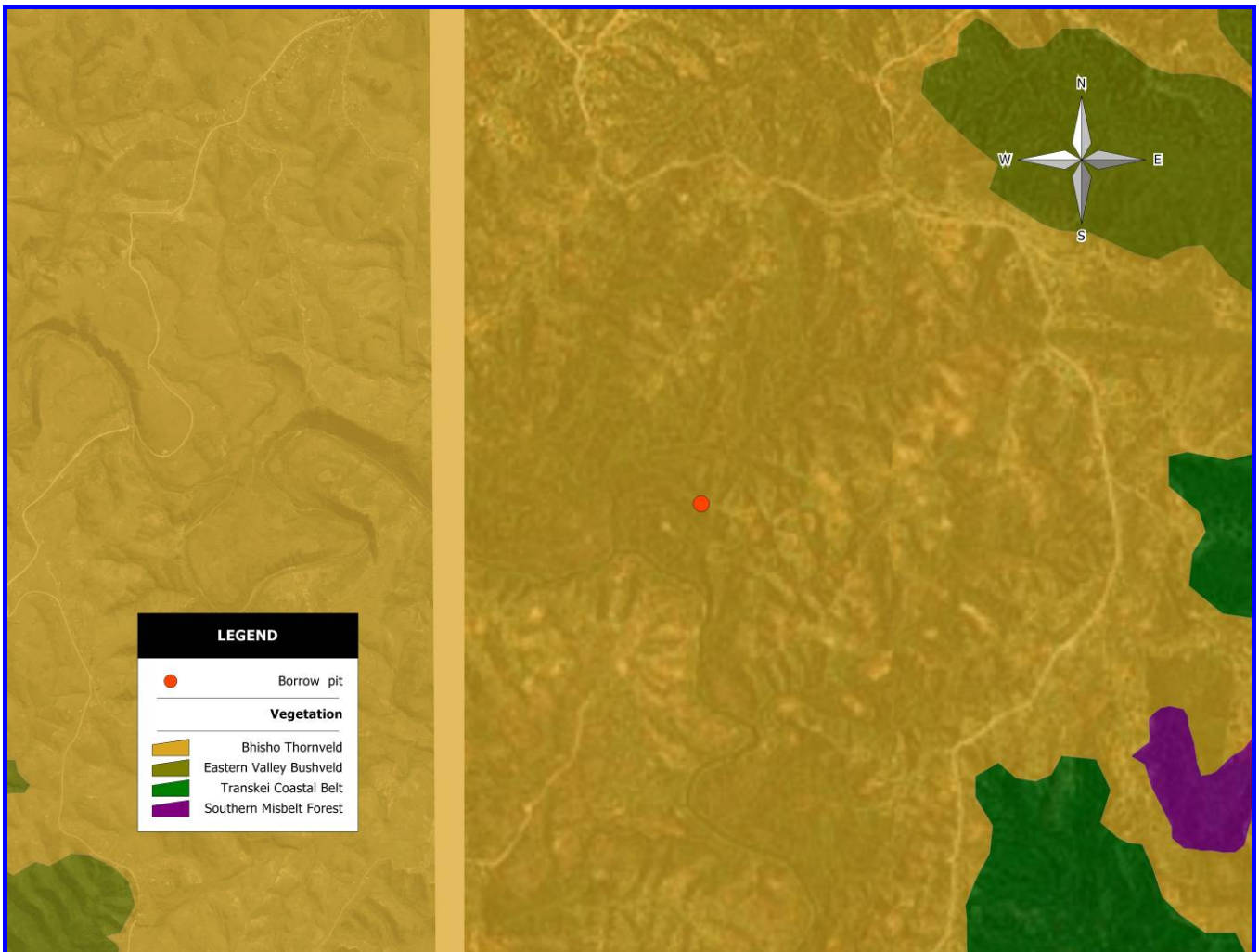


Figure 6: General vegetation and the location of the borrow pit.

10.7 Socio - Economic Environment

In the provincial context, the Eastern Cape is one of the poorer provinces in South Africa. Its economy has been characterised in the Province's 2004-2014 Provincial Growth and Development Plan (PGDP) as having "extreme levels of uneven development". It is situated in the south-east of the country and includes the former Eastern Province, Border, north-eastern Cape areas and the former "homelands" of Transkei and Ciskei. Spatially, it is the second largest province, covering almost 14 % of the total surface area of South Africa.

It has urban industrial manufacturing centres in Buffalo City and the Nelson Mandela Metropolitan Municipality, a well-developed commercial farming sector and high concentrations of developed socio-economic infrastructure in the western parts. In contrast to this is the undeveloped rural hinterland in the former Transkei and Ciskei homelands, which consist of weak subsistence agriculture and very limited

socio-economic growth. The coastal area known as the “Wild Coast” is very sparsely populated, mainly due to limited infrastructure and inadequate access to the coastal nodes.

Annual average economic growth for the provincial economy over the last decade was 2.2 % against the national average of 2.8 %. Farming is an important contributor to household livelihoods in the former Transkei where the proposed toll highway would be developed, but it is largely a subsistence activity. Two harbors, at East London and Port Elizabeth, are located along its coastline and a modern deepwater port has recently been constructed at Coega.

In 2007 the province had a population of about 6.90 million, comprising approximately 14 % of the national population. The province has an average density of 67 - 80 people per km². The Eastern Cape has the third lowest urbanized population, at 42.9 % (Development Bank of Southern Africa - DBSA, 2000).

The Gross Geographic Product (GGP) of the Eastern Cape was just more than R 81 billion in 2001, equaling 8.2 % of South Africa’s Gross Domestic Product (GDP). The three most important sectors at the intra-provincial level are manufacturing, commerce and community services. The province possesses comparative economic advantages with regard to textiles, leather products, rubber products and vehicles.

The Eastern Cape has the highest unemployment rate in South Africa, with almost half of its labour force being unemployed. The unemployment rate of 48.4 % is 14.6 percentage points higher than the national average. These figures exclude large numbers of people who left the province to find employment in other provinces such as the Western Cape and Gauteng. Average annual household income in 2001 for South Africa as a whole was R 46 291, while for the Eastern Cape it was R 28 468 (Stats SA Census, 2001).

11 The Affected Environment/ Site Description

11.1 Geology and Soils

All the sedimentary rocks present in the area belong to the Karoo Sequence which is represented by the Dwyka Formation, the Ecca Group and the Beaufort Group.

In the area of the borrow pit the geology is identified as comprising of the Beaufort Group and more specifically the Adelaide Subgroup (Figure 7). Within the Beaufort Group, the Tarkastad Subgroup is distinguished from the Adelaide Subgroup by the greater relative abundance of both sandstone and red-coloured mudstone in the former. The Adelaide Subgroup corresponds approximately to the old "Lower Beaufort".

The Adelaide Subgroup consists of alternating units a few metres to a few tens of metres thick of grey, fine -grained ultra-lithofeldspathic sandstone (approximately 20%) and greenish-grey, bluish-grey or greyish-red mudstone, generally constituting distinct upward fining cycles. Red mudstone is relatively abundant immediately below the top of the Adelaide Subgroup, over a vertical interval of 50 - 100 m. The sandstone displays flat bedding, trough cross bedding and micro- crosslamination. The mudstone is poorly stratified or massive. Cut and fill structures are common. Evidence from adjacent area indicates that the thickness of the subgroup probably ranges from about 4000 m in the south to 2000 m in the north.

Soils are derived from the underlying rock in the area and are generally shallow and low in fertility.

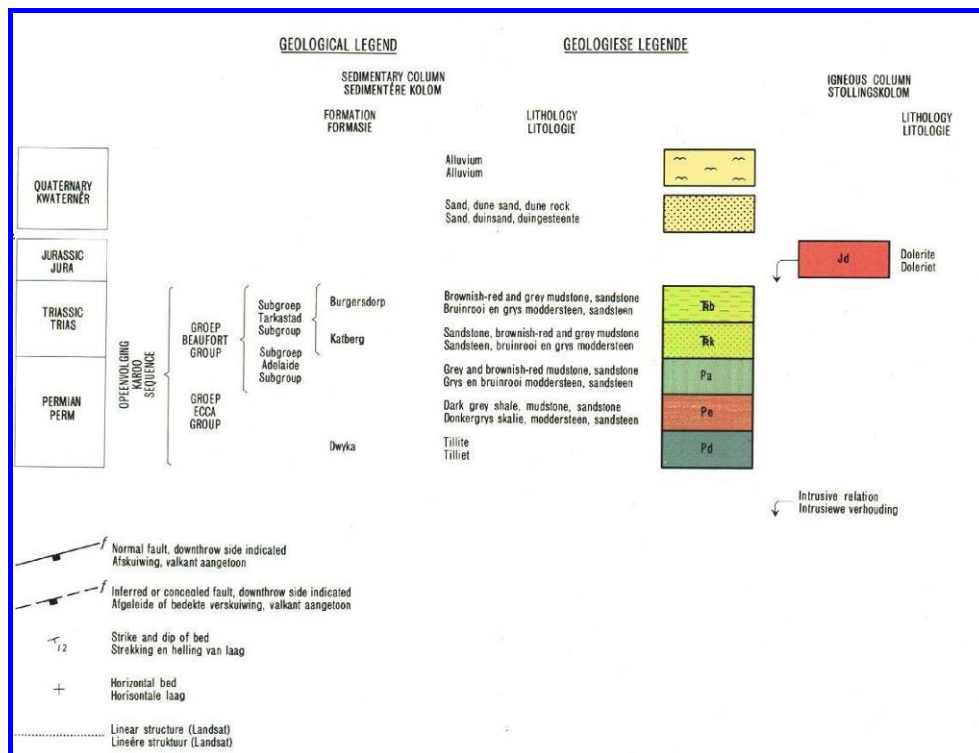
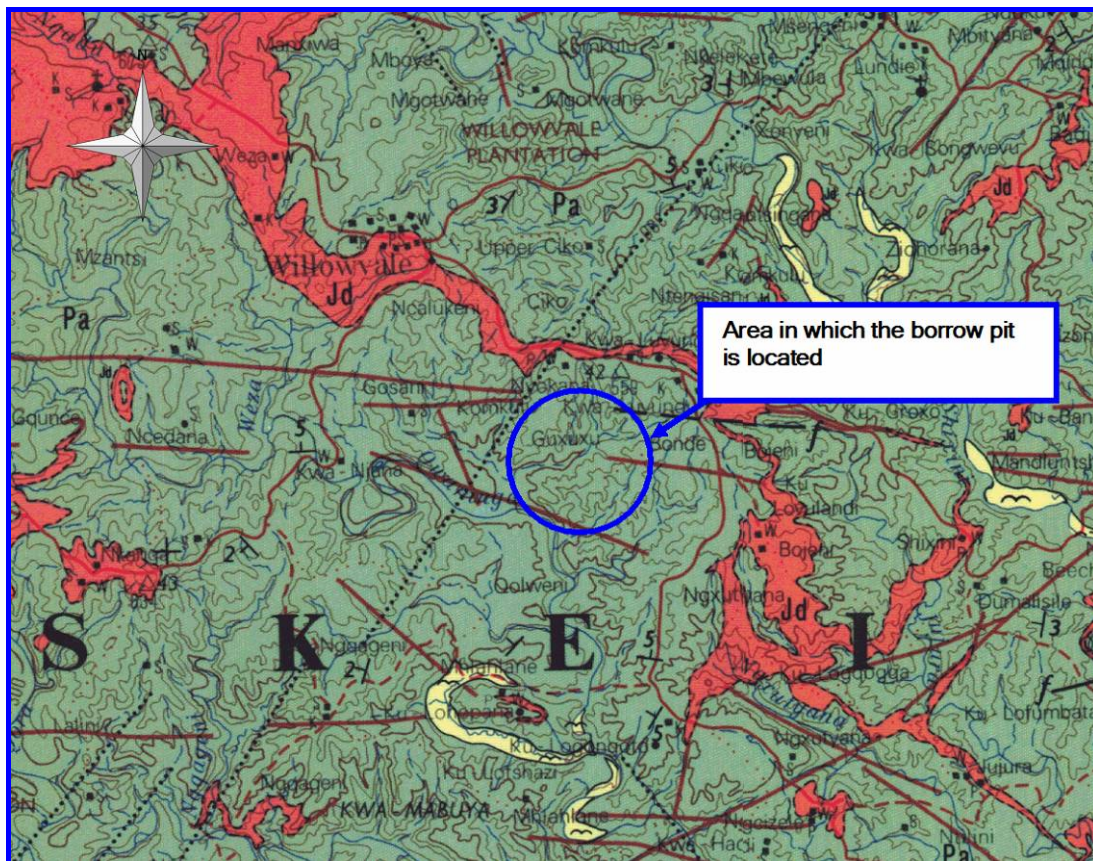


Figure 7: The geology of the area (Geological Map 3228 - Kei Mouth)

11.1.1 Erodibility Index

Erodibility of soils can be described as the sensitivity of soils to the effects of wind and water on the soil structure. This property is expressed as an erodibility index, where low values indicate high potential for erosion, and high values correspondingly indicate a low potential for erosion.

The erodibility index is determined by combining the effects of slope and soil type, rainfall intensity and land use. These aspects are represented by terrain morphology, mean annual rainfall and broad land use patterns.

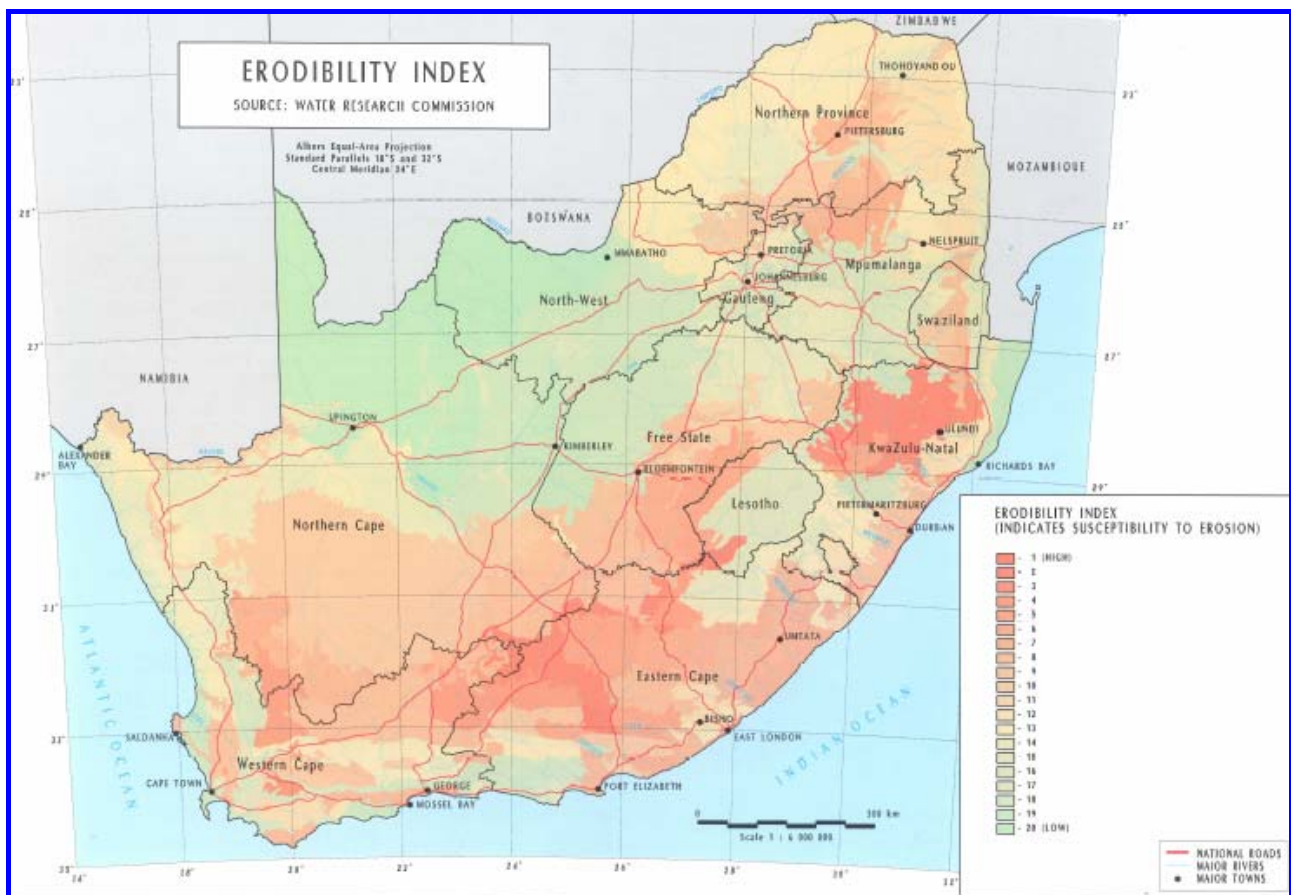


Figure 8: Erodibility Index

According to the Environmental Potential Atlas for South Africa, the study area falls within an Erodibility Index of between 7 and 9, which is at the lower end of the scale (1 being High and 20 being Low), indicating that the area is moderately to highly susceptible to erosion (Figure 8).

11.2 Archaeology, Palaeontology and Heritage Sites

No general listing of the sites of palaeontological, archaeological and historical significance within the area is available. The South African Heritage Resources Agency does possess a database of National Monuments within each province, but this is only of limited use since it only lists National Monuments (as declared within the Government Gazette), and the vast majority of these occur within urban areas which are unlikely to be impacted upon by borrow pit projects.

During the site assessment, in the immediate area of the proposed borrow pits no sites of archaeological, cultural or historical significance were identified. It is, however, possible that sites could potentially be covered by soil and vegetation and will only be discovered during the construction activities. This is considered unlikely; as sites/features within the existing borrow pits are most probably either badly damaged or destroyed.

Under the South African Heritage Resources Act, the South African Heritage Resources Agency (SAHRA) requires notification in order to ascertain whether or not an Archaeological, Heritage and Palaeontological Assessments will be required. SAHRA have been notified and as a result of the area being impacted/disturbed and they have concluded that it is very unlikely that any significant impacts on heritage resources will result from this project. As such a letter of exemption from conducting a Phase 1 Archaeological, Palaeontological and Heritage Assessment (Appendix C) for the proposed activity has been received. SAHRA Archaeology, Paleontology & Meteorites (APM) Unit has no objection to the proposed development and requires only that the recommendations are adhered to. However should any palaeontological or archaeological sites be identified (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, marine shell and charcoal/ash concentrations), unmarked human burials or other categories of heritage resources are found during the proposed mining activities, SAHRA APM Unit (Mariagrazia Galimberti, Tel: 021 462 4502) must be alerted immediately, and an accredited professional archaeologist/palaeontologist must be contacted as soon as possible to inspect the findings.

11.3 Air Quality

There are no major industries within the MLM likely to contribute to a marked decrease in air quality. Air pollution in the MLM is most likely to be associated with the burning of fuelwood and fugitive dust emissions generated on unpaved roads. No known monitoring of air pollution has been carried out in MLM, although the ADM does carry this responsibility.

11.4 Topography and Drainage

The topography of the study area, specifically the area in which the borrow pit is located, is highly irregular and undulating.

Borrow pit is located at an elevation of 392 m above mean sea level (amsl). The site is located on a pinnacle/spur with the predominant slope towards the north of the borrow pit. The natural drainage in the area of the borrow pit is towards the north where the non-perennial drainage lines drain to the north to the Guxuxu River which drains to the west into the perennial Qwaninga River (Figure 22). The Qwaninga River in terms of its conservation status has been classified as a CLASS B river, largely natural. The Qwaninga River then drains in a southerly direction into the Qora River. The Qora River then drains in a south easterly direction towards the coast line. The Qora River has been classified as a CLASS B river, largely natural. It must be noted that the nearest non-perennial drainage lines are located at a distance of 80 m to the east and west of the borrow pit.

The study area falls in the primary drainage area T90. Within this primary drainage the borrow pit falls within the quaternary catchment area T90E. The mean annual precipitation for the quaternary catchment is 898.63 mm and has a mean annual runoff of 132.7 mm.

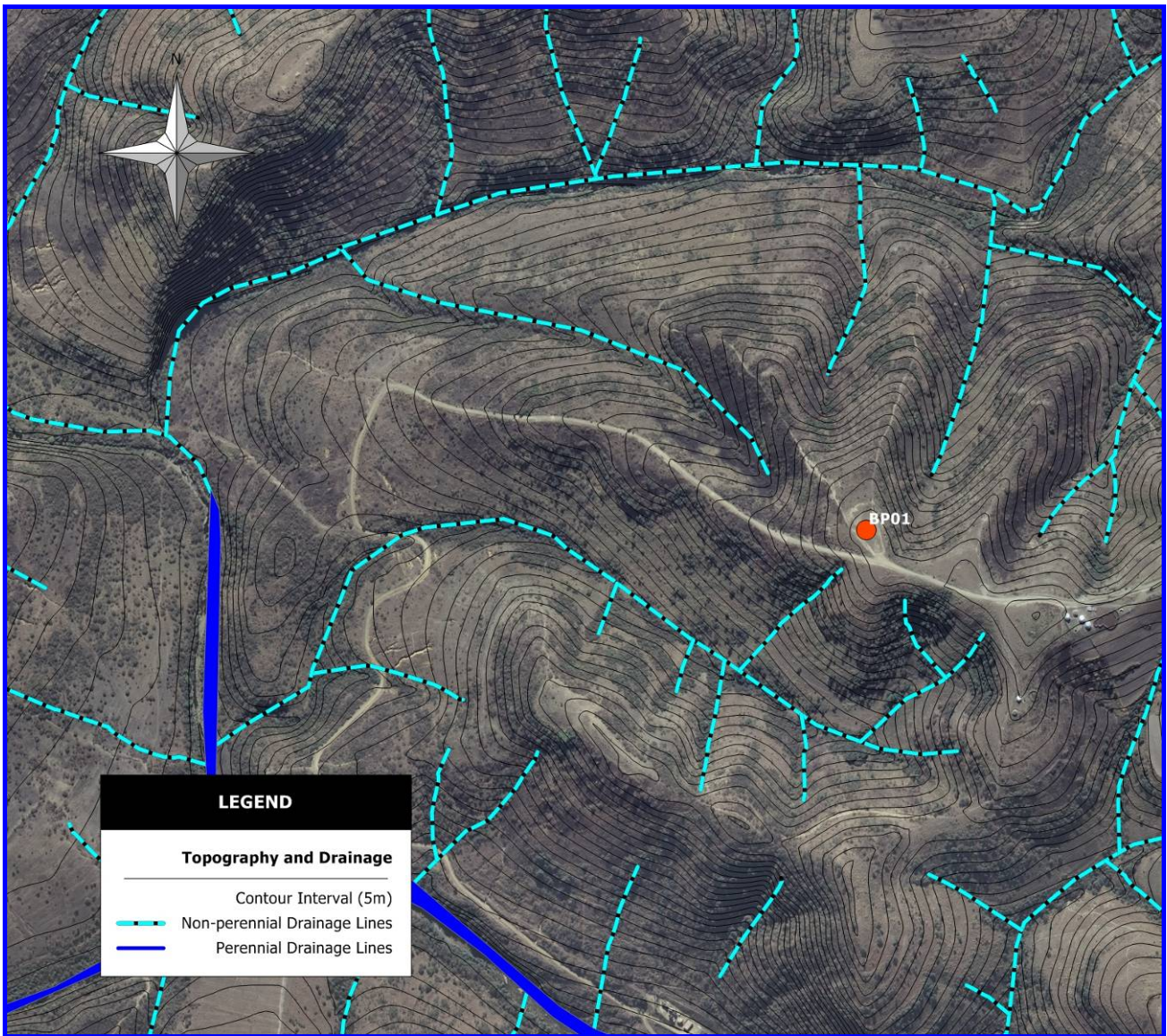


Figure 9: Drainage of the Area in which the proposed borrow pit is located.

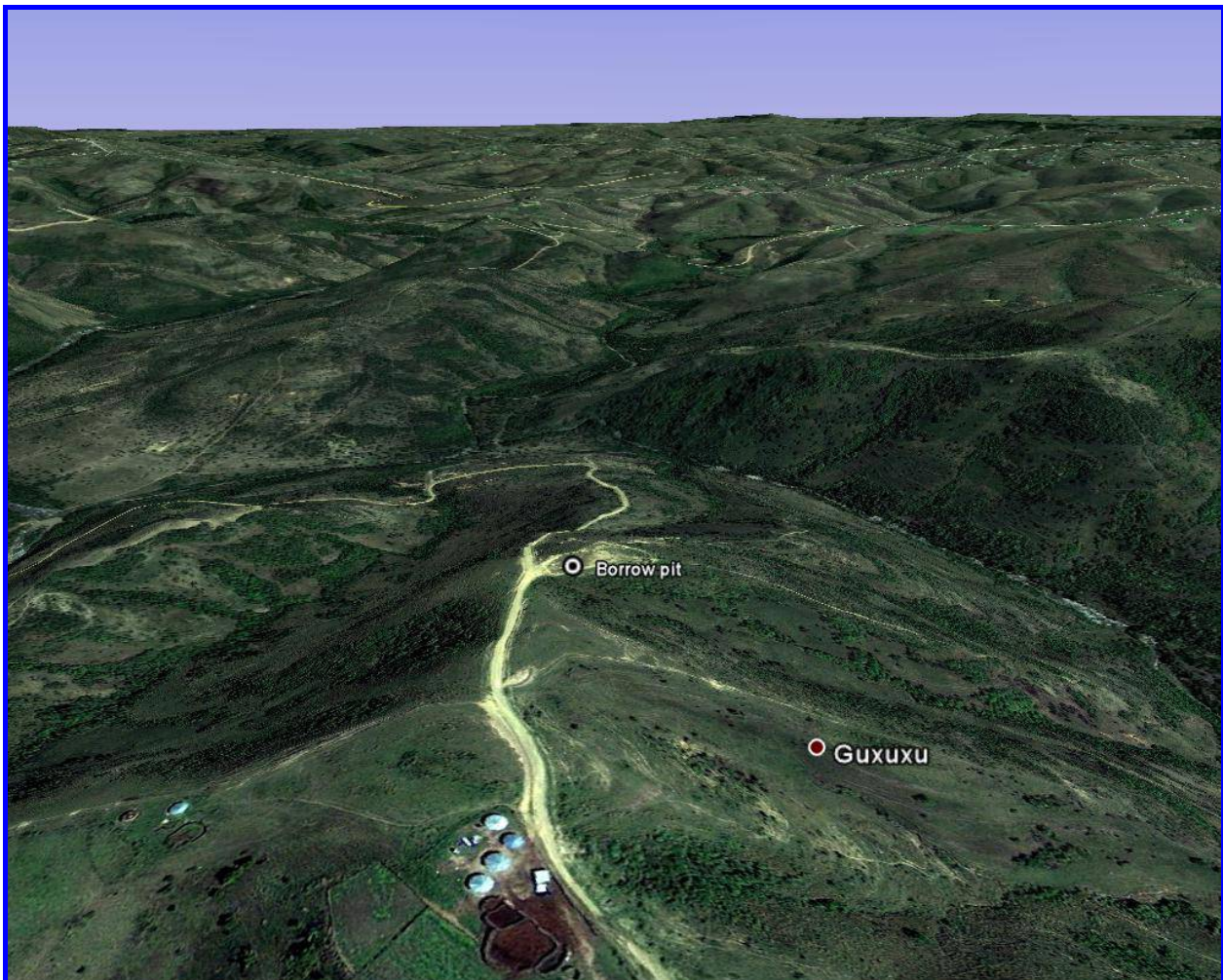


Figure 10: Terrain view indicating the position of the borrow pit in the landscape.

The topography may be impacted upon by the excavation of the existing borrow pit which in turn could have an effect on the storm water runoff and drainage of the immediate surrounding area. Areas of concentrated storm water runoff could be subject to increased erosion if not mitigated against appropriately by means of erosion control techniques and/or structures dissipating the velocity and flow of storm water runoff. The non-perennial drainage lines are referred to as such due to the fact that they are dry for the majority of the year, and some instance only flow during periods of high rainfall.

11.5 Fauna

Although a detailed faunal assessment was not undertaken, during the site visit the only fauna encountered were livestock grazing in the lands and domestic animals. There may however be some small mammals, reptiles, amphibians in the surrounding areas, particularly in the thicket areas surrounding the drainage lines. The current land use is that of a borrow pit and in the immediate area of

the borrow pit the natural environment is disturbed and thus is not thought to present a unique habitat for rare or endangered fauna and No Red Data List mammals were observed.

The terrestrial mammal, reptile and amphibian fauna are not likely to be further materially impacted on by the proposed activity as the borrow pit is existing and has been utilized in the past. However, any such fauna that is present on or near the site is likely to be displaced into the surrounding areas.

11.6 Flora

11.6.1 Eastern Cape Biodiversity Conservation Plan (ECBCP)

According to the ECBCP the area in which the borrow pit is located is identified as being predominantly Biodiversity Land use Management Class 2 (BLMC 2 - Maintain near natural state) (Figure 11).

A Biodiversity Land Management Class (BLMC) refers to the desired ecological state that a parcel of land should be kept in so as to ensure biodiversity persistence (designations may be at the scale of habitat patch, landscape or catchment). It can be described using sets of ecosystem condition indicators, referred to as Limits to Acceptable Change indicators (or LACs). LAC values are assigned for each BLMC to describe upper limits for the degree of acceptable ecological change or impact that any proposed land-use change may bring about without compromising the designated ecological state. In the table below four BMLC's are defined using Limits to Acceptable Change of six key land-use impact indicators.

Table 4: Limits to Acceptable Change thresholds for six key lands use impact indicators.

BLMC	Permissible transformation (per land parcel considered)	Change in ecosystem structure (fragmentation index)	Change in species composition and dominance	Overall change in natural disturbance regimes (fire, hydrology etc)	Resource extraction (% of Net Primary Production per annum)
Class 1	0%	0%	0%	Little or none	< 5%
Class 2	0% - 10%	0 to 10%	0 to 5%	Some	5 to 30%
Class 3	10 to 70%	10 to 50%	5 to 80%	Significant	> 30%
Class 4	70-100%	> 50%	> 80%	Significant	Any

Terrestrial Critical Biodiversity Area 2 (CBA 2) are areas identified as being endangered vegetation types through the ECBCP systematic conservation assessment, endangered vegetations types from STEP, endangered forest patches in terms of the National Forest Assessment and within the 1km coastal buffer strip. In addition these areas area ecological corridors identified in other studies (e.g. from STEP, Wild Coast, Pondoland, WMA 12 SEA, etc.) and ecological corridors identified by the ECBCP using an integrated corridor design for the whole Province. The land use objective for this

Terrestrial BLMC 2 is to maintain biodiversity in near natural state with minimal loss of ecosystem integrity. No transformation of natural habitat should be permitted. It is thus suggested that this land class only be used for purposes such as conservation, game farming and communal livestock.

The ECBCP may however have significant limitations in that there may be significant differences between the ECBCP description of land use and condition and the actual land use, condition and environmental status. The study area is predominantly transformed by the current land use (settlement and agricultural land use) and in particular the site of the borrow pit is existing and as such have been transformed by past activities.

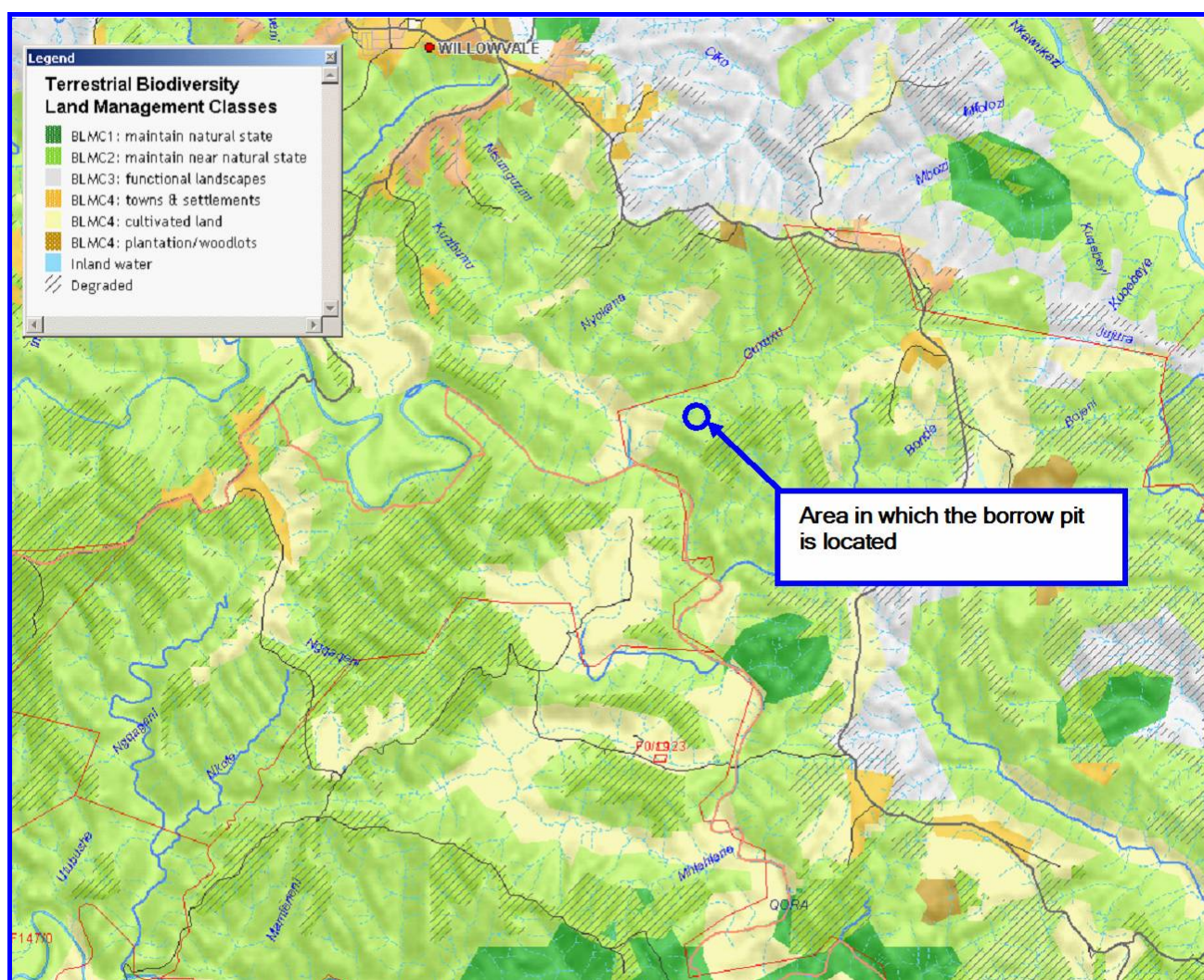


Figure 11: Eastern Cape Biodiversity Conservation plan for the proposed area.

11.6.2 Vegetation Description

As the borrow pit is existing, the site has been disturbed significantly. The Bhisho Thornveld vegetation unit identified for the area in which the proposed borrow pit is located has been predominantly transformed as a result of the past mining. The borrow pit has approximately 30% indigenous vegetation cover. As such the utilisation of the borrow pit is not expected to have a significant impact on the vegetation of the area.

The vegetation present in the area of the borrow pits tends to be predominantly dominated by a low diversity grassland with a few scattered shrubs and trees and a few alien invasives also being present in the disturbed areas, thus being of a low sensitivity and conservation importance. Vegetation located on the steep slopes and within the drainage environment adjacent to the borrow pit area however is indicative of Bhisho Thornveld and comprises of thicket scrub vegetation community which is of moderate to high sensitivity.

11.6.2.1 Protection status and legislation and Species of Special Concern

11.6.2.1.1 Indigenous flora

Whilst only a preliminary botanical investigation was undertaken, it was not observed and not expected that protected or endangered species will be present in the area of the borrow pit footprint. The conservation status of the vegetation present in the area of the proposed borrow pit is thus low.

11.6.2.1.2 Alien Invasive Plant species

A few declared alien invasive plant species are present within the area of the borrow pit (Table 6). They tend to form scattered clumps of low to moderate density within the borrow pit area, having a low to moderate overall impact. These invasive species require removal according to the Conservation of Agricultural Resources Act 43 of 1983 and methods of their removal and treatment should be undertaken according to the Working for Water Guidelines.

Table 5: Alien Invasive plants present within the site.

No.	Botanical Name	Common Name	Family	Category
1	<i>Lantana camara</i>	Lantana	Verbenaceae	CARA 1
2	<i>Solanum sisymbriifolium</i>	Dense-thorned bitter apple	Solanaceae	CARA 1
3	<i>Solanum spp</i>		Solanaceae	-

11.7 Visual Aspects

The borrow pit has been mined in the past and is located within proximity to the public access road. As a result, this source is visible and is currently have a moderate impact on the aesthetics of the area. The area is typically rural “Transkei” and the scenery is pleasant.

11.8 Existing Land-use and Tenure

The existing land use in the area of the borrow pit consists of rural homesteads and subsistence farming. Crop farming is primarily maize while goats, sheep and cattle are grazed throughout the area. The population is mainly concentrated in a number of rural villages.

The majority of the study area is state-owned land falling under the local tribal authority (communal land) which is responsible for the allocation of homesteads and agricultural land to the community members.

11.9 Socio - Economic Environment

Land use and settlement patterns of the area are influenced by the previous political division of the area with the right bank of the Great Kei being part of South Africa and the left bank being part of the former Transkei. The right bank of the great Kei is predominantly commercial, privately owned farming while on the left bank the dominant form of settlement is communal, with communal forms of tenure.

The former Transkei is characterized by dispersed rural settlements and communal subsistence farming and grazing. In the proposed study area, Butterworth is the main and largest formal town. Butterworth is the only urban node in the former Transkei area where most services and higher order infrastructure are to be found. The standards of these services have declined in recent years along with the economy of the town. The indigenous population of the Butterworth area is mainly Fingo, whose main farming activities include stock farming and the cultivation of maize.

Mbhashe is predominantly rural, with high levels of unemployment, poverty and dependency. The dependency ratio is set to increase if employment opportunities are not created for the large and youthful population. Mbhashe’s location on the Wild Coast provides the key for potential economic growth as the area is said to be one of the most sought after coastal tourism destinations in the Eastern Cape.

According to census 2001, there are a total of 253 372 people (53 199 households) living in the Mbhashe Municipal area. The population distribution ranges from between 6 068 (2 108 households)

and 14 822 (3 324 households) persons per ward. The average household size is five 5 people. Between 75% and 90% of the people of Mbhashe live below the poverty line, with an unemployment rate of 70%. The annual household income within Mbhashe is R396 647 400. Most households are very poor with 77% earning less than R800 per month.

The Municipality's low Productivity score points to the low GDP per worker (formal and informal), a shortage of skills available to the economy, and particularly low growth in value creation relative to labour remuneration and especially employment. Mbhashe emerges with the lowest Formal Economy Performance in the Eastern Cape, principally on the basis of being the most grant-dependent local economy in the Province. Other factors are the highly concentrated economy and poor GDP performance. However, Mbhashe emerges as a leading economy, both nationally and provincially, in respect of formal employment growth performance and has experienced a positive shift in share of employment, but a negative shift in share for DGP contribution from 1996 to 2004.

The local economy claims a comparative advantage, for both GDP and employment in Community Services, which is overwhelmingly dominated by Education (38.59% GVA and 46.24% employment). Further comparative advantages, in terms of GDP contribution, are reflected for Agriculture - centred on Forestry and Logging (8.11%); and Trade - centred on the Retail sub-sector (11.15%) emerge as a further employment advantage. The Municipality claims a range of leading products, including subtropical and deciduous fruit, maize, and tourism, where the latter is identified as having very high potential given the Municipality's favourable location on the Wild Coast. Dryland potential exists for maize and beans, and the area is identified as suitable for forestry. Good market (broilers, eggs) and field cropping (maize, and dry beans) as well as for hydroponics production, notably of tomatoes.

The proposed borrow pit is located within Ward 23 of the Mbhashe Local Municipality. According to Stats SA (Census 2001) the demographics of this ward are as proceeds. The population group tends to be predominantly African (99%) and as a result the predominantly spoken language in this ward is consequently Xhosa. Unemployment levels within this ward are very high at approximately 87%, with a large proportion of the ward being economically inactive. The average annual income is predominantly no income or between R1 - 9600. Thus the surrounding area is predominantly lower income settlement areas occupied by "previously disadvantaged" families.

The proposed project is unlikely to change the socio - economic structure of ward 23. However, the labour intensive construction and the utilization of the borrow pit may result in the creation of temporary employment, and will be of particular benefit should the local community be provided with these

employment opportunities. The socio-economic benefits of these jobs could also percolate through historically disadvantaged communities. There are thus positive socio-economic impacts in terms of creation of employment opportunities, skills transfer to the local community and providing a higher quality of access to the surrounding residents.

12 Potential Issues & Environmental Impacts

The objective of the assessment is to identify and assess all significant impacts that may arise from the undertaking of an activity. The findings of the assessments are used to inform the competent authority in their decision as to whether the activity should be authorized, subject to conditions that will mitigate the impacts to within acceptable levels or should be refused.

The scope of the Assessment includes all activities associated with the proposed mining operations. These impacts which may occur during the various phases (construction, operation and closure - where relevant) have been identified and assessed in Table 7.

12.1 Climate Change

During the construction, operational and closure phase the use of fossil fuels and the generation of carbon emissions from the use of machinery could potentially be of negative impact. However in a global sense, this impact is expected to be of low significance. It is important however that measures are taken to limit the consumption of fossil fuels and to reduce the generation of harmful emissions.

12.2 Consumption of Non-renewable Resources

The mining activities during the operational phase may impact on the local and regional natural resources as soil and hard rock will be used during construction activities. The proposed quantities mined from the borrow pits can be seen as relatively low and should therefore not deplete local or regional resources significantly.

12.3 Geology & Soils

During the operational phase soil loss due to vegetation removal, soil erosion, soil pollution as a result of spillages and loss of viability due to compaction may impact negatively. The topsoil is a particularly scarce resource in this environment, and must therefore be protected against wind, erosion, compaction, alien invasive plant species and pollution as the topsoil will be needed for rehabilitation purposes. The borrow pits are not normally associated with blasting activities and should therefore not have a significant impact on the geology of the area.

Stormwater management measures are required on closure to prevent erosion of topsoil from the surface of the borrow pits. Vegetation cover must be established as quickly as possible following shaping and closure of the sites in order to protect the soil from erosion.

12.4 Topography & Drainage

During the operational phase, the topography may be impacted upon by extensive excavation of sections during mining activities. This could in turn have an effect on the storm water runoff and drainage of the immediate surrounding areas.

12.5 Surface Water

During the construction and operational phase, surface water may become polluted via point source and/or diffuse discharge such as oil, fuel and chemical spills. Construction activities may also lead to soil erosion, which could lead to sedimentation of the streams, and subsequently, impacting water quality negatively. This may lead to an impact on downstream biota of the river/stream.

If any surface water is to be abstracted for construction/operational/closure purposes then the contractor must obtain a permit from the Department of Water Affairs prior to any abstraction taking place.

12.6 Groundwater

During the construction and operational phase, groundwater may also become polluted via point source and/or diffuse discharge such as oil, fuel and chemical spills. Petroleum products released to the environment migrate through soil via two general pathways, namely, as bulk flow infiltrating the soil under the forces of gravity and capillary action, and, as individual compounds separating from the bulk petroleum mixture and dissolving in air or water. As the products migrate through the soil column, a small amount of the product mass is retained by soil particles.

The bulk product retained by the soil particles is known as “residual saturation”, and depending upon the persistence of the products, residual saturation can potentially reside in the soil for years. Residual saturation is important as it determines the degree of soil contamination and can act as a continuing source of contamination for individual compounds to separate from the bulk product and migrate independently.

If any groundwater is to be abstracted for construction/operational/closure purposes then the contractor must obtain a permit from the Department of Water Affairs prior to any abstraction taking place.

12.7 Vegetation Removal and Habitat Disturbance

The loss of vegetation cover, loss of protected or endangered species, spread of alien invasive vegetation and loss of animal habitat during the construction and operational phases may impact negatively. However all the borrow pit is existing, and therefore been disturbed significantly, with the borrow pit showing less than 30% vegetation cover.

It must be noted that no protected/endangered species or species of special concern were identified in the footprint of the borrow pit. The vegetation unit identified for the area is described as a least threatened ecosystem and although the borrow pit is located in an identified CBA 2 area (ECBCP), the site has already been significantly disturbed and transformed as a result of the past activities. Not more than 0.98 ha of indigenous vegetation will be removed as a result of the activity.

Rehabilitation should however form an integral part of the post operational phase in order to avoid further soil erosion, vegetation removal and alien invasive weeds.

12.8 Air Quality

The air quality may be impacted upon by the mining activities due to dust generation and fugitive emissions from operation, excavation & hauling vehicles.

12.9 Visual Impact

Borrow pit activities during the construction and operational phase may lead to dust and noise generation and vegetation removal and change in landform which could have a visual impact on the rural character of the area. The mining of the borrow pit will in all likelihood result in a visual impact, while noise and dust generated by the works will likely be of nuisance value impinging on the rural nature of the study area. This will be largely mitigated on closure. Rehabilitation of the existing borrow pit will ultimately improve the aesthetics of the area.

12.10 Noise

The proposed mining activities will result in increased noise levels as a result of increased construction vehicles and equipment; however this will be restricted to working hours and is relatively short term.

12.11 Archaeology, Palaeontology & Heritage Sites

During the construction and operational phase, mining activities may damage or disturb sites of cultural/archaeological or palaeontological significance. The borrow pit is an existing borrow pit and as such have been disturbed already, there is always, however, a chance of uncovering additional unknown sites in the course of mining a borrow pit or quarry.

12.12 Land use

Impact of mining on existing landuse, where current landuse differs from the proposed mining operations, however the borrow pit is existing, and has therefore been disturbed. The surrounding areas are currently utilized for rural agriculture and settlement, however the temporary loss of land is not considered significant as it is not being utilized for agricultural or settlement purposes currently, the land was open space before being utilized as a borrow pit. It is proposed to rehabilitate the borrow pit to a stock watering dam for utilization by the livestock in the area.

12.13 Socio-Economic Environment

The local community could benefit through employment, income generation, skills development and small business enterprises (i.e. fencing companies). These benefits may be enhanced with focused procurement and by employing labour intensive methods during construction and rehabilitation of the borrow pits. Labour should be sourced from the target area so that those affected stand to benefit the most.

12.14 Health and Safety

During the construction/operational/closure phases there are certain risks posed to human health & safety via exposure to high noise and dust levels, as well as steep and/or unstable faces formed during mining activities. In addition, the use of heavy machinery in close proximity to households also poses a threat. Community health and safety risks should be controlled through the implementation of a Health & Safety Management Plan to be implemented by the contractor. Excavations should be "made safe" on closure.

13 Environmental Impact Significance Assessment and Mitigation Measures

13.1 Environmental Impact Risk Assessment Methodology

Environmental impact is assessed using an in-house methodology and software (EIA-RA 05[®]), developed by BESC, which operates a 3-D risk assessment protocol based on severity of impact, duration of impact and confidence of impact occurring.

The first step in assessing any environmental impact to listed possible activities or processes that are likely to occur and then identify any resultant or consequential environmental issue. The potential impact associated with an environmental issue is then identified as is the spatial range that any such impact would effect or take place in. The assessment is undertaken under two primary conditions, namely:

- Degree of impact WITHOUT environmental management protocols in place
- Degree of impact WITH environmental management protocols in place

To achieve this, information on severity of impact, duration of impact and confidence of impact occurring are entered, with a risk assessment output for each environmental impact being computed. The environmental impacts are thus categorised into ten negative impact categories and a four positive impact categories.

The ten negative categories are arranged on a scale of importance from category 1 being most negative and category 10 being least negative. Whilst the positive impact categories are arranged on a similar scale whereas category A is most positive and category D being least positive. In order to place a degree of significance to each impact (positive and negative), significance of impact has been defined as (Table 6).

Table 6: EIA-RA 05© - Risk Assessment Ratings.

Significance	Categories	Definition
Very High	1 & 2	<p>These impacts would be considered by society as constituting a major and usually permanent change to the (natural and/or social) environment.</p> <ul style="list-style-type: none"> ○ Example: The loss of a species would be viewed by informed society as being of VERY HIGH significance.
High	3 & 4	<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> <ul style="list-style-type: none"> ○ 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.
Moderate	5, 6 & 7	<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.</p> <ul style="list-style-type: none"> ○ Example: The loss of a sparse, open vegetation type of low diversity may be regarded as MODERATELY significant.
Low	8, 9 & 10	<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> <ul style="list-style-type: none"> ○ Example: The temporary change in the water table of a wetland habitat, as these systems are adapted to fluctuating water levels. <p>or,</p> <p>There are no primary or secondary effects at all that are important to scientists or the public.</p> <ul style="list-style-type: none"> ○ 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.
Positive	A, B, C, D	<p>Any beneficial impact to the environment:</p> <p>A = Very Beneficial</p> <ul style="list-style-type: none"> ○ Example: Protection of an environmental asset or removal of an existing/latent negative environmental impact; <p>B = Beneficial</p> <ul style="list-style-type: none"> ○ Example: Improve management of the environment; <p>C = Moderately Beneficial</p> <ul style="list-style-type: none"> ○ Example: Removal of alien species from the property; <p>D = Slightly Beneficial</p> <ul style="list-style-type: none"> ○ Example: Minor improvement that has no material significance to the immediate environment.

13.2 Sensitivity

An overall sensitivity assessment will be made to include condition or state of degradation, invasion status, extent and relative importance of the vegetation types as well as the degree to which successful rehabilitation can take place. Three sensitivity scores are allocated as follows:

1. Areas scoring a low sensitivity are those areas that tend to be highly degraded and it is unlikely that they could be rehabilitated to a normal functioning state without extreme effort and expense.
2. Areas of moderate sensitivity are those areas that contain reasonably intact habitat with low or no alien infestation.
3. Areas scoring a high sensitivity on site are those having an important ecological function.

13.3 Impacts

Four factors need to be considered when assessing the significance of impacts, namely:

- A. the relationship of the impact to temporal scales
 - B. the relationship of the impact to spatial scales
 - C. the actual significance of the impact, and
 - D. the probability of the event occurring
- A. The **temporal scale** defines the significance of the impact at various time scales, as an indication of the duration of the impact.
1. **Short term:** less than 5 years. Many construction phase impacts will be of a short duration.
 2. **Medium term:** between 5-20 years, the approximate duration of the mining operation.
 3. **Long term:** between 20-40 years, and from a human perspective essentially permanent.
 4. **Permanent:** over 40 years, and resulting in a permanent and lasting change that will always be there.
- B. The **spatial scale** defines physical extent of the impact.
1. **Site:** having an impact only within the confined of the development.
 2. **Local:** having an impact within the local area of the development.
 3. **Municipal:** having an impact within the municipal area (i.e. the Mbhashe Local Municipality)
 4. **Regional:** having an impact within the regional context (Eastern Cape)
 5. **National:** having an impact at the National Level (South Africa)

- C. The **Environmental Significance** scale is an attempt to evaluate the importance of a particular impact. This evaluation needs to be undertaken in the relevant context, as an impact can either be ecological or social, or both. The evaluation of the significance of an impact relies heavily on the values of the person making the judgment. For this reason, impacts of especially a social nature need to reflect the values of the affected society. SIGNIFICANCE will need to be evaluated with and without mitigation. In many cases, mitigation will take place, as it will have been incorporated into project design. A five-point significance scale has been applied (Table 6).
- D. It is also necessary to state the **probability** with which the likelihood of the event/impact will occur.
1. **Definite:** More than 90% sure of a particular fact. To use this one will need to have substantial supportive data.
 2. **Probable:** Over 70% likelihood of that impact occurring.
 3. **Possible:** Only over 40% likelihood of an impact occurring.
 4. **Unsure:** Less than 40% likelihood of an impact occurring.

Table 7: Assessment of Environmental Impacts

ASSESSMENT				PRIOR TO MITIGATION				POST MITIGATION						
Environmental Issue	Environmental Impact	Positive or Negative	Phase	Spatial	Severity	Duration	Probability	Significance Assessment	Mitigation Measures	Spatial	Severity	Duration	Probability	Significance Assessment
Climate Change	Use of fossil fuels and generation of carbon emissions	Negative	Construction, operational, closure	Global	5	4	6	Low	All machinery to be kept in good working order in order to reduce exhaust emissions. Unleaded fuel to be used where possible. Sources of renewable energy (eg solar power) to be used where possible.	Global	6	4	6	Low
Non-renewable Resources	Material Consumption	Negative	Operational	Municipal	4	3	3	Moderate	The volumes removed should be minor compared to natural resources. The proposed quantities mined however should not exceed limits specified.	Municipal	5	3	3	Low
Non-renewable Resources	Material Resources	Positive	Operational	Local	5	4	2	Moderate	None required	Local	5	4	2	Moderate
Geology and Soils	Soil Erosion	Negative	Construction, operational, closure	Site	3	4	2	High	Minimise the areas of disturbance or vegetation clearance. Revegetate areas that have been disturbed as soon as possible. Areas showing signs of erosion must be stabilized immediately. Cut and fill/Excavations shall be made stable and be revegetated as soon as possible during the operational phase.	Site	5	4	2	Moderate
Geology and Soils	Soil Pollution	Negative	Construction & Operational	Local	3	4	3	Moderate	Under no circumstances shall hazardous substances be disposed of on site or into the surrounding environment. Accidental pollution incidents shall be reported to the Project Manager/ECO immediately and shall be cleaned up by the Contractor or a nominated clean-up organisation at the expense of the contractor. Vehicles should be well maintained. Chemical toilets are to be emptied on a regular basis and disposed of at the licensed water treatment facility	Site	4	5	3	Low

Geology and Soils	Soil/Topsoil Loss	Negative	Construction, operational, closure	Local	3	4	3	Moderate	Minimise the areas of disturbance or vegetation clearance. Topsoil to be stockpiled in designated areas and is to be used during rehabilitation. Topsoil only to be stripped from required areas and done in a way to minimize wind erosion. Stockpiles must be protected from erosion and contamination	Site	5	4	3	Low
Topography & Drainage	Cut and Fill/ Extensive Excavations	Negative	Operational	Site	5	3	4	Low	Areas previously utilized and therefore transformed. Excavations/ slopes shall be made stable and be revegetated as soon as possible. Rehabilitate areas as soon as possible	Site	6	3	4	Low
Topography & Drainage	Increased stormwater runoff	Negative	Operational	Site	5	6	3	Low	All areas of stormwater release must be suitable stabilized	Site	6	6	3	Low
Topography & Drainage	Increased Soil Erosion	Negative	Operational	Site	3	4	2	High	Minimise the areas of disturbance or vegetation clearance. Revegetate areas that have been disturbed as soon as possible. Excavations/ slopes shall be made stable and be revegetated as soon as possible during the operational phase.	Site	5	7	4	Low
Surface Water/ Drainage lines	Surface Water Pollution - Contamination from chemical inputs/ effluent spillage and improper disposal of waste etc	Negative	Construction & Operational	Local	3	4	3	Moderate	Areas of spillages and/or contamination shall be cleaned up immediately and disposed of at a licensed landfill site. Release of chemicals directly into the environment is strictly prohibited. Waste is to be removed from the area on a regular basis.	Site	4	4	3	Low
Surface Water/ Drainage lines	Sedimentation	Negative	Construction & Operational	Local	3	4	3	Moderate	Minimise the areas of disturbance or vegetation clearance. Revegetate areas that have been disturbed as soon as possible. Cut and fill slopes/excavations shall be made stable and be revegetated as soon as possible during the construction phase. A stormwater cut-off berm shall be provided upslope from the mining areas. Gabions shall be provided at stormwater release areas	Site	4	4	3	Low

Surface Water/ Drainage lines	Soil Erosion	Negative	Construction & Operational	Local	3	3	3	Moderate	Minimise the areas of disturbance or vegetation clearance. Revegetate areas that have been disturbed as soon as possible. Cut and fill slopes/excavations shall be made stable and be revegetated as soon as possible during the construction phase. A stormwater cut-off berm shall be provided upslope from the mining areas. Gabions shall be provided at stormwater release areas	Site	4	4	3	Low
Surface Water/ Drainage lines	Decreased water quality/aquatic habitat	Negative	Construction & Operational	Local	4	3	4	Low	Minimise the areas of disturbance or vegetation clearance. Revegetate areas that have been disturbed as soon as possible. Cut and fill slopes/excavations shall be made stable and be revegetated as soon as possible during the construction phase. A stormwater cut-off berm shall be provided upslope from the mining areas. Gabions shall be provided at stormwater release areas	Site	4	4	4	Low
Surface Water	Water Abstraction	Negative	Construction & Operational	Local	3	5	2	Moderate	Applications for a water use license must be made in terms of the National Water Act, (Act 36 of 1998). Conditions contained in the approval(s) must be strictly adhered to	Local	4	5	3	Low
Groundwater	Groundwater pollution/contamination	Negative	Construction & Operational	Local	4	3	3	Moderate	Release of chemicals directly into the environment is strictly prohibited. Ablution facilities are to be made available for construction staff. Areas of spillages and/or contamination shall be cleaned up immediately and disposed of at a licensed landfill site	Site	5	3	3	Low
Groundwater	Groundwater Abstraction	Negative	Construction & Operational	Local	3	5	2	Moderate	Applications for a water use license must be made in terms of the National Water Act, (Act 36 of 1998). Conditions contained in the approval(s) must be strictly adhered to	Local	4	5	3	Low
Vegetation and Habitat	Loss of indigenous vegetation	Negative	Construction & Operational	Local	5	3	3	Low	The vegetation at the borrow pit is currently least threatened. The areas have been disturbed. Minimise the areas of disturbance or vegetation clearance. Revegetate areas that have been disturbed as soon as possible.	Site	5	3	3	Low
Vegetation and Habitat	Habitat Disturbance	Negative	Construction & Operational	Site	5	5	3	Low	The areas have been disturbed. Minimise the areas of disturbance or vegetation clearance. Revegetate areas that have been disturbed as soon as possible. Mining activities are restricted to the area demarcated in the mining plan	Site	6	5	3	Low

Vegetation and Habitat	Removal of species of special concern	Negative	Construction & Operational	Site	5	3	3	Low	No species of special concern were identified in the borrow pit area.	Site	5	3	3	Low
Vegetation and Habitat	Alien Invasives	Negative	Construction, Operational & Closure	Local	3	4	3	Moderate	Alien invasive eradication programme required to prevent the spread of alien invasive plants. All alien invasive plant species should be removed according to the Conservation of Agricultural Resources Act.	Local	4	4	3	Low
Vegetation and Habitat	Removal of Alien Invasives	Positive	Construction, Operational & Closure	Site	5	5	4	Low	None required	Site	5	5	4	Low
Vegetation and Habitat	Cumulative loss of Bhisho Thornveld (Regional Vegetation Unit -Least threatened Ecosystem)	Negative	Construction & Operational	Regional	5	3	4	Low	Least threatened type of ecosystem and the proposed area has been transformed and is not representative of an intact vegetation unit	Site	6	3	4	Low
Vegetation and Habitat	Rehabilitation with indigenous vegetation	Positive	Operational & Closure	Site	3	3	4	Moderate	None required	Site	3	3	4	Moderate
Air Quality	Dust generation	Negative	Construction & Operational	Local	6	6	3	Low	Avoid dust generating activities during periods of medium to high winds. Cover and/or maintain appropriate freeboard on trucks hauling any loose material that could produce dust when travelling. Limit the areas that need to be cleared of vegetation. Revegetate disturbed areas as soon as possible after clearing.	Site	7	6	4	Low
Air Quality	Vehicular Emissions	Negative	Construction & Operational	Local	5	5	3	Low	Vehicles should be properly maintained and serviced.	Local	6	5	3	Low
Noise	Noise Pollution	Negative	Construction & Operational	Local	3	5	2	Moderate	All noise sources shall be controlled at the source; Vehicle silencers should be in good working order and should be maintained. No construction/operational work should be done after working hours or on Sundays and Public Holidays.	Local	4	5	3	Low
Visual	Change in Sense of Place	Negative	Construction, operational, closure	Local	4	3	3	Moderate	Borrow pit is existing. Borrow Pit is to be rehabilitated to represent either an end use of a stock watering dam for the surrounding community or alternatively to the former habitat/surrounding land use character.	Local	6	3	3	Low

Visual	Decrease in visual quality	Negative	Construction & Operational	Local	4	4	2	Moderate	Protect and maintain the vegetated slopes as a natural screen. Ensure that any signage (i.e. at entrance gate of construction camp site) is visible but not visually intrusive. Ensure good housekeeping at the construction campsite and control litter and general site cleanliness. Ensure that adequate ablution facilities are in place, that the workforce utilises these facilities and that they are placed where they are not visible to the public. Workforce shall be dressed in appropriate neat and safe construction uniforms. Loitering of staff and other spin-off activities (such as food stalls, taxi ranks) are not allowed. Bright colours shall only be used for the safety issues for which they are intended. Safety lighting should only be used for the safety issues for which they are intended. Security lighting should be avoided where possible or placed so that they only illuminate the area to be protected. Only emergency after-hours work should be done. Avoid dust generating activities during periods of medium to high winds. Cover and/or maintain appropriate freeboard on trucks hauling any loose material that could produce dust when travelling. Limit the areas that need to be cleared of vegetation. Revegetate disturbed areas as soon as possible after clearing. Dampen exposed soil to suppress dust i.e. with water bowser	Local	4	4	3	Low
Visual	Rehabilitation of existing borrow pit	Positive	closure	Local	4	4	2	Moderate	None required	Local	4	4	2	Moderate
Archaeology, Palaeontology and Heritage	Disturbance/Loss of Archaeological, Heritage and Palaeontological Sites	Negative	Construction, Operational & closure	Municipal	3	2	3	High	All finds of human remains shall be reported to the nearest police station. Human remains from the graves of victims of conflict, or any burial ground or part thereof which contains such graves and any other graves that are deemed to be of cultural significance may not be destroyed, damaged, altered, exhumed or removed from their original positions without a permit from the South African Heritage and Resource Agency (SAHRA) Work in areas where artefacts are found shall cease immediately and SAHRA notified. Under no circumstances shall the Contractor, employees, subcontractors or subcontractors' employees remove, destroy or interfere with	Municipal	5	3	5	Low

								archaeological artefacts.						
Landuse	Change in landuse	Negative	Construction, operational, closure	Local	3	3	4	Moderate	The borrow pit is already existing. The change in landuse will be temporary. The borrow pit will be rehabilitated to a stock watering dam or alternatively to the previous landuse	Local	5	6	4	Low
Socio-economic	Employment opportunities	Positive	Construction, operational, closure	Local	4	5	4	Low	This benefit may be enhanced with focused procurement and by employing labour intensive methods of construction. Labour should be sourced from the target area so that those alongside the road stand to benefit the most.	Local	3	5	2	Moderate
Socio-economic	Skills Development	Positive	Construction, operational, closure	Local	4	5	4	Low	This benefit may be enhanced with focused procurement and by employing labour intensive methods of construction. Labour should be sourced from the target area so that those alongside the road stand to benefit the most.	Local	3	5	2	Moderate
Socio-economic	Indirectly - materials for water supply project	Positive	Construction & operational	Municipal	3	3	3	Moderate	None required	Municipal	3	3	3	Moderate
Health & Safety	Safety Risk	Negative	Construction & Operational	Local	2	2	3	Very High	The mining area shall be fenced off and access to the site shall be restricted by means of a gate. All Occupational Health & Safety Standards shall be strictly adhered to. Excavations should be made safe prior to closure.	Local	2	2	8	Moderate

The No-Go Alternative

The “no-go” alternative simply involves leaving the site in its current condition and not undertaking the proposed mining operation. This means that the impacts identified as a result of the construction/operational phase would not occur, this being impacts related to vegetation removal, soil erosion and pollution, surface water, groundwater and terrestrial pollution, air quality and visual impacts. Although no negative environmental issues identified for the construction/operational phase would occur, the existing borrow pit would not be rehabilitated thus leaving it in its current visual state. In addition, materials from the borrow pit would not be provided to the Phase 2B: Qwaninga Water Supply Project.

14 Mitigatory Measures & Environmental Management

The guidelines, operating procedures and rehabilitation/pollution control requirements contained in this Environmental Management Plan will be binding on the holder of the mining permit permission after approval of the Environmental Management Plan by the Department of Mineral Resources. It is essential that this portion be carefully studied, understood, implemented and adhered to at all times. The mitigation measures which will apply during the Site Establishment, Operation and Rehabilitation phases are provided in the following Sections.

14.1 Responsibilities of the Role Players

14.1.1 Developer

The Developer (Mbhashe Local Municipality in this instance) remains ultimately responsible for ensuring that the development is implemented according to the requirements of the EMP. Although the developer appoints specific role players to perform functions on his/her behalf, this responsibility is delegated. The developer is responsible for ensuring that sufficient resources (time, financial, human, equipment, etc.) are available to the other role players (e.g. the ECO, ELO and contractor) to efficiently perform their tasks in terms of the EMP. The developer is liable for restoring the environment in the event of negligence leading to damage to the environment. The developer shall ensure that the EMP is included in the tender documentation so that the contractor who is appointed is bound to the conditions of the EMP. The developer shall appoint an independent Environmental Control Officer (ECO) during the planning phase to oversee all the environmental aspects relating to the development.

14.1.2 Consulting Engineer

The Consulting Engineer, is bound to the EMP conditions through his/her contract with the developer, and is responsible for ensuring that she/he adheres to all the conditions of the EMP. The Consulting Engineer shall thoroughly familiarise him/herself with the EMP requirements before coming onto site and shall request clarification on any aspect of these documents, should they be unclear. The Consulting Engineer shall ensure that he/she has provided sufficient budget for complying with all EMP conditions at the tender stage. The Consulting Engineer shall comply with all orders (whether verbal or written) given by the ECO, Project Manager or DEDEA in terms of the EMP.

14.1.3 Contractor

The Contractor, as the developer's agent on site, is bound to the EMP conditions through his/her contract with the developer, and is responsible for ensuring that she/he adheres to all the conditions of the EMP. The Contractor shall thoroughly familiarise him/herself with the EMP requirements before coming onto site and shall request clarification on any aspect of these documents, should they be unclear. The Contractor shall ensure that he/she has provided sufficient budget for complying with all EMP conditions at the tender stage. The Contractor shall comply with all orders (whether verbal or written) given by the ECO, Project Manager, Consulting Engineer or DMR in terms of the EMP.

The Department of Mineral Resources have reserved their rights to initiate criminal proceedings against the Consulting Engineer, contractor and/or any sub-contractors.

14.1.4 Environmental Control Officer (ECO)

The Environmental Control Officer (ECO) is appointed by the developer as an independent monitor of the implementation of the EMP. He/she shall form part of the project team and shall be involved in all aspects of project planning that can influence environmental conditions on the site. The ECO shall attend relevant project meetings, conduct inspections to assess compliance with the EMP and be responsible for providing feedback on potential environmental problems associated with the development. In addition, the ECO is responsible for:

- Liaison with relevant authorities;
- Liaison with contractors regarding environmental management; and
- Undertaking routine monitoring and appointing a competent person/institution to be responsible for specialist monitoring, if necessary
- Has the authority to halt any activity or process related directly or indirectly to the project, which in the view of the ECO may have undue or significant impact the environment
- The ECO has the right to enter the site and undertake monitoring, auditing and assessment at any time.

The ECO shall be responsible for liaising with the DMR. The ECO shall submit monthly environmental audit reports to the authorities. These audit reports shall contain information on the contractor and developer's levels of compliance with the EMP. The audit report shall also include a description of the general state of the site, with specific reference to sensitive areas and any matters of non-compliance. The ECO is to suggest corrective action measures to eliminate the occurrence of the non-compliance

incidents. In order to keep a record of any non-compliance, an Environmental Incident Record (Appendix B) shall be kept.

An Environmental Control Officer (ECO) should be appointed prior to any mining activities commencing in order to ensure compliance with this Environmental Management Plan.

14.1.5 Environmental Liaison Officer (ELO)

The contractor shall appoint an Environmental Liaison Officer (ELO) to assist with day-to-day monitoring of the construction activities. Any issues raised by the ECO shall be routed to the ELO for the contractors' attention. The ELO shall be *permanently* on site during the construction phase to ensure daily environmental compliance with the EMP and shall ideally be a senior member of the contractor's management team. The ECO shall be responsible for ensuring that all staff members are adequately trained and aware of the EMP. The ELO shall be responsible for undertaking weekly environmental inspections (according to the criteria specified in the EMP), and accompany the ECO during site visits, audits or assessments.

The ECO shall be notified of this appointment and furnished with the contact details of the ELO.

14.2 General Requirements

14.2.1 Mining Plans

- A copy of the mining plan shall be available at the mining site for scrutiny when required.
- A final layout plan must be submitted at closure of the mine or when operations have ceased.

14.2.2 Demarcating the mining area

- The mining area must be clearly demarcated by means of beacons at its corners and by fencing off the mining area.
- Permanent beacons as indicated on the mining plans must be firmly erected and maintained in their correct position throughout the life of the operation.
- Mining operations shall only take place within this demarcated area.
- Mining is to take place according to the proposed mine development plans. Mined out areas are to be used as spoil site thereby facilitating rehabilitation.

14.3 Infrastructural Requirements

14.3.1 Topsoil Management

- Stripping of topsoil shall be undertaken in such a manner as to minimise erosion by wind or runoff.

- Topsoil shall be stripped to a depth not exceeding 300 mm from the original ground level unless otherwise specified by the Project Manager in consultation with ECO.
- Areas from which the topsoil is to be removed shall be cleared of any foreign material which may come to form part of the topsoil during removal including bricks, rubble, any waste material, litter, excess vegetation and any other material which could reduce the quality of the topsoil.
- The Contractor shall ensure that subsoil and topsoil are not mixed during stripping, excavation, reinstatement and rehabilitation. If mixed with sub-soil the usefulness of the topsoil for rehabilitation of the site shall be lost.
- The topsoil stockpiles shall be clearly demarcated with appropriate signage.
- Topsoil should under no circumstances be used to create diversion berms or for general erosion control measures.
- Soils should be exposed for the minimum time possible once cleared.
- Topsoil shall be temporarily stockpiled, separately from subsoil and rocky materials.
- Topsoil shall be stockpiled in the Top Soil designated storage areas.
- Soil shall not be stockpiled near drainage lines, watercourses or the 1:50 year flood line. Topsoil should be stockpiled on the high ground.
- Stockpiles shall either be vegetated with indigenous grasses or covered by a suitable fabric to prevent erosion and invasion of weeds.
- Stockpiled topsoil shall not be compacted.
- Topsoil shall be used for rehabilitation of disturbed areas only.

14.3.1.1 Topsoil stripping

- Prior to the stripping of topsoil, as much as possible of the aboveground grass layer shall be removed and stockpiled. This is to be placed on top of the topsoil once the topsoil has been replaced and shall be stored separately from the topsoil. The purpose of using this vegetation material is that it contains grass seed and would therefore assist with re-establishment of the indigenous grasses that naturally occur in the area. Aside from this, the grass covering of the soil would also assist in preventing erosion prior to the re-establishment of a dense vegetation covering. Should insufficient grass covering be available to cover the soil, grass cuttings must be obtained from areas of natural grassland in the immediate vicinity of the particular area, with the consent of the affected landowner, or hydroseeding must be conducted.
- Topsoil shall be stripped from all areas that are to be utilised during the mining period and where permanent structures and access' is required. Topsoil shall be stripped after clearing of vegetation and before excavation commences.

- While topsoil is being stripped, it should be scanned for the presence of bulbous plants. Should bulbous plants be detected, they shall be removed from the topsoil and an ecologist shall be contacted to provide advice on suitable habitats and methods for replanting.
- The topsoil is regarded as the top 300mm of the soil profile, unless there is a clearer shallower boundary between the topsoil and subsoil indicated by texture, colour or structure.
- No topsoil which has been stripped shall be buried or in any other way be rendered unsuitable for further use by mixing with spoil or by compaction using machinery.
- Topsoil shall preferably be stripped when it is in a dry condition in order to prevent compaction.

14.3.1.2 Soil stockpiling

- Stripped topsoil shall be stockpiled in areas, which have been approved by the ECO.
- Topsoil stripped from different soil zones shall be stockpiled separately and clearly identified as such.
- Soil stockpiles shall not be higher than 2.5m or stored for a period longer than one month. The slopes of soil stockpiles shall not be steeper than 1 vertical to 5 horizontal.
- No vehicles shall be allowed access onto the stockpiles after they have been placed. Topsoil stockpiles shall be clearly demarcated in order to prevent vehicle access and for later identification when required.
- Soil stockpiles shall not be allowed to become contaminated with oil, diesel, petrol, litter or any other material that may later inhibit the growth of vegetation in the soil.
- After topsoil removal has been completed, the Contractor shall apply soil conservation measures to the stockpiles where and as directed by the Environmental Control Officer. This may include the use of erosion control fabric or grass seeding.

14.3.2 Access to the Borrow Pit Sites

14.3.2.1 Establishment of Access Roads

- The access road to the mining areas and the camp-site/site office must be via existing access roads/ jeep tracks.
- Should a portion of the access road be upgraded or newly constructed the following must be adhered to:
 - The route shall be selected that a minimum number of bushes or trees are felled and existing fence lines shall be followed as far as possible.
 - Water courses and steep gradients shall be avoided as far as is practicable.
 - Adequate drainage and erosion protection in the form of cut-off berms or trenches shall be provided where necessary.

- No other routes will be used by vehicles or personnel for the purpose of gaining access to the site.

14.3.2.2 Maintenance of Access Roads

- The maintenance of access roads will be the responsibility of the holder of the mining permit.
- Newly upgraded access roads shall be adequately maintained so as to minimize dust, soil erosion or undue surface damage (i.e. adequate storm water control).

14.3.2.3 Dust control on the access and haul roads

- The liberation of dust into the surrounding environment shall be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents.
- The speed of haul trucks and other vehicles must be strictly controlled to avoid dangerous conditions, excessive dust generation or excessive deterioration of the road being used.
- A freeboard of 0.5m shall be maintained by haul trucks. The load should also be covered during travel in order to avoid loss of material and dust generation.

14.3.2.4 Rehabilitation of access roads

- Whenever a mining permit is suspended, cancelled or abandoned or if it lapses and the holder does not wish to renew the permit or right, any access road or portions thereof, constructed by the holder shall be removed and/or rehabilitated in order to represent the former habitat.
- Roads shall be ripped or ploughed, and if necessary, appropriately fertilized to ensure the regrowth of vegetation. Imported road construction materials which may hamper regrowth of vegetation must be removed and disposed of in an approved manner prior to rehabilitation.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the ECO may require that the soil be analyzed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a seed mix to the ECO specification.

14.3.3 Office/Camp Sites

14.3.3.1 Establishing Office/Camp Sites

- Should any office/ camp sites be established, these are to be established within the boundaries of the mining area.
- No camp or office site shall be located closer than 100 meters from a stream, river, spring, dam or pan.
- The area chosen for these purposes shall be the minimum reasonably required in order to remove as little vegetation as possible.
- Topsoil shall be handled as described in this EMP. This topsoil is to be used for rehabilitation of the area once the office/camp sites have been removed.

- Only gas cooking facilities shall be allowed for purposes of making food. No open fires shall be allowed.
- Lighting and noise disturbance or any other form of disturbance that may have an effect on the public living in the vicinity shall be kept to a minimum by avoiding work after hours.

14.3.3.2 Toilet facilities, waste water and refuse disposal

- The contractor shall provide suitable ablution facilities for employees and proper hygiene measures shall be established.
- Chemical toilet facilities are to be used and sited on the camp site at least 100 meters away from any river/stream/watercourse. The construction of “long drop” toilets is forbidden. Under no circumstances may open areas or the surrounding bush be used as a toilet facility. A minimum of 1 toilet per 20 persons must be provided. Chemical Toilets should be emptied on a regular basis and the contents disposed of at a licensed sewage treatment works.
- All temporary / portable toilets shall be secured to the ground to prevent them toppling due to wind or any other cause. The Contractor shall ensure that no spillage occurs when the toilets are cleaned, or emptied, and that the contents are properly stored and removed from Site. Discharge of waste from toilets into the environment, and burial of waste, is strictly prohibited.
- All effluent water from the camp washing facility shall be disposed of in a properly constructed French drain, situated as far as possible, but not less than 200 meters, from any stream, river, pan, dam or borehole.
- Only domestic type wash water shall be allowed to enter this drain and any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site for appropriate disposal at a licensed disposal facility. Records of safe disposal shall be kept on site and presented to the ECO.
- Spills should be cleaned up immediately to the satisfaction of the ECO by removing the spillage together with the polluted soil and by disposing of them at a licensed waste disposal facility.
- Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., shall be stored in a container at a collecting point and collected on a regular basis and disposed of at a licensed waste disposal facility.
- All other waste shall also be removed from site on a regular basis and disposed of at a licensed waste disposal facility.
- Waste containers shall be provided with lids or netting to prevent waste from being disturbed by scavengers or being blown away by wind.

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- Specific precautions shall be taken to prevent refuse from being dumped on or in the vicinity of the camp site. This could include environmental awareness training and the provision of a suitable number of refuse bins.
 - No burning of refuse is to take place on site.
 - Materials shall be appropriately secured to ensure safe passage between destinations. Loads including, but not limited to sand, fine vegetation, refuse and paper shall have appropriate cover to prevent them spilling from the vehicle during transit. The Contractor shall be responsible for any clean-up resulting from the failure of his employees, or suppliers, to properly secure transported materials.

14.3.3.3 Rehabilitation of the office/camp site

- When the mining permit lapses, is cancelled or is abandoned or when any prospecting or mining operation comes to an end, the holder of any such right or permit may not demolish or remove any building, structure, object -
 - which may not be demolished in terms of any other law;
 - which has been identified in writing by the Minister; or
 - which is to be retained in terms of an agreement between the holder and the owner or occupier of the land, which agreement has been approved by the Minister in writing.
- Where office/camp sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.
- Areas containing French drains shall be compacted and covered with a final layer of topsoil to a height of 10cm above the surrounding ground surface in order to allow for the settling of the soil.
- The site shall be seeded with an indigenous grass seed mix.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the ECO may require that the soil be analyzed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a seed mix to the ECO specification.
- Photographs of the camp and office sites, before, during and after the mining operations shall be taken by the ECO and/or ELO at selected fixed points and kept on record.

14.3.4 Maintenance Yard & Storage Areas

14.3.4.1 Establishing the vehicle maintenance yard and secured storage areas

- Should a vehicle maintenance yard be required, this vehicle maintenance yard and secured storage areas shall not be located closer than 100 meters from any stream, river, spring, dam or pan, and shall be within the boundaries of the mining area.

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- The areas chosen for these purposes shall be the minimum reasonably required and involve the least disturbance to vegetation.
 - Topsoil shall be removed from these areas and handled as described in this EMP.
 - The vehicle maintenance yard and secured storage areas shall be constructed of impermeable material and bunded.
 - Runoff from vehicle maintenance yards and secured storage areas shall be contained on site in a suitable receptacle and removed for appropriate disposal at a licensed waste disposal facility. The receptacle shall be emptied when 75% full. Records of safe disposal shall be kept on site and presented to the ECO.
 - Store all materials defined as hazardous within a bunded and secure area (>50L).
 - The floor and bund walls should be impervious to the material stored and should be capable of containing 110% of the total volume of hazardous substance stored.
 - Fuel or lubricant tanks shall be secured and provided with collision protection.
 - Valves shall be locked when not in use, and shall be protected from vandalism and unauthorized use.
 - Valves shall be within the confines of the bunded/impervious areas.
 - Small quantities of hazardous substances (50L or less) shall be stored in appropriate containers within a secure storage area.
 - Base of the storage area shall be impervious and so designed as to ensure that the hazardous substances do not infiltrate into the soil.
 - Used fuels, oils, hydraulic fluids, paints and solvents and grease shall be stored in drums or other suitable containers. Care shall be taken to avoid ingress of rain water into containers.
 - Once the containers are full then they shall be labeled, sealed and removed from the site to a licensed waste disposal site.
 - The relevant Material Safety Data Sheets (MSDS) shall be available on Site. Procedures detailed in the MSDS shall be followed in the event of an emergency situation.
 - Provide collection systems (i.e. trays or impervious linings) under machinery or equipment that may dispense hazardous substances (i.e. generators and pumps).

14.3.4.2 Maintenance of vehicles and equipment

- The maintenance of vehicles and equipment used for any purpose shall take place only in the maintenance yard areas provided.
- The maintenance yard areas shall be fully contained and impervious.
- Runoff from the maintenance yard areas shall be collected and contained on site in a suitable receptacle and removed for appropriate disposal at a licensed waste disposal facility. The

receptacle shall be emptied when 75% full. Records of safe disposal shall be kept on site and presented to the ECO.

- Equipment used in the mining/ process must be adequately maintained so that during operations it does not spill oil, diesel, fuel, or hydraulic fluid.
- Machinery or equipment used on the mining area must not constitute a pollution hazard. The ECO shall order such equipment to be repaired or withdrawn from use if he or she considers the equipment or machinery to be polluting and irreparable.
- The washing of equipment and vehicles shall be restricted to urgent or preventative maintenance requirements only. All washing shall be undertaken in a wash bay area which must be equipped with a suitable impermeable floor and sump / oil trap.

14.3.4.3 Waste disposal

- Suitable waste disposal containers shall be made available at all times and conveniently placed for the disposal of waste.
- Collected waste shall be separated into the different categories of hazardous, general waste and construction rubble.
- Separate waste containers for the different waste categories shall be provided and located in the maintenance areas.
- Containers shall be easily distinguishable (i.e. different colors etc)
- Waste containers shall be provided with lids or netting to prevent waste from being disturbed by scavengers or being blown away by wind.
- Waste shall be removed from site on a regular basis.
- All used oils, grease or hydraulic fluids shall be placed therein and these receptacles will be removed from the site on a regular basis for disposal at a registered or licensed waste disposal facility. Records of safe disposal shall be kept on site and presented to the ECO.
- All spills should be cleaned up immediately to the satisfaction of the ECO by removing the spillage together with the polluted soil and by disposing of them at a licensed waste disposal facility

14.3.4.4 Rehabilitation of vehicle maintenance yard and secured storages areas.

- On completion of mining operations, the above areas shall be cleared of any contaminated soil, which must be disposed of at a licensed waste disposal facility. Records of safe disposal shall be kept on site and presented to the ECO.
- All buildings, structures or objects on the vehicle maintenance yard and secured storage areas shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002.

- The surface shall be ripped or ploughed to a depth of at least 300mm and topsoil previously removed from these areas shall be spread evenly to its original depth over the whole area.
- The area shall then be fertilized if necessary in order to assist re-establishment of the vegetation and then be seeded with an indigenous grass seed mix.

14.4 Operational Procedures

14.4.1 Limitations on mining

- Mining shall be limited to the areas indicated on the mining plans for each individual borrow pit.
- The contractor shall ensure that operations take place only in the demarcated areas.
- Operations/mining excavations will not be conducted within 32 m of a drainage line.
- Security must be put in place to prevent unauthorized access to the site.
- The entire mining area is to be fenced.
- Appropriate warning signage is to be erected around the mining area.

14.4.2 Water Use License

- If any surface or groundwater abstraction is needed then applications for a water use license must be made in terms of the National Water Act, (Act 36 of 1998)
- Approval(s) must be granted by the Department of Water Affairs prior to any abstraction taking place.
- Conditions contained in the approval(s) must be strictly adhered to.
- The appropriate license forms for each kind of expected water use should be completed together with supporting documentation.

14.4.3 Excavations

Whenever any excavation is undertaken the following operating procedures shall be adhered to:

- Topsoil shall, in all cases be handled as described in this EMP.
- Excavations shall take place only within the approved demarcated mining area as indicated in the mining plans.
- Overburden rocks and coarse material shall be placed concurrently in the excavations or stored adjacent to the excavation, if practicable, to be used as backfill material once mining operations have ceased.
- Trenches shall be backfilled as soon as possible.
- Areas of expected increased surface runoff along the down-slope borders of the excavation areas (i.e. areas natural runoff may be concentrated) shall be suitable stabilized using gabions and/or rock material. These areas shall be maintained until the borrow pits have been fully rehabilitated.

- Where blasting may be required, the appropriate measures and blasting permits in terms of Explosives Act and Occupation Health and Safety Act (Regulations) must be undertaken.

14.4.4 Rehabilitation of excavation areas

The following operating procedures shall be adhered to during the rehabilitation of excavation areas:

- The excavated area must serve as a final depositing rocks and coarse material not used in the road construction.
- Waste material (general waste, litter, etc) shall not be deposited in the excavations.
- Once excavations have been refilled and profiled with acceptable contours and erosion control measures, the topsoil previously removed shall be returned to form a layer no less than 50mm. If insufficient topsoil is available, then it must be imported from elsewhere if such material is available.
- The area shall be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with an indigenous grass seed mix in order to propagate the locally or regionally occurring vegetation.
- Near vertical slopes (1:1 to 1:2) must be stabilized using natural rock wall structures constructed using conventional building methods or in forms with slurry forced between the structures. All structures must have a 'natural' look and facilities for plants to grow in.
- All areas where the slopes are 1:3 to 1:6 must be logged or otherwise stepped (using stabilization cylinders or similar) in order to prevent soil erosion. Logs/ cylinders must be laid in continuous lines following the contours and spaced vertically 0.8-1.2 m apart, depending on the steepness of the slope. These logs/ cylinders must be secured by means of steel pegs and wire in rocky areas, and treated wooden pegs in other areas.
- The post-mining area must be fenced off in order to prevent access by livestock until such time that the vegetation has been allowed to establish sufficiently.
- The site must remain fenced with warning signs erected to caution the general public of the altered state of the environment in the area. Drainage structures must also be left intact.
- No dangerous faces which present a safety threat to communities should be left.

14.5 Vegetation Removal and Habitat Disturbance

- Natural features, indigenous flora and fauna within the vicinity of the project works, should be protected and damage or disturbance prevented or minimised, specifically:
 - No plant species outside of the designated mine site and associated areas may be removed.

- No mining staff may have access to indigenous vegetation outside the boundaries of the Site.
- The use of indigenous plants as firewood is prohibited.
- All fauna (including domestic livestock) within, and surrounding the site, shall be protected. They shall not be caught, poisoned, trapped, snared or killed.
- The minimum amount of vegetation must be removed. Excessive clearing of a site must be avoided. Disturbance outside of the immediate construction area must be avoided.
- Replanting of these or other indigenous species in disturbed areas will be required, under the guidance of the Environmental Controller.
- Planning and construction must ensure that alien plants are not introduced to the disturbed areas. This can be accomplished by:
 - Utilizing the saved topsoil from the construction area and regular monitoring during the revegetation phase and immediately after the revegetation phase.
 - Preventing continuous disturbances of the rehabilitated areas.
 - Alien invader species must be removed from the site and destroyed as per the DWAF Working for Water specifications for that species.
 - Any regrowth must be controlled in the same manner.
 - Soil should not be moved from one part of the site to another unnecessarily.

14.6 Surface Waters/Drainage Lines

- Site staff shall not be permitted to use the stream/drainage lines/water bodies for the purpose of bathing, washing of clothing or as a water resource.
- The stream/drainage/inland water bodies lines shall not be used for mining activities such as washing of equipment or the disposal of any type of waste.
- Water may not be abstracted from the stream for any reason or use, unless authorised by the Department of Water Affairs.
- All fuel, chemical, oil storage areas shall be confined to areas at least 100 meters away from any watercourse and/or drainage line and is to be secured and appropriately stored on bund areas and in storage areas.
- Appropriate structures and methods to confine spillages such as the construction of berms and pans shall be used in order to prevent contamination of the rivers and streams.
- Release of chemicals directly into the environment is strictly prohibited.
- Waste should be managed and removed from site on a regular basis and the use of degreasing agents should be strictly prohibited.
- Illegal dumping of construction material within the Drainage Environment is strictly prohibited.

- No mining activities are to be allowed within 32 m of the drainage lines.

14.7 Stormwater Management

The general principal behind stormwater management is to divert runoff away from the mining area in such a manner as to prevent any erosion from resulting and to contain the “dirty” runoff within the mining area before releasing it into the environment.

“Dirty” water runoff refers to stormwater runoff which has collected within the disturbed areas and accumulated a high sediment load as a result of the exposed soils and underlying weathered rock. Other than a high sediment load, there is unlikely to be any other form of contamination of the runoff.

- No rock, silt, petroleum product, timber, vegetation, domestic waste, or any deleterious substance shall be placed or allowed to disperse directly into the drainage lines.
- Halt construction activity on exposed soil during events of high rainfall intensity and runoff.
- Minimise vegetation cover removal on all the cleared areas - i.e. only clear those areas where mining and stockpiling is currently taking place.
- Diversion berms with energy dissipation beds should be installed down slope of the mining area to filter out any sediment washed off the site during heavy rainfall.
- Water that has been contaminated with suspended solids, like soils and silt, may be released into natural watercourses. However, all suspended solids shall be removed from water before it is discharged by settling out these solids.
- Soil erosion shall not be tolerated on the Site. Uncontrolled erosion will cause siltation and pollution of the downstream areas and result in loss of valuable topsoil. The Contractor should take all reasonable measures to prevent soil erosion and protect areas susceptible to erosion. Erosion prevention measures must be implemented to the satisfaction of the ECO and DMR.
- Areas particularly susceptible to erosion include:
 - areas stripped of topsoil,
 - soil stockpiles, and
 - steep slopes (gradients > 8%).
- Where erosion does occur, the Contractor shall reinstate such areas to the satisfaction of the DMR through the construction of contour berms, cut-off drains, or planting of grass sods / ground cover, as may be necessary. Topsoil that has been washed away shall be replaced.
- The berms will remain in place after closure in order to allow for the protection of the downstream environment from sedimentation and erosion which may arise during the rehabilitation period prior to the establishment of adequate grass cover.

14.8 Air Emissions

- Minimise areas of exposed soil by only clearing those areas where mining or stockpiling is activity taking place and by re-vegetating the mining and stockpiling areas progressively where possible.
- Fine material must be kept to a minimum by practicing good housekeeping. All fines should be removed to the spoils area and covered with overburden and vegetated accordingly.
- Employ dust suppression measures on dry dusty surfaces. This may involve the spraying of water from water carts.
- Ensure fine materials being stored or transported are covered with tarps or equivalent material.
- Ensure that the district road accessing the site is maintained in a good condition with a suitable gravel surface. Heavy trucks may lead to the pulverizing of the gravel and increase the amount of dust produced.
- Operators exposed to high levels of dust (including cement dust) must be equipped with dust masks. This is a health and safety requirement and must be managed via the mine's Health and Safety Plan.
- Ensure all equipment is in good operating order, and fitted with standard air emission control devices.
- Wet methods must be enforced when rock breaking, drilling and loading take place.
- Minimise idling of engines at all times.

14.9 Noise Management

- No nighttime activities are to take place.
- All activities with high noise levels should be restricted to daylight hours on weekdays. Working hours are Monday to Friday 6 am - 6.00 pm and Saturdays 7am - 2pm.
- All operators exposed to noise in excess of 85dB will be equipped with hearing protection devices.
- The Contractor shall take the necessary measures to limit noise levels on site to within legally acceptable limits. The regulations framed under the Machinery and Occupational Safety Act, 1983 (Act No. 6 of 1983) apply.
- All vehicles to be kept in a serviceable condition and fitted with silencers.
- Any warning hooters be so designed that they are only effective in the area of concern.
- Where possible physical barriers are to be placed between noise sources and the community.

14.10 Visual Quality

- Protect and maintain the vegetation not required to be removed as a natural screen.
- Ensure that any signage (i.e. at entrance gate of construction camp site) is visible but not visually intrusive.

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- Ensure good housekeeping and control litter and general site cleanliness. The construction camp should be so sited so as to limit its visual impact.
 - Ensure that adequate ablution facilities are in place, that the workforce utilises these facilities and that they are placed where they are not visible to the public.
 - Workforce shall be dressed in appropriate neat and safe construction uniforms.
 - Bright colours shall only be used for the safety issues for which they are intended.
 - Safety lighting should only be used for the safety issues for which they are intended.
 - Only emergency after-hours work should be done.
 - Rehabilitation of Borrow pits after utilisation must be undertaken to decrease visual impact

14.11 Health and Safety (safety of all contractors, employees and the general public)

- The Contractor shall have a first aid box and a trained First Aider (as required by the OHS Act) available on site at all time.
- Potable (human drinking quality) drinking water shall be provided to all construction crews at all times.
- The Contractors (and all sub-contractors) shall provide all their employees (permanent, contracted or casual) with:
 - Overall that have a reflective strip across the back, and around both legs
 - Steel capped safety boots
 - Hard hats
 - These are to be worn on the site at all times
- Visitors shall not move around the site unaccompanied.
- The contractor shall ensure that all construction vehicles using public roads are in a roadworthy condition, they adhere to speed limits, their loads are secured and that all other regulations are adhered to.
- The mining area must be placed out of bounds to members of the public and other unauthorized persons.
- Security must be put in place to prevent unauthorized access to the site.
- The entire mining area is to be fenced.
- Appropriate warning signage is to be erected around the mining and processing area.
- The contractor will be required to develop a Health and Safety Plan identifying all potential health and safety hazardous and providing a plan and programme for the management and monitoring of these risks.

14.12 Emergency Procedures & Remediation

- Emergency procedures must be developed for the following incidents:
 - Fire
 - Spillage of Hazardous Materials (fuel, chemicals, sewage etc)
- It is the Contractor's responsibility to develop the emergency action plans. These must be checked and approved by the ECO and by DMR.

14.13 Fire Risk & Burning

- The Contractor shall take all the necessary precautions to ensure that fires are not started on site.
- The Contractor shall develop a Fire Management Procedure and present it to the ECO for review.
- The Contractor shall ensure that the risk of fire at any location on site is kept to a minimum.
- The Contractor shall ensure that all construction staff are aware of these procedures.
- The Contractor shall supply fire fighting equipment in proportion to the fire risk presented by the type of activity and materials used on site.
- This equipment shall be kept in good working order.
- No open fires shall be allowed on site or on the route. Gas cylinder shall be provided for daily cooking. A designated facility must be established to serve as a kitchen/food preparation area.
- Any welding or other sources of heating shall be done in a controlled environment and under appropriate supervision, in such a manner as to minimise the risk of veld fires and/or injury to staff.
- Occupational Health & Safety Act requirement relating to fire precautions and fire control shall be implemented.
- All waste bins shall be kept away from fuel tank installations.
- Smoking near refueling depots or near any flammable substances shall be prohibited.

14.14 Accidental leaks & spillages

- An Emergency Action Plan and Procedure for the prevention and remediation of spillages of hazardous substances shall be developed by the Contractor. This must include clear roles & responsibilities.
- The Contractor shall ensure that his employees are aware of the procedure to be followed for dealing with spills and leaks, which shall include the immediate notification of the Project Manager, ECO and the relevant authorities.
- The Contractor shall ensure that the necessary materials and equipment for dealing with spills and leaks is available on site at all times.
- Potentially hazardous materials shall be handled and stored on site in containers with tight lids that shall be sealed and disposed of at an appropriately permitted hazardous waste disposal site.

-
- The Contractor shall maintain a hazardous materials register which must document the use, storage, final destination and method of disposal of all hazardous substances.
 - The contractor shall submit copies of Material Safety Data Sheets (in accordance with the requirements of the OHS Act - i.e. sixteen point MSDS format) to the ECO. Copies shall also be kept on site.
 - Treatment and remediation of the spill areas shall be undertaken to the reasonable satisfaction of the DMR.
 - In the event of a hydrocarbon spill, the source of the spillage shall be isolated and contained (i.e. be protected from rainfall and surface runoff). The Contractor shall ensure that there is always a supply of absorbent material readily available to absorb / breakdown spilt hydrocarbon material and where possible, materials designed to encapsulate minor hydrocarbon spillage. This is particularly relevant in the fuel storage and dispensing area.
 - The quantity of such materials shall be able to handle a minimum of 200liters of hydrocarbon liquid spill.
 - The telephone numbers for the closest Hazardous Materials Emergency Response offices should be prominently displayed as bitumen and diesel spillage frequently occur on mining sites. A swift cleanup procedure is critical in order to prevent contamination.

14.15 Archaeology, Palaeontology & Heritage Sites

- All finds of human remains shall be reported to the nearest police station.
- Human remains from the graves of victims of conflict, or any burial ground or part thereof which contains such graves and any other graves that are deemed to be of cultural significance may not be destroyed, damaged, altered, exhumed or removed from their original positions without a permit from the South African Heritage and Resource Agency (SAHRA)
- Work in areas where artifacts are found shall cease immediately and SAHRA notified.
- Under no circumstances shall the Contractor, employees, subcontractors or subcontractors' employees remove, destroy or interfere with archaeological artifacts.
- Any person who causes intentional damage to archaeological or historical sites and/or artifacts could be penalized or legally prosecuted in terms of the national Heritage Resources Act 25 of 1999.
- A fence of at least 3m outside the extremities of the site shall be erected to protect archaeological sites.
- All known and identified archaeological sites shall be left untouched.
- In terms of the National Heritage Resources Act (Act 25 of 1999), in the event that any object or material of archaeological or palaeontological importance is noted during the construction &

operational process, work in the immediate area should be immediately stopped and SAHRA notified without delay. Should any such sites be identified (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, marine shell and charcoal/ash concentrations), unmarked human burials or other categories of heritage resources are found during the proposed activities, SAHRA APM Unit (Mariagrazia Galimberti, Tel: 021 462 4502) must be alerted immediately, and an accredited professional archaeologist must be contacted as soon as possible to inspect the findings.

- Should substantial fossil remains (notably articulated vertebrate skeletons or skulls) be exposed during construction, however, the ECO should safeguard these - in situ, where feasible. SAHRA and / or a professional palaeontologist should then be alerted as soon as possible so that appropriate mitigation measures can be implemented.

14.16 Socio-economic

- A targeted procurement policy to be implemented at the mine whereby goods and services should be sourced locally if possible.
- Labour where feasible should be drawn from the affected community.

14.17 Community Relations

- The Contractor shall keep a "Complaints Register" on Site. The Register shall contain all contact details of the person who made the complaint, information regarding the complaint itself, and measures taken to address the complaint.

14.18 Work Stoppage

The DMR shall have the right to order work to be stopped in the event of significant infringements of the Environmental Specifications. Work will only be allowed to restart once the situation is rectified in compliance with the specifications.

14.19 Site Closure/Decommissioning

The Applicant, the Mbashe Local Municipality, shall be responsible for the complete rehabilitation of the site, access roads, site camp / office, stockpile area, ablution facilities and storage areas.

- All site infrastructure, equipment, and other items used during the mining period will be removed from the site in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 and those areas will be ripped and then covered with a 50mm thick layer of topsoil. Those areas will then be seeded with a mix of grasses indigenous to the area.

- All waste shall be removed from site. It will not be permitted to be buried or burned on the site.
- All access roads or portions thereof, constructed by the holder shall be removed/ripped and/or rehabilitated in order to represent the former habitat.
- Foreign materials, which may hamper the re-growth of the vegetation, must be removed prior to rehabilitation and disposed of at a licensed waste disposal site.
- All cleared sites are rehabilitated with indigenous grass species.
- The mine must conform to the designed closure specifications, including drainage, slope stability, topsoiling and grass planting.
- Drainage structures must be left intact.
- Areas showing signs of erosion due to mining activities shall be suitably stabilized or rehabilitated.
- All ablution facilities shall be removed from site.
- The mine area will be fenced with a stockproof fence to prevent access by livestock until such time that the vegetation has been allowed to recover. No dangerous faces which present a safety threat to communities will be left.
- All signs relating to the mining activities shall be removed.
- All areas, devoid of vegetation or where solids have been compacted due to traffic, shall be scarified or ripped before rehabilitation to allow penetration of roots and water.
- The remaining boulders and spoil will be pushed up against the slopes of the mine face. That rock material will be covered with overburden (decomposed rock) and a 50cm thick layer of topsoil and then seeded. The borrow pit will be rehabilitated to a stock watering dam, alternatively if surface water is proved to not accumulate within the borrow pit, then the borrow pit must be rehabilitated to represent its former landuse.
- Final rehabilitation shall be completed within a period specified by DMR and should take cognizance of the season.

15 Quantum of Financial Provision for Rehabilitation

The Quantum of Financial Provision has been calculated using DME's Guideline Document for the Evaluation of the Quantum of Closure-Related Financial Provision Provided by a Mine (2005) as a guideline.

In terms of this guideline the borrow pits classify as Class C Mines (low risk) of low to moderate sensitivity.

The Financial Provision calculated for the rehabilitation of the borrow pit using this guideline has been calculated to be R23,000.00. The Letter of Financial Provision from Mbhashe Local Municipality is retained in section 20 of this report.

16 Monitoring & Performance of the EMP

In order to ensure that this Environmental Management Plan is effectively implemented, it is important that regular external audits of the Environmental Management Plan are conducted.

The Mbhashe Local Municipality must appoint an independent Environmental Control Officer (ECO) in order to oversee compliance with the EMP by undertaking monthly site inspections, quarterly audits and post construction/operation site visits. The audits shall aim at addressing environmental issues identified on site and to provide recommendations through the audit reports.

Audit Reports shall be provided to Department of Roads and Public Works, the Project Managers/Engineers, and the Department of Mineral Resources (DMR).

17 Environmental Objectives and Goals

17.1 Mine Closure

The overall Environmental Objective for mine closure is as follows:

To render the mining area in a safe and environmentally acceptable condition on completion of the mining, rehabilitation and closure activities.

Specific Environmental Goals include:

- To rehabilitate the mining area, to preferably a stock watering dam for the surrounding community, if this is not feasible then as closely as possible to its original condition and land use through the shaping and landscaping of the surface and through the establishment of an indigenous grass cover emulating the surrounding environment.
- To minimize the residual impacts through ensuring that erosion is controlled, the slopes are stable, the vegetation cover is established satisfactory and that the area is left in a condition which does not pose a safety hazard to humans, livestock and indigenous fauna.
- To minimize the visual impacts of the mine on closure by way of landscaping and the establishment of an indigenous grass cover emulating the surrounding environment
- To obtain the necessary Mine Closure Certificates from the Department of Mineral Resources.

17.2 Socio-Economic Aspects

The specific objective related to the Socio-Economic aspects is as follows:

To contribute significantly and meaningfully towards the economic and social development of the surrounding communities within the Mphashe Local Municipality.

Specific goals include:

- To maximize the benefits to the local economy through the provision of employment opportunities and support of local service providers and suppliers wherever possible.
- To institute a training programme for all staff members in order to improve skills development in the area.
- To improve the safety aspects of the road for road users and pedestrians.
- To encourage further economic development through exploring partnerships with local individuals and groups in the establishment of further beneficiation businesses.

17.3 Archaeological, Palaeontological & Heritage Aspects

The specific objective related to the Archaeological, Palaeontological & Heritage Aspects is as follows:

“To identify, protect and preserve any sites of cultural, religious, palaeontological or archaeological significance”

Specific goals include:

- To ensure that any identified sites are properly protected in accordance to the National Heritage Resources Act.

- To ensure that any further sites that may be discovered are identified timeously and protected in accordance to the National Heritage Resources Act.

18 Public Participation

18.1 Advertisement

- Public participation was initiated by the placement of a Legal Notice (English and Xhosa) in the regional daily newspaper, The Daily Dispatch on 21 February, 2011 (Appendix A). The general public were given 30 days (from 21 April, 2011) to register as Interested & Affected Parties and to submit any issues / concerns they might have regarding this proposed project/ utilization of the borrow pit.
- A signboard, in English and Xhosa, was erected at the borrow pit, on 18 February, 2011, in order to notify the general public and passers-by of the proposed utilization of borrow pits in the vicinity and the construction of the access roads (Appendix B).

18.2 Key Interested and Affected Parties

- A Letter of Notification and Background Information Document was posted via registered mail to the person in control of the land, Traditional Leader - Chief Manixiwe, in which the proposed borrow pit is located informing him of the proposed activity on 21 February, 2011.
- A Letter of Notification and Background Information Document was e-mailed to the Landowner/person in control of the land, Department of Rural Development and Land Reform - District Manager Mr Hlopekazi, in which the proposed borrow pit is located informing him of the proposed activity on 21 February, 2011.
- Notice of the activity and background information document was posted via registered mail to Advocate Sipiwo Sohena, the Municipal Manager for Mbashe Local Municipality on 21 February 2011.
- A Background Information Document was posted via registered mail to the Mbashe Local Municipality Buildings in Dutwya for Cllr Mapungu, the Mbashe Municipality Ward Councillor for ward number 23 on 21 February, 2011. The proposed borrow pit is located in ward 23.
- Identified Key Interested and Affected Parties (Table 8) were either e-mailed or posted via registered mail the notification of the proposed utilization of the borrow pit and the Background Information Document for this activity on 21 February, 2011.
- All email and/or hard copy correspondence received from and issued to key I & AP's is retained in Appendix C.

18.3 Interested and Affected Parties

No Interested and Affected Parties registered in response to the advertisement and/or signage.

Table 8: Identified Key Interested & Affected Parties.

Borrow Pit, south east of Willowvale - Key I & AP's							
	Name		Tel/Fax		Mobile/Email	Postal	Comments
1	Advocate Siphiso Sohena	Tel:	(047) 489 5800	Mbl:		Mbhashe Local Municipality, PO Box 25, INDUTYWA, 5000 3 Kiddley Street, INDUTYWA	Mbhashe Municipality: Municipal Manager
		Fax:	(047) 489 1137	Eml:			
2	Mr Mgwentshe	Tel:	(047) 489 5800	Mbl:		Mbhashe Local Municipality, PO Box 25, INDUTYWA, 5000 3 Kiddley Street, INDUTYWA	Mbhashe Municipality: Technical Services
		Fax:	(047) 489 1137	Eml:			
3	Cllr Mapungu	Tel:		Mbl:	728084165	Mbhashe Local Municipality, PO Box 25, INDUTYWA, 5000	Mbhashe Municipality: Ward 23 Councillor
		Fax:		Eml:			
4	Ms Deidre Watkins	Tel:	041 396 3900	Mbl:		Department of Minerals and Energy Private Bag X6076 Port Elizabeth 6000	Deputy Director : Mine Environment Management
		Fax:	041 396 3945	Eml:	Deidre.Watkins@dmr.gov.za		
5	Jimmy Calder, Phillip Wilkinson	Tel:	043 748 6246	Mbl:	082 900 0840	P O Box 2909, Beacon Bay, 5205	WESSA
		Fax:		Eml:	Jimmy [jimjan@iafrica.com], phillip@wessabk.co.za		
6	Ms. Mariagrazia Galimberti	Tel:	(0)21 462 4502	Mbl:		South African Heritage Resources Agency, PO Box 4637, Cape Town 8000	APM Impact Assessor
		Fax:	(0)21 462 4509	Eml:	mgalimberti@sahra.org.za		
7	Andrew Lucas	Tel:	043 701 0228	Mbl:		Department of Water Affairs and Forestry PO BOX 7019, EL, 5200	Department of Water Affairs - Eastern Cape
		Fax:	043 722 6152	Eml:	lucasa@dwaf.gov.za		
8	Mr. Nico Jonker	Tel:	043 701 4000	Mbl:		Amathole District Municipality, 40 Cambridge Street, East London, Eastern Cape, South Africa, 5200, P O Box 320, East London, Eastern Cape, South Africa,	ADM Director: Engineering
		Fax:	043 742 0337	Eml:	nicoj@amatoleadm.co.za		

						5200	
9	Vuyo Mlokoti	Tel:	043 701 4000	Mbl:		Amathole District Municipality, 40 Cambridge Street, East London, Eastern Cape, South Africa, 5200, P O Box 320, East London, Eastern Cape, South Africa, 5200	ADM: Municipal Manager
		Fax:	043 742 0337	Eml:			
10	Amathole District Municipality (Kamva Qwede)	Tel:	042 701 4097	Mbl:	083 387 2199	P O Box 320, East London, Eastern Cape, South Africa, 5200	ADM
		Fax:	043 722 0539	Eml:	kamvaq@amatoleadm.co.za		
11	Mr. Mbulelo Songqishe	Tel:	043 705 4301	Mbl:	0836568984	EC Department of Roads and Public Works, Private Bag X 13004, Cambridge, 5201 Eastern Cape	Regional Manager
		Fax:		Eml:	mbulelo.songqishe@dpw.ecape.gov.za		
12	Mr M. Hlopekazi	Tel:	043 722 1762	Mbl:		Department of Rural Development & Land Reform P.O.BOX 1958 East London 5201	Department of Rural Development & Land Reform: Amathole District Manager
		Fax:	043 722 1788	Eml:	mhlopekazi@ruraldevelopment.gov.za		
13	Chief Manixiwe	Tel:		Mbl:	083 741 5662	PO BOX 15, Willowvale, 5040	Traditional Leader - Qwaninga LOC 15
		Fax:		Eml:			
14	Briant Noncembu	Tel:	043 707 4000	Mbl:		Private bag X 9060 East London 5200	DEDEA - Amathole Region
		Fax:		Eml:	Briant.Noncembu@deaet.ecape.gov.za		

Table 9: Summary of comments received from Key I & AP's

Name	Comments	EAP Response
Chief Manxiwa	<ul style="list-style-type: none"> To attend all site meetings so as to observe and assist in small conflicts and disputes 	<ul style="list-style-type: none"> Comment Noted. Contractor to contact Chief Manxiwa if this occurs.
Amathole District Municipality (Kamva Qwede)	<ul style="list-style-type: none"> Register the institution as an I & AP and update on the developments of the assessment process and furnish with all associated documentation 	<ul style="list-style-type: none"> Amathole District Municipality registered as an I & AP. As such all documentation will be sent to them.
SAHRA: Dr Galimberti	<ul style="list-style-type: none"> SAHRA archaeology, palaeontology & meteorite unit has no objection to the proposed utilisation of the borrow pit. If any new evidence of archaeological sites or artefacts, paleontological fossils, graves or other heritage resources are found during mining activities then SAHRA must be alerted immediately and a professional archaeologist contacted to inspect the findings. 	<ul style="list-style-type: none"> Comments Noted

18.4 Public Draft Environmental Management Plan




Electronic Copies (in Adobe PDF format and cut to Compact Disk) or Hard Copies of the Public Draft Environmental Management Plan Report were posted via parcel mail or hand delivered to Key Interested & Affected Parties. These Interested & Affected Parties were given thirty (30) days (excluding public holidays) from date of mailing in which to make any further submission. The commenting period thus commenced on the 18 April 2011 and ended on 23 May 2011, 17h00. All correspondence issued to and received from Key Interested and Affected Parties during this public review commenting period is retained in Appendix C. No comments were received during the public draft environmental management plan report commenting period.

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19 Mining Plan

Electronic Adobe PDF Version Only

DOUBLE CLICK the PAPER CLIPS here to access the reports.

Borrow pit: Mining plan	
BP Willowvale Design PG1	
BP Willowvale Design PG2	



Hardcopy/Paper Version - See overleaf

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20 Letters of Financial Provision & Undertaking

Electronic Adobe PDF Version Only

DOUBLE CLICK the PAPER CLIPS here to access

Letter for Financial Provision - Mbashe Local Municipality	
Letter of Undertaking - Mbashe Local Municipality	

Hardcopy/Paper Version - See overleaf

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21 Appendix A: Advertisement placed in Daily Dispatch

Daily Dispatch, Monday, February 21, 2011

Legal Notices

NOTICE/ ISAZISO
 Notice is hereby given in terms of the Regulations of the Minerals and Petroleum Resources Development Act (No. 28 of 2002) of intent to carry out the following activity/Esi saziso sikhutshwa phantsi kwesaziso somgaqo ne Minerals akunge ne Petroleum Resources Development Act (No. 28 of 2002) nezihlomelo zawo zokwenza oku kulandelayo:

Activity/Umsebenzi ozakwenziwa:
 The proposed utilisation of a borrow pit/Nentsebenzi sawo yokubolaka umlindi

Location/Indawo:
 South East of Willowvale, Eastern Cape
 GPS Co-ordinate: 32,31617°S, 26,54536°E

Proponent/Abanikazi zimemo:
 Mbashe Local Municipality
 PO Box 25, INDUTYWA, 5000

Consultant/Umniki macebiso:
 BESC
 PO Box 8241, Nahoon, 5210
 Lee-Anne Proudfoot
 Tel: (043) 726 4242
 Fax: (043) 726 3199
 Mobile: 083 4213991
 Email: lee-anne@besc.co.za

In order to ensure that you are identified as an interested or affected party, please submit your name, contact information, and interest in the project, to the Consultant within 30 days of this advertisement.
 Ukuba unqwenela ukuba unqwenela njononnye onomdla nochaphezilekayo, nceda faka igama lakho, nenkcukacha apho unokuqhagamshelaka khona, nento ekutshelwayo nekuchaphazelayo kolu-phuhliso, uyigqithise kumnikhi- Macebiso zingadlulanga iintsuku ezi mashumi mathathu (30 days) sibhengezwe esi saziso.

Date of Advertisement /Umhla wokubhenezeza:
 21 February 2011

Figure 12: Daily Dispatch Advertisement.


22 Appendix B: Signage placed at the Borrow pit



Figure 13: Signboard.

23 Appendix C: Public Participation

23.1 Correspondence issued to and received from Key I & AP's during the public participation process



BIOTECHNOLOGY & ENVIRONMENTAL SPECIALIST CONSULTANCY CC

PO Box 8241, Nahoon, 5210, East London South Africa
9 Douglas Road, Vincent, 5247, East London, South Africa
Telephone: +27 43 726 4242 Facsimile: +27 43 726 3199
E-mail: info@besc.co.za <http://www.besc.co.za>

Leaders in Industrial Ecology, Environmental Impact & Site Assessments
& Safety, Health & Environmental Management Systems

February 11, 2011

Ms. Deidre Watkins
Deputy Director: Mine Environment Management
Department of Minerals and Energy
C/o of Mount & Diaz Roads
Mount Croix
Port Elizabeth
6001
Tel: (041) 3963934
Fax: 086 576 8004

RE: The proposed utilisation of an existing borrow pit, located near Willowvale), Eastern Cape.

We have been appointed by UWP Consulting on behalf of the Amathole District Municipality to undertake the permitting required for the proposed utilization of an existing borrow pit located south east of Willowvale. This existing borrow pits is located at the following GPS co-ordinates:
BP 1 – 32.31817°S and 28.54535°E

Please could you assist me in determining if this borrow pit has been previously licensed. In addition, please could you confirm if the Amathole District Municipality is exempt from the application process as has been allowed for in the Minerals and Petroleum Resources Act? If they have been exempted, can I confirm that only a Environmental Management Plan would be required to be submitted to DMR for approval.

Your assistance in the above regard will be much appreciated. Please feel free to contact me directly for any further queries.

Yours Sincerely
Lee-Anne Proudfoot
(Pr.Sci.Nat – Environmental Scientist)
Senior Environmental Consultant

Mobile: +27 83 421 3991
Email: lee-anne@besc.co.za

Malcolme Logie

B.Sc. Hons. (Botany), M.Sc. (Botany), Ph.D. (Biotechnology), (Rhodes)
CEAP-SA; MSAIE & ES; MIAIA; Pr.Sci.Nat.(Environ.Sci.)
CK 95.10210/23

Page 1 of 1

Subject: RE: Utilisation of a Borrow pits - south east of Willowvale

Hi Lee-Anne,

I will forward your email to the Assistant Director : System Development and Maintenance, Siyanda Lurwenga, to check whether the borrow pit has been licenced. Please note that our database extends from the implementation of the MPRDA (28 of 2002), and so we only can verify spatially for applications received from 2004. You thus need to also check with the DRPW whether they are utilizing the BP and whether they have authorization prior to 2004.

With respect to your other queries, the Amatole DM has not yet received exemption from the application process. However, they simply need to submit a letter to the DMR indicating that they wish to apply for exemption in terms of section 106 from the application process. This exemption can be processed simultaneously with the application. But the sooner the letter is sent in the better because the application cannot be authorized before exemption is issued.

In terms of the EMP, I can confirm that all you need to submit is the EMP (7 copies) for the application, together with proof of consultation and a copy of the letter from the district municipality indicating that they wish to apply for exemption.

Hope this assists.

Thanks.

Best regards,

Deidre

Hi Siya,

Please can you check the database and indicate to Lee-Anne whether the borrow pit has been authorized for the following location:

32.31817 degrees S

28.54535 degrees E

Thanks Siya.

Best regards,

Deidre

From: lee-Anne Proudfoot [mailto:lee-anne@besc.co.za]

Sent: Monday, February 14, 2011 9:34 AM

To: Deidre Watkins

Subject: RE: Utilisation of a Borrow pits - south east of Willowvale

Hi Deidre,

Thank you for coming back to me. My apologies, I made a mistake with the applicant, it is actually the Mhashe Local Municipality. I have been informed that they do have exemption. Thus only an EMP required. Is this correct?

Kind Regards

Lee-Anne

Ms Lee-Anne Proudfoot
Senior Environmental Consultant
(Pr. Sci. Nat. – Environmental Scientist)

From: Deidre Watkins [Deidre.Watkins@dmr.gov.za]

Sent: 14 February 2011 09:37 AM

To: lee-Anne Proudfoot

Subject: RE: Utilisation of a Borrow pits - south east of Willowvale

Yes, they do have exemption – so just the EMP and proof of consultation.

Thanks.

Best regards,

Deidre

From: Siyanda Lurwenga [Siyanda.Lurwenga@dmr.gov.za]
Sent: 16 February 2011 10:38 AM
To: lee-anne@besc.co.za
Subject: FW: Utilisation of a Borrow pits - south east of Willowvale
Good day lee-Anne

The correspondence from Deidre refers,

I have entered the coordinates you provided into our database and I can confirm that as per the records of this office there is no existing, nor are the any pending authorizations that are situated over the area given by the submitted coordinates. The provided coordinates indicated that the area is situated near Guxuxu at Mbashe LM, Idutywa.

Thanks.

Regards,
Siyanda

From: lee-Anne Proudfoot [lee-anne@besc.co.za]
Sent: 18 February 2011 03:22 PM
To: 'Deidre Watkins'
Subject: Utilisation of a borrow pit - south east of Willowvale
Dear Deidre,

Please find attached the background information document for the proposed utilisation of an existing borrow pit, south east of Willowvale, Eastern Cape.
This serves to notify you that we have been appointed to compile the Environmental Management Plan and will be initiating public participation on 21 February 2011.

The permitting of the materials sources required for the project will be undertaken in accordance with the Minerals and Petroleum Resources Development Act (M&PRDA) (No. 28 of 2002). As previously confirmed, since the proponent, Mbashe Local Municipality, has been exempted in terms of the provisions of the M & PRDA, an Environmental Management Plan will be compiled for submission and approval from the DMR for the utilisation of the identified borrow pit.

Kind Regard

Lee-Anne

Ms Lee-Anne Proudfoot
Senior Environmental Consultant
(Pr. Sci. Nat. – Environmental Scientist)

From: Deidre Watkins [Deidre.Watkins@dmr.gov.za]
Sent: 22 February 2011 11:47 AM
To: lee-Anne Proudfoot
Subject: RE: [WARNING: MESSAGE ENCRYPTED]Utilisation of a borrow pit - south east of Willowvale
Morning Lee-Anne,

Sorry I am only replying now, but our email has been down and has only been restored this morning. BID document received and noted. Thanks for the info – once the application is received I will organize an inspection. Please ensure that the Municipality are aware that they will be required to submit rehabilitation monies either in the form of a cash deposit or financial guarantee. Most of the Municipality applications are refused because they fail to submit the financial provision on time. Thanks.

Best regards,
Deidre

From: Deidre Watkins [Deidre.Watkins@dmr.gov.za]

Sent: 23 March 2011 08:58 AM

To: lee-Anne Proudfoot

Subject: RE: [WARNING: MESSAGE ENCRYPTED]Utilisation of a borrow pit - south east of Willowvale

Hi Lee-Anne,

As discussed yesterday, the Department of Mineral Resources can confirm the following with respect to the Mbashe LM borrow pits:

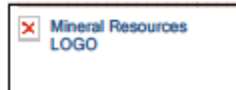
- It is acceptable for the borrow pit to be rehabilitated to the stage where it can be used as a stock watering hole. However, rehabilitation measures will still need to be implemented - the sides of the borrow pit will need to be adequately sloped and contoured and the banks of the dam will need to be topsoiled, seeded and re-vegetated. In addition the entrance must be left open so that the animals can enter the stock dam. There must be no dangerous slopes on site to ensure that the animals do not fall into the dam and get hurt or drown. Thus slopes must at least be sloped to a ratio of 1:3. In addition the applicant must confirm that the establishment of a stock dam is actually feasible in that the dam is situated within a catchment area that receives runoff in the area where the stock watering dam is situated. The department does not want a situation where the end use is a stock watering hole and the quarry never gets used as a watering hole because there is simply no water in the area and the quarry never has water in it – this is seen by the Department as the applicant simply ducking out of the rehabilitation because the feasibility of creating a stock dam has not been established. In the past the DMR has had applications where the end use of the quarry is to establish a stock watering dam and in the end the farmer never wanted the stock watering dam and the stock dam is never used or filled with water, resulting in an abandoned hole and an erosion problem that the department must then deal with.
- However, the best way to deal with the situation is to indicate in the EMP that the end use of the quarry will be a stock watering dam, but should the rehabilitation be completed and within the 2 year rehabilitation period it can be seen that the quarry will never be used as a stock watering dam, then the bottom of the quarry will need to be topsoiled, seeded and re-vegetated.
- In addition, if the land on which the borrow pit is to be developed belongs to the farmer or the LM, a letter must be included in the EMP that the landowner or the LM actually want a stock watering dam in that area. This will indicate that there is a need for the establishment of a stock watering dam and establish the feasibility in that there is a need for the dam.

I hope that this provides further clarity on the issue. Should you have any further queries, please do not hesitate to contact this office.

Best regards,

Deidre

*Deidre Watkins
Deputy Director: Mine Environmental Management*



*Mine Environmental Management
Private Bag X6076, Port Elizabeth 6000*

*Tel: 041 3963934
Cell: 082 7355 319
Fax: 041 3738171/ 0867101055
Email: deidre.watkins@dmr.gov.za*

From: lee-Anne Proudfoot [lee-anne@besc.co.za]
Sent: 18 February 2011 04:48 PM
To: 'mhlopekazi@ruraldevelopment.gov.za'
Subject: Proposed utilisation of an existing borrow pit, south east of Willowvale, Eastern Cape

Dear Mr Hlopekazi,

BESC have been appointed as independent environmental consultants to prepare an Environmental Management Plan for the Mbhashe Local Municipality as defined by the Minerals and Petroleum Resources Development Regulations published in Government Gazette 26275 dated 23 April 2004, for the utilisation of an existing borrow pit south east of Willowvale, for the Phase 2B: Qwaninga Water Supply Project.

In this regard, notice is hereby given in terms of Government Notice No. R.1273 Mineral and Petroleum Resources Development Act 2002 (Act No. 28 of 2002) for the proposed utilisation of the borrow pit. The purpose of this notification is to inform you the land owner/person in control of the land of the proposed activity, this being the utilisation of the borrow pit identified south east of Willowvale, on Qwaninga LOC 15 within ward 23.

The permitting of the material sources required for the project will be undertaken in accordance with the Minerals and Petroleum Resources Development Act (M&PRDA) (No. 28 of 2002). Since the Mbhashe Local Municipality has been exempted in terms of the provisions of the M & PRDA an Environmental Management Plan will be compiled for submission and approval from the DMR for the utilisation of the identified borrow pit.

In addition, this notice serves to inform you that you may participate in the public participation process, should you wish to participate in the public participation process, please complete the Interested and Affected Party registration form attached in the Background Information Document and return to the offices of BESC by one of the following methods:

- Post – PO Box 8241, Nahoon, 5210
- Fax – 043 726 3199
- E-mail – lee-anne@besc.co.za.

To be identified as a Key Interested and Affected Party registration must be submitted to the offices of BESC by 17H00, 22 March 2011.

Please find enclosed the Background Information Document (BID) for the proposed activity. Should you have any queries or concerns, please do not hesitate to contact me directly.

Regards

Lee-Anne

Ms Lee-Anne Proudfoot
Senior Environmental Consultant
(Pr. Sci. Nat. – Environmental Scientist)

Biotechnology & Environmental Specialist Consultancy cc
PO Box 8241, Nahoon, 5210, East London, South Africa
9 Douglas Road, Vincent, 5247, East London, South Africa

Mobile: +27 83 421 3991

From: lee-Anne Proudfoot [lee-anne@besc.co.za]
Sent: 28 March 2011 08:41 AM
To: 'mhlopekazi@ruraldevelopment.gov.za'
Subject: FW: Proposed utilisation of an existing borrow pit, south east of Willowvale, Eastern Cape

Attachments: 2011-R455 – BID – Borrow Pit – Willowvale – MLM.pdf
Dear Mr Hlopekazi,

Following my correspondence below (18 February 2011) regarding the utilisation of a borrow pit, south east of Willowvale, it has been proposed that the utilised borrow pit be rehabilitated for an end use purpose of a stock watering dam. As such it has been requested by DMR that a letter is received from the landowner (this being the Department of Rural Development and Land Affairs for communal land) stating that there is no objection/or such a use (stock watering dam) would be wanted in the area.

Would it be possible to provide us with a letter in this regard?

Should you have any queries, please do not hesitate to contact me.

Kind Regards

Lee-Anne

Ms Lee-Anne Proudfoot
Senior Environmental Consultant
(Pr. Sci. Nat. – Environmental Scientist)

Biotechnology & Environmental Specialist Consultancy cc
PO Box 8241, Nahoon, 5210, East London, South Africa
9 Douglas Road, Vincent, 5247, East London, South Africa

Mobile: +27 83 421 3991
Direct Email: lee-anne@besc.co.za



BIOTECHNOLOGY & ENVIRONMENTAL SPECIALIST CONSULTANCY CC

PO Box 8241, Nahoon, 5210, East London South Africa
 9 Douglas Road, Vincent, 5247, East London, South Africa
 Telephone: +27 43 726 4242 Facsimile: +27 43 726 3199
 E-mail: info@besc.co.za http://www.besc.co.za

Leaders in Industrial Ecology, Environmental Impact & Site Assessments
 & Safety, Health & Environmental Management Systems

February 18, 2011

Attention: Chief Manixwe

RE: Utilisation of an existing borrow pit located south east of Willowvale, Eastern Cape.

BESC have been appointed as independent environmental consultants on behalf of Mbashe Local Municipality to prepare an Environmental Management Plan as defined by the Minerals and Petroleum Resources Development Regulations published in Government Gazette 26275 dated 23 April 2004, for the utilisation of an existing borrow pit south east of Willowvale, for the Phase 2B: Qwaninga Water Supply Project.

In this regard, notice is hereby given in terms of Government Notice No. R.1273 Mineral and Petroleum Resources Development Act 2002 (Act No. 28 of 2002) for the proposed utilisation of the borrow pit. This notice serves to inform you of the proposed activity, this being the utilisation of the borrow pit identified to the south east of Willowvale, on communal land – Qwaninga LOC 15 within ward 23, to provide construction material.

The permitting of the material sources required for the project will be undertaken in accordance with the Minerals and Petroleum Resources Development Act (M&PRDA) (No. 28 of 2002). Since the Mbashe Local Municipality has been exempted in terms of the provisions of the M & PRDA an Environmental Management Plan will be compiled for submission and approval from the DMR for the utilisation of the identified borrow pit.

In addition, this notice serves to inform you that you may participate in the public participation process, should you wish to participate in the public participation process, please complete the Interested and Affected Party registration form attached in the enclosed Background Information Document and return to the offices of BESC by one of the following methods:

- o Post – PO Box 8241, Nahoon, 5210
- o Fax – 043 726 3199
- o E-mail – lee-anne@besc.co.za.

Please note that in order to be identified as a Key Interested and Affected Party registration must be submitted to the offices of BESC by 17H00, 22 March 2011. Should you have any queries or concerns, please do not hesitate to contact me directly.


Yours Sincerely
 Lee-Anne Proudfoot
 (Pr.Sci.Nat – Environmental Scientist)
 Senior Environmental Consultant

Page 1 of 1

Malcolm Logie

B.Sc. Hons. (Botany), M.Sc. (Botany), Ph.D. (Biotechnology), (Rhodes)
 CEAP-SA; MSA/E & ES; MIAIA; Pr.Sci.Nat.(Environ.Sci.)
 CK 95.10210/23

03/03 2011 12:42 0474852300

 **ENVIRONMENTAL IMPACT ASSESSMENT
INTERESTED & AFFECTED PARTY
REGISTRATION FORM**
Return Facsimile: +27 43 726 3199
BESC, PO Box 8241, Nahoon, 5210 - East London, South Africa

Name: Nkosi/Chief Milliot Petrus Esigandu Mankiwa

Telephone Number: _____ Mobile Number: 0837415662

Facsimile Number: _____ Email Address: _____

Postal Address: _____ Physical Address: _____

Address: P.O. Box 15 Address: QWANINGA H/A

City: WILLOWVALE Zip Code: 5040 City: WILLOWVALE Zip Code: 5040

Country: SOUTH AFRICA Country: SOUTH AFRICA

EIA Project: UTILISATION OF AN EXISTING BORROW PIT LOCATED SOUTH EAST OF WILLOWVALE EASTERN CAPE.

Submission: TO ATTEND ALL SITE MEETINGS. SO AS TO OBSERVE AND ASSIST IN SMALL CONFLICTS AND DISPUTES RESOLUTION

**BHOSI M. P. G. MANKIWA
HEAD LINDINKIWA T/COUNCIL
P.O. BOX 15, WILLOWVALE 5040**
SIGNATURE: [Signature]
DATE: 01/03/2011

[Signature] Signature: _____ Name (Print): Milliot Date: 01/03/2011

From: lee-Anne Proudfoot [lee-anne@besc.co.za]
Sent: 18 February 2011 04:33 PM
To: 'Bryant Noncembu (Bryant.Noncembu@deaet.ecape.gov.za)'
Subject: Proposed utilisation of an existing borrow pit, south east of Willowvale, Eastern Cape
Dear Bryant,

Notice is hereby given in terms of Government Notice No. R.1273 of the Mineral and Petroleum Resources Development Act 2002(Act No. 28 of 2002) for the proposed utilisation of an existing borrow pit located south east of Willowvale, Eastern Cape. The permitting of the materials sources will be undertaken in accordance with the Minerals and Petroleum Resources Development Act (M&PRDA) (No. 28 of 2002) and an Environmental Management Plan will be compiled for submission and approval from the DMR for the utilisation of the identified borrow pit.

Please find attached the Background Information Document (BID) for the proposed activity.

Should you have any further queries, please do not hesitate to contact me directly.

Lee-Anne

Ms Lee-Anne Proudfoot
Senior Environmental Consultant
(Pr. Sci. Nat. – Environmental Scientist)

Biotechnology & Environmental Specialist Consultancy cc
PO Box 8241, Nahoon, 5210, East London, South Africa
9 Douglas Road, Vincent, 5247, East London, South Africa

Mobile: +27 83 421 3991
Direct Email: lee-anne@besc.co.za

From: lee-Anne Proudfoot [lee-anne@besc.co.za]
Sent: 18 February 2011 04:41 PM
To: 'mbulelo.sonqishe@dpw.ecape.gov.za'
Subject: Proposed utilisation of an existing borrow pit, south east of Willowvale, Eastern Cape

Importance: High

Dear Mr. Sonqishe,

Notice is hereby given in terms of Government Notice No. R.1273 of the Mineral and Petroleum Resources Development Act 2002(Act No. 28 of 2002) for the proposed utilisation of an existing borrow pit located south east of Willowvale, Eastern Cape. The permitting of the materials sources will be undertaken in accordance with the Minerals and Petroleum Resources Development Act (M&PRDA) (No. 28 of 2002) and an Environmental Management Plan will be compiled for submission and approval from the DMR for the utilisation of the identified borrow pit.

Please find attached the Background Information Document (BID) for the proposed activity.

Please could you advise as to whether or not the identified borrow pit in the attached Background Information Document is licensed by Department of Roads and Public Works and if you have any concerns regarding the utilization of the borrow pit for the purposes of the proposed project.

Regards

Lee-Anne

Ms Lee-Anne Proudfoot
(Pr.Sci.Nat. - Environmental Scientist)
Senior Environmental Consultant

Biotechnology & Environmental Specialist Consultancy cc
PO Box 8241, Nahoon, 5210, East London, South Africa
9 Douglas Road, Vincent, 5247, East London, South Africa

Mobile: +27 83 421 3991
Direct Email: lee-anne@besc.co.za

From: lee-Anne Proudfoot [lee-anne@besc.co.za]
Sent: 18 February 2011 04:38 PM
To: 'lucasa@dwaf.gov.za'
Subject: Proposed utilisation of an existing borrow pit, south east of Willowvale, Eastern Cape
Dear Mr Lucas,

Notice is hereby given in terms of Government Notice No. R.1273 of the Mineral and Petroleum Resources Development Act 2002(Act No. 28 of 2002) for the proposed utilisation of an existing borrow pit located south east of Willowvale, Eastern Cape. The permitting of the materials sources will be undertaken in accordance with the Minerals and Petroleum Resources Development Act (M&PRDA) (No. 28 of 2002) and an Environmental Management Plan will be compiled for submission and approval from the DMR for the utilisation of the identified borrow pit.

Please find attached the Background Information Document (BID) for the proposed activity.

Should you have any further queries, please do not hesitate to contact me directly.

Regards

Lee-Anne

Ms Lee-Anne Proudfoot
Senior Environmental Consultant
(Pr. Sci. Nat. – Environmental Scientist)

Biotechnology & Environmental Specialist Consultancy cc
PO Box 8241, Nahoon, 5210, East London, South Africa
9 Douglas Road, Vincent, 5247, East London, South Africa

Mobile: +27 83 421 3991
Direct Email: lee-anne@besc.co.za

From: lee-Anne Proudfoot [lee-anne@besc.co.za]
Sent: 18 February 2011 04:31 PM
To: 'MGALIMBERTI@sahra.org.za'
Subject: Proposed utilisation of an existing borrow pit, south east of Willowvale, Eastern Cape
Dear Mariagrazia,

Notice is hereby given in terms of Government Notice No. R.1273 of the Mineral and Petroleum Resources Development Act 2002(Act No. 28 of 2002) for the proposed utilisation of an existing borrow pit located south east of Willowvale, Eastern Cape. The permitting of the materials sources will be undertaken in accordance with the Minerals and Petroleum Resources Development Act (M&PRDA) (No. 28 of 2002) and an Environmental Management Plan will be compiled for submission and approval from the DMR for the utilisation of the identified borrow pit.

Please find attached the Background Information Document (BID) for the proposed activity. Please would you be able to confirm with me at this stage as to whether or not a Phase 1 Archaeological, Heritage and Paleontological Assessment would be required by SAHRA. The proposed identified borrow pit is an existing previously utilised borrow pit and has thus been extensively disturbed. Your assistance would be much appreciated.

Please confirm receipt of the attached document.

Should you have any further queries, please do not hesitate to contact me directly.

Lee-Anne

Ms Lee-Anne Proudfoot
Senior Environmental Consultant
(Pr. Sci. Nat. – Environmental Scientist)

Biotechnology & Environmental Specialist Consultancy cc
PO Box 8241, Nahoon, 5210, East London, South Africa
9 Douglas Road, Vincent, 5247, East London, South Africa

Mobile: +27 83 421 3991
Direct Email: lee-anne@besc.co.za



111 HARRINGTON STREET, CAPE TOWN, 8000
PO BOX 4637, CAPE TOWN, 8000
TEL: (021) 462 4502 FAX: (021) 462 4509

DATE: 03 March 2011
ENQUIRIES: Dr Mariagrazia Galimberti
Archaeology, Palaeontology and Meteorite Unit
E-mail: mgalimberti@sahra.org.za
Web site: www.sahra.org.za

Our Ref. Number: 9/2/503/0001
Your Report Number: 2011-R455

Ms Lee-Anne Proudfoot
Biotechnology & Environmental Specialist Consultancy (BESC)
P.O. Box 8241
Nahoon 5210

Dear Ms Proudfoot,

BACKGROUND INFORMATION DOCUMENT: UTILIZATION OF A BORROW PIT, SOUTH EAST OF WILLOWVALE, EASTERN CAPE

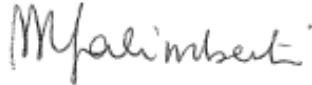
The SAHRA Archaeology, Palaeontology and Meteorites (APM) Unit has received the BID for this project.

In terms of the National Heritage Resources Act, no 25 of 1999, heritage resources, including archaeological or palaeontological sites over 100 years old, graves older than 60 years, structures older than 60 years are protected. They may not be disturbed without a permit from the relevant heritage resources authority. This means that before such sites are disturbed by development it is incumbent on the developer to ensure that a Heritage Impact Assessment is done. This must include the archaeological component (Phase 1) and any other applicable heritage components. Appropriate (Phase 2) mitigation, which involves recording, sampling and dating sites that are to be destroyed, must be done as required.

According to the information provided in the Background Information Document the borrow pit has been previously used and therefore it is envisaged that no impact on archaeological resources will occur. Consequently, SAHRA Archaeology, Palaeontology & Meteorites (APM) Unit has no objection to the proposed utilization of the borrow pit.

If any evidence of archaeological sites or remains (e.g., shell middens, remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, marine shell and charcoal/ash concentrations), unmarked human burials, fossils or other categories of heritage resources are found during mining activities, SAHRA APM Unit (Mariagrazia Galimberti/ Nonofho Ndobochani 021 462 4502) must be alerted immediately, and a professional archaeologist must be contacted as soon as possible to inspect the findings. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance a Phase 2 rescue operation might be necessary.

Yours sincerely



Pp Mrs Nonofho Ndobochani
SAHRA: Archaeology, Palaeontology and Meteorite Unit
For: CHIEF EXECUTIVE OFFICE

Copies: PHRA Eastern Cape Office

From: lee-Anne Proudfoot [lee-anne@besc.co.za]
Sent: 18 February 2011 04:35 PM
To: 'phillip@wessabk.co.za'
Cc: 'jimjan@iafrica.com'
Subject: Proposed utilisation of an existing borrow pit, south east of Willowvale, Eastern Cape
Dear Dr Wilkinson,

Notice is hereby given in terms of Government Notice No. R.1273 of the Mineral and Petroleum Resources Development Act 2002(Act No. 28 of 2002) for the proposed utilisation of an existing borrow pit located south east of Willowvale, Eastern Cape. The permitting of the materials sources will be undertaken in accordance with the Minerals and Petroleum Resources Development Act (M&PRDA) (No. 28 of 2002) and an Environmental Management Plan will be compiled for submission and approval from the DMR for the utilisation of the identified borrow pit.

Please find attached the Background Information Document (BID) for the proposed activity.

Should you have any further queries, please do not hesitate to contact me directly.

Regards

Lee-Anne

Ms Lee-Anne Proudfoot
Senior Environmental Consultant
(Pr. Sci. Nat. – Environmental Scientist)

Biotechnology & Environmental Specialist Consultancy cc
PO Box 8241, Nahoon, 5210, East London, South Africa
9 Douglas Road, Vincent, 5247, East London, South Africa

Mobile: +27 83 421 3991
Direct Email: lee-anne@besc.co.za



BIOTECHNOLOGY & ENVIRONMENTAL SPECIALIST CONSULTANCY CC

PO Box 8241, Nahoon, 5210, East London South Africa
9 Douglas Road, Vincent, 5247, East London, South Africa
Telephone: +27 43 726 4242 Facsimile: +27 43 726 3199
E-mail: info@besc.co.za <http://www.besc.co.za>

Leaders in Industrial Ecology, Environmental Impact & Site Assessments
& Safety, Health & Environmental Management Systems

February 18, 2011

Attention: Key Interested and Affected Parties

RE: Utilisation of an existing borrow pit located south east of Willowvale, Eastern Cape.

BESC have been appointed as independent environmental consultants to prepare an Environmental Management Plan for the Mbashe Local Municipality as defined by the Minerals and Petroleum Resources Development Regulations published in Government Gazette 26275 dated 23 April 2004, for the utilisation of an existing borrow pit south east of Willowvale, for the Phase 2B: Qwaninga Water Supply Project.

In this regard, notice is hereby given in terms of Government Notice No. R.1273 Mineral and Petroleum Resources Development Act 2002 (Act No. 28 of 2002) for the proposed utilisation of the borrow pit.

The permitting of the material sources required for the project will be undertaken in accordance with the Minerals and Petroleum Resources Development Act (M&PRDA) (No. 28 of 2002). Since the Mbashe Local Municipality has been exempted in terms of the provisions of the M & PRDA an Environmental Management Plan will be compiled for submission and approval from the DMR for the utilisation of the identified borrow pit.

Please find enclosed the Background Information Document (BID) for the proposed activity. Should you have any queries or concerns, please do not hesitate to contact me directly.

Yours Sincerely
Lee-Anne Proudfoot
(Pr.Sci.Nat – Environmental Scientist)
Senior Environmental Consultant

Mobile: +27 83 421 3991
Email: lee-anne@besc.co.za

Page 1 of 1

Malcolm Logie

B.Sc. Hons. (Botany), M.Sc. (Botany), Ph.D. (Biotechnology), (Rhodes)
CEAP-SA; MSAIE & ES; MIAIA; Pr.Sci.Nat.(Environ.Sci.)
CK 95.10210/23

List of REGISTERED LETTERS
Lys van GEREGISTREERDE BRIEWE
(with an insurance option/met 'n versekeringsopsie)



Post Office

Full tracking and tracing/Volledige volg en spoor

Name and address of sender:
 Naam en adres van afsender:

BESC
 P.O. Box 8241, Nahoon, 5210
 9 Douglas Road, Vincent, 5247
 East London South Africa
 Tel: 043 726 4242 • Fax: 043 726 3199
 E-mail: info@besc.co.za
 http://www.besc.co.za

Enquiries/Navrae
 Toll-free number
 Tollvry nommer
0800 111 502

No	Name and address of addressee Naam en adres van geadresseerde	Insured amount Versekerde bedrag	Insurance fee Versekeringsgeld	Postage Postgeld	Service fee Diensgeld	Affix Track and Trace customer copy Plak Volg-en-Spoorklantekopie
1	MBASHE L.M. PO BOX 25, IDUTYANA 5000 - MR MG WENTISHE					REGISTERED LETTER Affix Track and Trace customer copy RD 026 092 313 ZA CUSTOMER COPY 204228
2	MBASHE L.M. PO BOX 25, IDUTYANA 5000 - CLR MAPUNGU					REGISTERED LETTER Affix Track and Trace customer copy RD 026 092 327 ZA CUSTOMER COPY 204068
3	MBASHE L.M. PO BOX 25, IDUTYANA 5000 - ADY S. SOHENA					REGISTERED LETTER Affix Track and Trace customer copy RD 016 493 300 ZA CUSTOMER COPY 204458
4	AMATHOLE D.M - PO BOX 320 EAST LONDON 5200 - MR N. DONKER					REGISTERED LETTER Affix Track and Trace customer copy RD 016 092 287 ZA CUSTOMER COPY 204128
5	AMATHOLE D.M - PO BOX 320 EAST LONDON 5200 - MR V. MOKOTI					REGISTERED LETTER Affix Track and Trace customer copy RD 026 092 260 ZA CUSTOMER COPY 204638
6	MR MANIYIWE - PO BOX 15 WILLOWVALE 5040					REGISTERED LETTER Affix Track and Trace customer copy RD 026 492 173 ZA CUSTOMER COPY 210228
7						
8						
9						
10						

Number of letters posted
 Getal briewe gepos

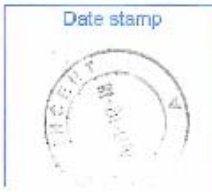
[Handwritten signature]

Total
 Totaal

Signature of client
 Handtekening van klient

Signature of accepting officer
 Handtekening van aanneembeampte

[Handwritten signature]



The value of the contents of these letters is as indicated and compensation is not payable for a letter receiver unconditionally. Compensation is limited to R 200,00. No compensation is payable without documentary proof. Optional insurance of up to R2 000,00 is available and applies to domestic registered letters only.

Die waarde van die inhoud van hierdie briewe is soos aangedui en vermelding sal nie betaal word vir 'n brief

All communications to
be directed to the
Municipal Manager
File Ref. No. 82

*Municipality
of Mbhashe*



*Umasipalathi
wase Mbhashe*

Zeko inkqubo
mabhakisiwe izi
Mangalis
Ref. 82

MUNICIPAL OFFICES

P O Box 25

DUTYWA

5000

Phone 047 489 5800 Fax 047 498 11

23 February 2011

The Manager
Biotechnology & Environmental Specialists Consultancy Cc

Dear: Lee Anne Proudfoot

**RE: UTILISATION OF AN EXISTING BORROW PIT LOCATED SOUTH EAST OF
WILLOWVALE EASTERN CAPE**

This is to acknowledge receipt of your letter dated 18 February 2011. However the matter has been referred to Community Services Manager (Mr. N. Mlungu) for consideration, her telephone number is 047 -489 1400.

Hoping that you will find this in order.

Yours Faithfully

A handwritten signature in black ink, appearing to be 'S. Sohena', written over a horizontal line.

Adv. S. Sohena
Acting Municipal Manager

Cc: Community Services Manager

16-AUG-2011 03:59 From:

To:0437263199

P. 1/1



Biotechnology & Environmental Specialist Consultancy cc

PO Box 8241, Nahoon, 5210, East London South Africa
 9 Douglas Road, Vincent, 5247, East London, South Africa
 Telephone: 043 726 4242 Facsimile: 043 726 3199
 E-mail: info@besc.co.za http://www.besc.co.za

ENVIRONMENTAL IMPACT ASSESSMENT

INTERESTED & AFFECTED PARTY FORM

Return Facsimile: 043 726 3199

Name		AMATHOLE DISTRICT MUNICIPALITY	
Telephone Number	043 791 4097	Mobile Number	083 367 2189
Facsimile Number	043 722 0539	Email Address	kanvaq@amatholedm.co.za
Postal Address		Physical Address	
Address	P.O. Box 323	Address	8th Floor, Caxton House, Cambridge Street
City	East London	City	East London
Zip Code	5200	Zip Code	5200
Country	South Africa	Country	South Africa
EIA Project	Utilization of a Borrow Pit, South East of Willowvale, Eastern Cape		
Submission	Kindly register the Institution as an Interested and Affected Party (I &AP), and update us on the developments of the assessment process and furnish us with all the associated documentation in relation to the project.		

[Handwritten Signature]
 Signature

Kanva Qwabe
 Name (Print)

4/8/2011
 Date



From: lee-Anne Proudfoot [lee-anne@besc.co.za]
Sent: 07 March 2011 08:32 AM
To: 'kamvaq@amatoledm.co.za'
Subject: Utilisation of a borrow pit located south east of Willowvale
Dear Kamva,

This serves to acknowledge receipt of the I & AP registration form received for the Amathole District Municipality. The Amathole District Municipality have been registered as an I & AP, please find attached the background information document.

Kind Regards


Lee-Anne

Ms Lee-Anne Proudfoot
Senior Environmental Consultant
(Pr. Sci. Nat. – Environmental Scientist)

Biotechnology & Environmental Specialist Consultancy cc
PO Box 8241, Nahoon, 5210, East London, South Africa
9 Douglas Road, Vincent, 5247, East London, South Africa

Mobile: +27 83 421 3991
Direct Email: lee-anne@besc.co.za

23.2 Correspondence issued to and received from Key Interested and Affected Parties during the public draft commenting period



BIOTECHNOLOGY & ENVIRONMENTAL SPECIALIST CONSULTANCY CC

PO Box 8241, Nahoon, 5210, East London South Africa
9 Douglas Road, Vincent, 5247, East London, South Africa
Telephone: +27 43 726 4242 Facsimile: +27 43 726 3199
E-mail: info@besc.co.za <http://www.besc.co.za>

Leaders in Industrial Ecology, Environmental Impact & Site Assessments
& Safety, Health & Environmental Management Systems

April 14, 2011

Dear Key Interested and Affected Party,

RE: Public Draft Environmental Management Plan Report: Utilisation of an existing borrow pit located south east of Willowvale, Eastern Cape

Please find herein a copy of the **Public Draft Environmental Management Plan Report** (in terms of the Minerals and Petroleum Resources Act, 2002) for the proposed utilisation of an existing borrow pit located south east of Willowvale, Eastern Cape.

This **Public Draft Environmental Management Plan Report** is released for review and comment for a 30-day period (18 April 2011 to 23 May 2011). Should you wish to make any comments for inclusion into the final report, please do so in writing to the good offices of BESC before 17H00, May 23, 2011; either via email (lee-anne@besc.co.za), facsimile (043 726 3199), or post (BESC, P.O. Box 8241, Nahoon, 5210).

Should you have any queries, please do not hesitate to contact me.

Yours Sincerely
Lee-Anne Proudfoot
(Pr.Sci.Nat – Environmental Scientist)
Senior Environmental Consultant

Mobile: +27 83 421 3991
Email: lee-anne@besc.co.za

Malcolme Logie

B.Sc. Hons. (Botany), M.Sc. (Botany), Ph.D. (Biotechnology), (Rhodes)
CEAP-SA; MSAIE & ES; MIAIA; Pr.Sci.Nat.(Environ.Sci.)
CK 95.10210/23

PACK PARCELS SECURELY TO PREVENT DAMAGE
VOORKOM BESKADIGING DEUR STEWIGE VERPAKKING

No. 05351 ACKNOWLEDGEMENT OF INLEWERINGSBEWYS

ORDINARY PARCEL
Standard 0502 711 882 www.epost.co.za
PK 526 442 038 ZA
CUSTOMER COPY 301016

(Must be completed by sender / Moet deur afsender ingevul word)
addressed to: DEPT OF WATER AFFAIRS
Postresponder aan: PO BOX 219, EAST LONDON, 5200
ATT: MR A. LUCAS
Contents / Inhoud: Value / Waarde

PACK PARCELS SECURELY TO PREVENT DAMAGE
VOORKOM BESKADIGING DEUR STEWIGE VERPAKKING

No. 05264 ACKNOWLEDGEMENT OF INLEWERINGSBEWYS

ORDINARY PARCEL
Standard 0502 711 882 www.epost.co.za
PK 526 442 049 ZA
CUSTOMER COPY 301016

(Must be completed by sender / Moet deur afsender ingevul word)
addressed to: MBHASHE L.M. - CLR MAPUNGU
Postresponder aan: PO BOX 25, INDUTYWA, 5000
Contents / Inhoud: Value / Waarde

PACK PARCELS SECURELY TO PREVENT DAMAGE
VOORKOM BESKADIGING DEUR STEWIGE VERPAKKING

No. 05269 ACKNOWLEDGEMENT OF INLEWERINGSBEWYS

ORDINARY PARCEL
Standard 0502 711 882 www.epost.co.za
PK 526 442 064 ZA
CUSTOMER COPY 301016

(Must be completed by sender / Moet deur afsender ingevul word)
addressed to: AMATHOLE D.M. PO BOX 320
Postresponder aan: EAST LONDON, 5200
ATT: MR V. MLOKOTI
Contents / Inhoud: Value / Waarde

PACK PARCELS SECURELY TO PREVENT DAMAGE
VOORKOM BESKADIGING DEUR STEWIGE VERPAKKING

No. 05267 ACKNOWLEDGEMENT OF INLEWERINGSBEWYS

ORDINARY PARCEL
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Biotechnology & Environmental Specialist Consultancy cc
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 E mail: info@besc.co.za http://www.besc.co.za

DOCUMENT/REPORT RECEIPT FORM

TITLE OR DESCRIPTION OF DOCUMENT/REPORT		
EMP - Utilisation of a borrow pit, south east of Willowvale		
REPORT NUMBER	2011-R472	
DATE OF REPORT	March 2011	
PARTICULARS OF RECEIVING PERSON/AUTHORITY		
Name	Briant Noncembu	
Organisation	DEDEA - AMATHOLE REGION	
SIGNATURES		
	Received by	Delivered by
Name	BONGIVIS	LEE-ANNE PARDFOOT
Signature		
Date	15/04/2011	15/04/2011
Time	8:15	8:16
Place	DEDEA	DEDEA

24 Appendix E: Site Photographs



Figure 14: View of the existing borrow pit



Figure 15: View of access to the borrow pit.



Figure 16: View of steep slopes to east of the borrow pit



Figure 17: View of slopes to the west of the borrow pit



Figure 18: View of vegetation community to the north of the existing footprint of the borrow pit



Figure 19: View across the existing borrow pit footprint

25 Appendix F: Mammal species of the Eastern Cape region

Species	Common name
<i>Aethoys namaquensis</i>	Namaqua rock mouse
<i>Alelerix frontalis</i>	Southern African hedgehog
<i>Amblysomus hottentotus</i>	Hottentot golden mole
<i>Aonyx capensis</i>	Clawless otter
<i>Atilax paludinosus</i>	Water mongoose
<i>Canis mesomelas</i>	Black-backed jackal
<i>Cephalophus monticola</i>	Blue duiker
<i>Cercopithecus aethiops</i>	Vervet monkey
<i>Cercopithecus mitis</i>	Samango monkey
<i>Chrysospalax trevelyani</i>	Giant golden mole
<i>Cicidura falvenscens</i>	Greater mush shrew
<i>Crocidura cyanea</i>	Reddish-grey mush shrew
<i>Cryptomys hottentotus</i>	Common mole rat
<i>Cynictis penicillata</i>	Yellow mongoose
<i>Damaliscus dorcas phillipsi</i>	Blesbuck
<i>Dasumys incomtus</i>	Water rat
<i>Dendromus mesomelas</i>	Brant's climbing mouse
<i>Dendrohyrax arboreus</i>	Tree dassie
<i>Dendromus melanotis</i>	Grey climbing mouse
<i>Dendromus mystacalis</i>	Chestnut climbing mouse
<i>Elephantus edwardii</i>	Cape rock elephant shrew
<i>Epomophorus wahlbergi</i>	Walberg's epauletted fruit bat
<i>Eptesicus capensis</i>	Cape serotine bat
<i>Eptesicus hottentotus</i>	Long-tailed serotine bat
<i>Felis caracal</i>	Caracal
<i>Felis lybica</i>	African wild cat
<i>Felis serval</i>	Serval
<i>Galerella pulverulenta</i>	Small grey mongoose
<i>Genetta genetta</i>	Small-spotted genet
<i>Genetta tigrina</i>	Large-spotted genet
<i>Georychus capensis</i>	Cape mole rat
<i>Gammomys dolichurus</i>	Woodland mouse
<i>Graphiurus murinus</i>	Woodland dormouse
<i>Graphiurus ocellatus</i>	Spectacled dormouse
<i>Herpestes ichneumon</i>	Large grey mongoose
<i>Hipposideros caffer</i>	Sundevall's leaf-nosed bat
<i>Hystrix africaeaustralis</i>	Porcupine
<i>Ichneumia albicauda</i>	White-tailed mongoose
<i>Ictonyx striatus</i>	Striped polecat
<i>Kerivoula lanosa</i>	Lesser woolly bat
<i>Lepus saxatilis</i>	Scrub hare
<i>Malacothrix typicalis</i>	Long-eared mouse
<i>Mastomys coucha</i>	Multi-mammate mouse
<i>Mastomys natalensis</i>	Natal multi-mammate mouse
<i>Mellivora capensis</i>	Honey badger
<i>Miniopterus schreibersii</i>	Schreiber's long-fingered bat
<i>Miniopterus fraterculus</i>	Lesser long-fingered bat
<i>Mus minutoides</i>	Pygmy mouse

Species	Common name
<i>Mus musculus</i>	House mouse
<i>Myotis tricolor</i>	Temminck's hair bat
<i>Mysorex cafer</i>	Dark-footed forest shrew
<i>Mysorex varius</i>	Forest shrew
<i>Mystromys albicaudatus</i>	White-tailed rat
<i>Nycteris thebaica</i>	Egyptian slit-faced bat
<i>Orycteropus afer</i>	Antbear (aardvark)
<i>Otmys irroratus</i>	Vlei rat
<i>Otomys saundersiae</i>	Saunders's vlei rat
<i>Papio ursinus</i>	Chacma baboon
<i>Pedetes capensis</i>	Springhare
<i>Philantomba monticola</i>	Blue duiker
<i>Pipistrellus kuhlii</i>	Kuhl's pipistelle
<i>Poecilogate albinuchu</i>	Stripped weasel
<i>Potamochoerus larvatus</i>	Bushpig
<i>Procavia capensis</i>	Rock dassie
<i>Pronolagus crassicaudatus</i>	Natal red hare
<i>Pronolagus rupestris</i>	Smith's red hare
<i>Proteles cristatus</i>	Aardwolf
<i>Raphicerus campestris</i>	Steenbok
<i>Raphicerus melanotis</i>	Cape grysbok
<i>Rattus norvegicus</i>	Brown rat
<i>Rattus rattus</i>	House rat
<i>Redunca arundinum</i>	Reedbuck
<i>Rhabdomys pumilio</i>	Stripped mouse
<i>Rhinolophus clivosus</i>	Geoffrey's horseshoe bat
<i>Rhinolophus swinnyi</i>	Swinny's horseshoe bat
<i>Rousettus aegyptiacus</i>	Egyptian fruit bat
<i>Sccostomus campestris</i>	Pouched mouse
<i>Scotophilus borbonicus</i>	Lesser yellow house bat
<i>Suncus infitesimus</i>	Least dwarf shrew
<i>Suncus varilla</i>	Lesser dwarf shrew
<i>Sylvicapra grimmia</i>	Common duiker
<i>Tadarida aegyptiaca</i>	Egyptian free-tailed bat
<i>Tadarida condylura</i>	Angolan free-tailed bat
<i>Taphozous mauritanus</i>	Mauritian tomb bat
<i>Thryonomys swinderianus</i>	Greater cane rat
<i>Tragelaphus scriptus</i>	Bushbuck
<i>Vulpes chama</i>	Cape fox

26 Appendix G: Bird species of the Eastern Cape region

Species	Common name	Robarts N#
<i>Accipiter melanelous</i>	Black sparrow hawk	158
<i>Accipiter minullus</i>	Little sparrow hawk	157
<i>Accipiter tachio</i>	African goshawk	160
<i>Acridotheres tristis</i>	Indian myna	758
<i>Acrocephalus palustris</i>	European marsh warbler	633
<i>Actophilomus africanus</i>	African jacana	240
<i>Alcedo cristata</i>	Malachite kingfisher	431
<i>Alcedo semitorquata</i>	Half-collared kingfisher	430
<i>Alopochen aegyptiacus</i>	Egyptian goose	102
<i>Amblyospiza abifrons</i>	Thick-billed weaver	807
<i>Anas sparsa</i>	African black duck	105
<i>Anas undulate</i>	Yellow bulled duck	104
<i>Andropadus imprtunus</i>	Somber bulbul	572
<i>Anhinga melanogaster</i>	Darter	60
<i>Anthreptes collaris</i>	Collard sunbird	793
<i>Anthus lineiventris</i>	Stripped pipit	720
<i>Anthus novaeseelandiae</i>	Richard's pipit	716
<i>Apalis flavida</i>	Yellow-breasted apalis	648
<i>Apalis thoracica</i>	Bar-throated apalis	645
<i>Apalodema narina</i>	Narina trogon	427
<i>Aplopelia larvata</i>	Cinnamon dove	360
<i>Apus affinis</i>	Little swift	417
<i>Apus barbatus</i>	Black swift	412
<i>Apus caffer</i>	White-rumped swift	415
<i>Ardeola railodides</i>	Squacco heron	72
<i>Ardrea cinera</i>	Grey heron	62
<i>Ardrea melancephala</i>	Black-beared heron	63
<i>Aviceda cuculoides</i>	Cucco hawk	128
<i>Balearica regulorum</i>	Crowned quail	209
<i>Batis capensis</i>	Cape batis	700
<i>Bostrychia hagedash</i>	Hadeda	94
<i>Bradyoterus baboecala</i>	African sedge warbler	638
<i>Bradypterus barratti</i>	Barret's warbler	639
<i>Bradypterus sylvaticus</i>	Knysna warbler	640
<i>Bubo africanus</i>	Spotted eagle owl	401
<i>Burhinus capensis</i>	Spotted dikkop	297
<i>Burhinus vermiculatus</i>	Water dikkop	298
<i>Buteo buteo</i>	Steppe buzzard	149
<i>Buteo rufofucus</i>	Jackal buzzard	152
<i>Bycanister bucinator</i>	Trumpeter hornbill	455
<i>Calandrella cinerea</i>	Red-capped lark	507
<i>Calidrus capensis</i>	Sanderling	281
<i>Camaroptera brachyuran</i>	Bleating warble	657
<i>Campephraga flava</i>	Black cuckoo shrike	538
<i>Campethera notata</i>	Knysna woodpecker	484
<i>Centro superciliosus</i>	Burchell's cuckoo	391
<i>Ceryle maxima</i>	Giant kingfisher	429

Species	Common name	Robarts N#
<i>Ceryle rudis</i>	Pied kingfisher	428
<i>Charadrius marginatus</i>	White-fronted plover	246
<i>Charadrius pecuarius</i>	Kittilz's plover	248
<i>Charadrius tricollaris</i>	Three-banded plover	249
<i>Chrysococcyx capruis</i>	Diederik's cuckoo	386
<i>Chrysococcyx cupreus</i>	Emerald cuckoo	384
<i>Chrysococcyx klaas</i>	Klaas's cuckoo	385
<i>Circaetus cinereus</i>	Brown snake eagle	142
<i>Circus macrourus</i>	Pallid harrier	167
<i>Circus maurus</i>	Black harrier	168
<i>Circus ranivorus</i>	African marsh hawk	165
<i>Cisticola aberrans</i>	Laz cisticola	679
<i>Cisticola ayersii</i>	Ayre's cisticola	667
<i>Cisticola fulvicapilla</i>	Neddick cisticola	681
<i>Cisticola tinniens</i>	Le Vallant's cisticola	677
<i>Colius striatus</i>	Speckled mousebird	424
<i>Columba arquatrix</i>	Rameron pigeon	350
<i>Columba guinea</i>	Rock pigeon	349
<i>Coracias garrulous</i>	European roller	446
<i>Coracina caesia</i>	Grey cuckoo shrike	540
<i>Cossypha caffra</i>	Cape robin	601
<i>Cossypha dichroa</i>	Chorister robin	598
<i>Coturnix coturnix</i>	Common quail	200
<i>Croesus albicollis</i>	Whiter-necked raven	550
<i>Croesus albus</i>	Pied crow	548
<i>Croesus capensis</i>	Black crow	547
<i>Cypsiurus parvus</i>	Palm swift	421
<i>Dendrocygna viduata</i>	White-faced duck	99
<i>Dicrurus adsimilis</i>	Fork-tailed drongo	541
<i>Dryscopus cubia</i>	Puff-back	740
<i>Egretta garzetta</i>	Little egret	67
<i>Elanus caeruleus</i>	Black-shouldered kite	127
<i>Erythropgia leucophrys</i>	White-browed robin	613
<i>Erythropgia signata</i>	Brown robin	616
<i>Estilda astrid</i>	Common waxbill	846
<i>Estrilda melanotisquartin</i>	Swee waxbill	850
<i>Euplectes capensis</i>	Yellow-rumped widow	827
<i>Falco biarmicus</i>	Lanner falcon	172
<i>Falco subuteo</i>	Hobby falcon	173
<i>Falco tinnunculus</i>	Rock kestrel	181
<i>Fulica cristata</i>	Red-nobbed coot	228
<i>Haliaeetus vocifer</i>	African fish eagle	148
<i>Halyco albiventris</i>	Brown-hooded kingfisher	435
<i>Hieraaetus pennatus</i>	Booted eagle	136
<i>Hirundo abyssinica</i>	Lesser striped swallow	527
<i>Hirundo albigularis</i>	White-throated swallow	520
<i>Hirundo cucullata</i>	Greater striped swallow	526
<i>Hirundo dimidiata</i>	Pearl-breasted swallow	523
<i>Hirundo fuligula</i>	Rock martin	529
<i>Hirundo rustica</i>	European swallow	518
<i>Indicator indicator</i>	Greater honey guide	474
<i>Indicator variegatus</i>	Scarlet-throated honey guide	475

Species	Common name	Robarts N#
<i>Ispidima picta</i>	Pygmy kingfisher	432
<i>Lagonosticta rubricate</i>	Blue-billed fire finch	840
<i>Lamprotomis corrusus</i>	Black-billed starling	768
<i>Laniarius ferrugineus</i>	Southern boubou	736
<i>Lanius colaris</i>	Fiscal shrike	732
<i>Lopeatus occipitalis</i>	Long-crested eagle	139
<i>Lybius leucomelas</i>	Pied barbet	465
<i>Lybius torquatus</i>	Black-collared barbet	464
<i>Macronyx capensis</i>	Orange-throated longclaw	727
<i>Malaconotus blanchoti</i>	Grey-headed bush shrike	751
<i>Malaenomys pammelaina</i>	Black flycatcher	694
<i>Merops apiaster</i>	European bee-eater	438
<i>Mesopicus griseocephalus</i>	Olive woodpecker	488
<i>Milvus migrans</i>	Yellow-billed black kite	126
<i>Motacilla aguimp</i>	African pied wagtail	711
<i>Motacilla capensis</i>	Cape wagtail	713
<i>Motacilla ciara</i>	Long-tailed wagtail	712
<i>Muscicupa adjusta</i>	Dusk flycatcher	690
<i>Muscicupa caerulea</i>	Blue-grey flycatcher	691
<i>Nectainia veroxii</i>	Gery sunbird	789
<i>Nectarine amethystina</i>	Black sunbird	792
<i>Nectarinia afra</i>	Greater double-collared sunbird	785
<i>Nectarinia chalybea</i>	Lesser double-collared sunbird	783
<i>Nycticorax nycticorax</i>	Black crowned night heron	76
<i>Oena capensis</i>	Namaqua dove	356
<i>Oriolus larvatus</i>	Black-headed oriole	545
<i>Oriolus oriolus</i>	European golden oriole	543
<i>Parus niger</i>	Southern black tit	554
<i>Permis apivorus</i>	Hone buzzard	130
<i>Phalacrocorax africanus</i>	Reed cormorant	58
<i>Phalacrocorax capensis</i>	Cape cormorant	56
<i>Phalacrocorax carbo</i>	White-breasted cormorant	55
<i>Phoeniculus purpureus</i>	Red-billed wood hoopoe	452
<i>Phyllasterphus terrestris</i>	Terrestrial bulbul	569
<i>Phylloscopus trochilus</i>	Willow warbler	643
<i>Plectropterus gambensis</i>	Spurwinged goose	116
<i>Ploceus bicolor</i>	Forest weaver	808
<i>Ploceus capensis</i>	Spectacled weaver	810
<i>Ploceus capensis</i>	Cape weaver	813
<i>Ploceus subaureus</i>	Yellow weaver	817
<i>Podica senegalensis</i>	African finfoot	229
<i>Pogoniulus pusillus</i>	Red-fronted tinker barbet	469
<i>Pogonocichia stellata</i>	Starred robin	606
<i>Poicephalus robustus</i>	Cape parrot	362
<i>Polyboroides typus</i>	Gymnogene	169
<i>Prinia maculosa</i>	Spotted prinia	686
<i>Prinia sublava</i>	Tawn-flanked prinia	683
<i>Psalioprocne holomelas</i>	Black saw-winged swallow	536
<i>Pyncnonotus barbatus</i>	Black-eyed bulbul	568
<i>Sagittarius serpentarius</i>	Secretary bird	118
<i>Sarothrura affinis</i>	Stripped flufftail	221
<i>Sarothrura rufa</i>	Red-chested flufftail	217

Species	Common name	Robarts N#
<i>Saxicola toquata</i>	Stone chat	596
<i>Scopus unbretta</i>	Hammerkop	81
<i>Seicercus ruficapillus</i>	Yellow-throated warbler	644
<i>Serinus gularis</i>	Streak-headed canary	881
<i>Serinus mazambicus</i>	Yellow-eyed canary	869
<i>Serinus scotops</i>	Forest canary	873
<i>Sigelus silens</i>	Fiscal flycatcher	698
<i>Sorathrura elegans</i>	Buff-spotted flufftail	218
<i>Spermestes cucullatus</i>	Bronze manikin	857
<i>Stephanoaetus coroatus</i>	Crowned eagle	141
<i>Streptopelia capicola</i>	Cape turtle dove	354
<i>Streptopelia semitorquata</i>	Red-eyed dove	352
<i>Streptopelia senegalensis</i>	Laughing dove	355
<i>Sturnus vulgaris</i>	European starling	757
<i>Tachybaptus ruficolis</i>	Little grebe, dabchick	8
<i>Tadoma cana</i>	South African shell duck	103
<i>Tauraco corythaix</i>	Knysna lourie	370
<i>Tchagra tchagra</i>	Grey-breasted tchagra	742
<i>Telephorus zeylonus</i>	Bokmakierie	746
<i>Telephorus olivaceus</i>	Olive bush shrike	750
<i>Tersiphone viridis</i>	Paradise flycatcher	710
<i>Thalassomis leuconotus</i>	White-backed duck	101
<i>Thamnolea cinnamomeivent</i>	Mocking chat	577
<i>Threskiomis aethiopus</i>	Sacred ibis	91
<i>Tokus alboterminatus</i>	Crown hornbill	460
<i>Tringa hypoleucos</i>	Common sandpiper	264
<i>Trochocercus cynomelas</i>	Blue-mantled flycatcher	708
<i>Turdus olivaceus</i>	Olive thrush	577
<i>Turtur chalcospilos</i>	Green-spotted dove	358
<i>Turtur tympanistria</i>	Tambourine dove	359
<i>Tyto alba</i>	Barn owl	392
<i>Tyto capensis</i>	Grass owl	393
<i>Upupa epopus</i>	Hoopoe	451
<i>Vanellus armatus</i>	Blacksmith plover	258
<i>Vanellus coronatus</i>	Crowned plover	255
<i>Vanellus melanopterus</i>	Black-winged plover	257
<i>Zosterops pallidus</i>	Cape white-eye	796

27 Appendix H: Threatened Birds of the Eastern Cape

Common name	Species name	Conservation status	Endemicity
Bearded Vulture	<i>Gypaetus barbatus</i>	Endangered	
Bittern	<i>Botaurus stellaris</i>	Critical	
Black Harrier	<i>Circus maurus</i>	Near-threatened	SA Endemic
Black Oystercatcher	<i>Haematopus moquini</i>	Near-threatened	
Black Stork	<i>Ciconia nigra</i>	Near-threatened	
Blackbellied Korhaan	<i>Eupodotis melanogaster</i>	Near-threatened	
Blackbrowed Albatross	<i>Diomedea melanophris</i>	Near-threatened	
Blackwinged Plover	<i>Vanellus melanopterus</i>	Near-threatened	
Blue Crane	<i>Anthropoides paradisea</i>	Vulnerable	SA Endemic
Blue Korhaan	<i>Eupodotis caerulescens</i>	Near-threatened	SA Endemic
Broadtailed Warbler	<i>Schoenicola brevirostris</i>	Near-threatened	
Bush Blackcap	<i>Lioptilus nigricapillus</i>	Near-threatened	SA Endemic
Cape Cormorant	<i>Phalacrocorax capensis</i>	Near-threatened	
Cape Gannet	<i>Morus capensis</i>	Vulnerable	
Cape Parrot	<i>Poicephalus robustus</i>	Endangered	
Cape Vulture	<i>Gyps coprotheres</i>	Vulnerable	SA Endemic
Caspian Tern	<i>Hydroprogne caspia</i>	Near-threatened	
Chestnutbanded	<i>Charadrius pallidus</i>	Near-threatened	
Corncrake	<i>Crex crex</i>	Vulnerable	
Crowned Eagle	<i>Stephanoaetus coronatus</i>	Near-threatened	
Damara Tern	<i>Sterna balaenarum</i>	Endangered	
Delegorgue's Pigeon	<i>Columba delegorguei</i>	Vulnerable	
Finfoot	<i>Podica senegalensis</i>	Vulnerable	
Grass Owl	<i>Tyto capensis</i>	Vulnerable	
Greater Flamingo	<i>Phoenicopterus ruber</i>	Near-threatened	
Grey Petrel	<i>Procellaria cinerea</i>	Near-threatened	
Ground Hornbill	<i>Bucorvus leadbeateri</i>	Vulnerable	
Halfcollared Kingfisher	<i>Alcedo semitorquata</i>	Near-threatened	
African Penguin	<i>Spheniscus demersus</i>	Vulnerable	
Knysna Warbler	<i>Bradypterus sylvaticus</i>	Vulnerable	SA Endemic
Knysna Woodpecker	<i>Campethera notata</i>	Near-threatened	SA Endemic
Kori Bustard	<i>Ardeotis kori</i>	Vulnerable	
Lanner	<i>Falco biarmicus</i>	Near-threatened	
Lesser Flamingo	<i>Phoenicopterus minor</i>	Near-threatened	
Lesser Kestrel	<i>Falco naumanni</i>	Vulnerable	
Ludwig's Bustard	<i>Neotis ludwigii</i>	Vulnerable	
Mangrove Kingfisher	<i>Halcyon senegaloides</i>	Vulnerable	
Marabou	<i>Leptoptilos crumeniferus</i>	Near-threatened	
Marsh Harrier	<i>Circus ranivorus</i>	Vulnerable	
Martial Eagle	<i>Polemaetus bellicosus</i>	Vulnerable	SA Endemic
Melodious Lark	<i>Mirafraga cheniana</i>	Near-threatened	
Orange Thrush	<i>Turdus gurneyi</i>	Near-threatened	
Painted Snipe	<i>Rostratula benghalensis</i>	Near-threatened	
Pallid Harrier	<i>Circus macrourus</i>	Near-threatened	
Peregrine	<i>Falco peregrinus</i>	Near-threatened	
Roseate Tern	<i>Sterna dougallii</i>	Endangered	
Rudd's Lark	<i>Mirafraga ruddi</i>	Critical	
Secretary bird	<i>Sagittarius serpentarius</i>	Near-threatened	

Common name	Species name	Conservation status	Endemicity
Shy Albatross	<i>Diomedea cauta</i>	Vulnerable	
Southern Giant Petrel	<i>Macronectes giganteus</i>	Near-threatened	
Stanley's Bustard	<i>Neotis denhami</i>	Vulnerable	
Striped Flufftail	<i>Sarothrura affinis</i>	Vulnerable	
Tawny Eagle	<i>Aquila rapax</i>	Vulnerable	
Wandering Albatross	<i>Diomedea exulans</i>	Vulnerable	
Wattled-Crane	<i>Burgeranus carunculatus</i>	Endangered	
White Pelican	<i>Pelecanus onocrotalus</i>	Near-threatened	
Whitebacked Night Heron	<i>Gorsachias leuconotus</i>	Vulnerable	
Whitebellied Korhaan	<i>Eupodotis cafra</i>	Vulnerable	
Whitechinned Petrel	<i>Procellaria aequinoctialis</i>	Near-threatened	
Whitecrowned plover	<i>Vanellus albiceps</i>	Near-threatened	
Yellowbilled Stork	<i>Mycteria ibis</i>	Near-threatened	
Yellowbreasted Pipit	<i>Anthus chloris</i>	Vulnerable	SA Endemic

28 Appendix I: Curriculum Vitae

28.1 Dr Malcolme Logie

Dr. Malcolme Logie
Principal and Managing Director
MSc (Botany); PhD (Biotechnology), Rhodes

Malcolme Logie has over 12 years experience in the field of Environmental Management with extensive experience in the fields of Industrial Environmental Management; Safety, Health & Environmental Management Systems; and Environmental Auditing and Assessments (environmental site assessments, environmental impact assessments, systems certification), in South Africa, Mocambique, Namibia, Angola, Ghana, Zambia, Egypt, The Czech Republic, The Slovak Republic and Romania.

Malcolme has wide-ranging experience primarily in the following sectors:

- Automotive sector
- Beverages
- Chemicals & chemical products
- Civil and mechanical engineering
- Electricity & water supply
- Metals refining & processing
- Mining & quarrying
- Pulp & paper
- Telecommunications

Malcolme's project experience largely falls into the following broad areas:

Safety, Health & Environmental Management Systems

Malcolme's experience includes management system design and implementation and also certification audits across a wide range of industrial and mining sectors in South Africa, Mocambique, Angola, Zambia and Romania.

Environmental Site Assessments

Malcolme has been the project leader on many Phase I and II ESA's that have been undertaken in accordance with the ASTM standards, at several industrial facilities in South Africa.

Environmental Auditing

Malcolme's auditing experience includes ISO 14001, OHSAS 18001 and ISO 9001 certification level audits; legal compliance, and environmental performance audits across a wide range of industrial and mining sectors in South Africa, Mocambique, Namibia, Angola, Ghana, Zambia, Egypt, The Czech Republic and Romania.

Environmental Impact Assessments

Malcolme has managed a broad range of environmental impact assessments ranging from: industrial facilities, telecommunication networks, electrification networks, transportation infrastructure, waste sites and water supply.

Professional Affiliations & Registrations

- Registered as a Professional Natural Scientist (Environmental Scientist) with the South African Council of Natural Scientific Professions (SACNASP).
- Professional Member of the South African Institute of Ecologists and Environmental Scientists (SAIE&ES)
- Certification Board of Environmental Assessment Practitioners of South Africa
- International Association of Impact Assessors (IAIASA)
- Royal Society of South Africa
- South African Association of Botanists (SAAB)
- Phycology Society of South Africa (PSSA)
- South African Auditor & Training Certification Association (SAATCA) – EMS Verification Auditor
- Bureau Veritas Quality International – Lead EMS Auditor

South African Council of Natural Scientific Professions

- Malcolme is a member of the Education Committee of South African Council of Natural Scientific Professions (SACNASP) for the registration of Professional Natural Scientist.

Rhodes University Investec Schools of Business

- Malcolme sits on the Advisory Board for the Rhodes University Investec Schools of Business which provides advice and directs the strategic planning and continual development of the business school.
- Malcolme lectures at the MBA class at the Rhodes University Investec Schools of Business on safety, health environmental management in the industrial and business environments.

Fields of Competence

- Safety, Health & Environmental Management Systems
- Industrial Environmental Management
- Environmental Site Assessments

- Environmental Impact Assessments

Education

- PhD (Biotechnology) 1995
- MSc (Botany), 1992
- BSc Honours (Botany), 1990
- BSc (Plant Science & Biochemistry), 1989

Key Projects

Recent key projects include:

South African Breweries Millers (SAB Miller)

- Ursus Breweries, Romania (SAB Miller), where Malcolme is responsible for the development and implementation of a Safety, Health & Environmental Management System at four breweries and a depot.
- Plzeňský Prazdroj, Czech Republic (SAB Miller), where Malcolme is responsible for the development and implementation of an integrated Safety, Health & Environmental Management System at three breweries.
- Dreher Sörgyárak Zrt, Hungary (SAB Miller), where Malcolme is responsible for the development and implementation of an integrated Safety, Health & Environmental Management System at this brewer.
- Ibhayi Brewery (Port Elizabeth) where an Environmental Management System was designed and implemented at this new state-of-art brewery. During the construction of the brewery Malcolme reviewed all the plans to ensure environmental sustainability

BHP Billiton (MOZAL), Mocambique

- Malcolme designed and co-ordinated the implementation of the Environmental Management System at this BHP Billiton aluminium smelter in Maputo, and continues to service this organization environmental management needs.

Coca-Cola Company

- Malcolme is the appointed SHE Management System Consultant to Coca-Cola Company Southern Africa, responsible for advising of the implementation of a SHE MS compliant with ISO 14001:2004, OHSAS 18001:1999 and the Coca-Cola Worldwide E3 programme.
- Malcolme is guiding to process for the development and implementation of an integrated SHE Management System at Coca-Cola Fortune (Polokwane & Bloemfontein). The management system is based on the requirements of ISO 14001:2004 and OHSAS 18001:1999.

Lonmin Platinum, South Africa

- Malcolme co-ordinated the design and implementation of the Environmental and Quality Management System at Lonmin's Western Platinum Refinery in Johannesburg, and also revised and re-establish the EMS at this platinum producers smelter and base metal refinery near Rustenburg.

Dorbyl Automotive Technologies, South Africa.

- For the past eight years Malcolme has been the exclusive environmental management and environmental management systems consultant to this automotive components producer. The production facilities include: foundries, forges, machine shops and manufacturing units.

Telkom SA Ltd, South Africa.

- Malcolme was instrumental in establishing the internal environmental assessment guidelines for this national telecommunication service provider, for the placement of telecommunication masts and associated infrastructure. He has also undertaken more than 120 environmental impact assessments of individual telecommunication masts throughout South Africa.

Environmental Site Assessments

- Malcolme has been the project leader on many Phase I and II ESA's that have been undertaken in accordance with the ASTM standards, at several industrial facilities in South Africa.

SHEQ Management Systems Auditing

- Malcolme has in excess of 8600 hours of SHEQ Management Systems auditing. He has audited companies in South Africa, Mocambique, Namibia, Angola, Ghana, Zambia, Egypt, The Czech Republic, The Slovak Republic and Romania.

European Scope of Accreditation

Malcolme has competency in the following Industrial Sectors:

1	Agriculture, forestry, fisheries	20	Ship building
2	Mining & quarrying	21	Aerospace
3	Beverages & foodstuff industries	22	Other transport equipment (automotive, rail)
4	Textile industries	23	Manufacturing (not classified elsewhere)
5	Leather & leather products	24	Recycling
6	Wood industries	25	Electricity supply
7	Pulp, paper & paper products	26	Gas supply
10	Mineral-oil processing	27	Water supply
12	Chemicals & chemical products	28	Construction
13	Pharmaceuticals	30	Hotels & restaurants
14	Rubber & plastic goods	31	Transport & communication
15	Glass, ceramics, processing of minerals & ores	34	Research & development
16	Production of cement, lime, gypsum & concrete, lime and gypsum products	35	Business services
17	Metals refining & processing, & production of metals	37	Education
18	Mechanical engineering	39	Other social services

28.2 Ms Lee-Anne Proudfoot

Ms. Lee-Anne Proudfoot Senior Environmental Consultant MSc (Marine Biology)

Lee-Anne Proudfoot has experience in the fields of Marine and Coastal Ecology , Geographical Information Systems (GIS), Environmental Impact Assessments, Environmental Site Assessments, Environmental Management Plans, Environmental Auditing, Visual Impact Assessments, Aquatic Impact Assessments and Project Management.

Lee-Anne's project experience includes:

Environmental Impact Assessments

Lee-Anne assisted in and managed a broad range of scoping & environmental impact assessments ranging from: agri-industrial & industrial facilities, residential & resort developments, golf estates, renewable energy technologies, storm water management, water supply, desalination and sewage.

Environmental Site Assessments

Lee-Anne has experience in site assessments, field sampling & monitoring, permit applications and in the compilation of reports for prospective land buyers.

Environmental Management Plans

Lee-Anne has experience in compiling and monitoring the Environmental Management Plans for a wide range of developments.

Environmental Auditing

Lee-Anne has experience in auditing the environmental compliance of and compiling environmental auditing reports.

Geographical Information Systems (GIS)

Lee-Anne has experience in using ArcView, Idrisi and Manifold software in assessing & producing maps, site plans, aerial photographs, etc.

Visual Impact Assessments (VIA)

Lee-Anne has experience in conducting VIA's and compiling VIA reports.

Aquatic Impact Assessments (AIA)

Lee-Anne has experience in conducting SASS5 Bio-rapid assessments for Aquatic Impact Assessments.

Project Management

Lee-Anne has experience in managing projects for a wide range of developments.

Professional Affiliations & Registrations

- Registered as a Professional Natural Scientist (Environmental Scientist) with the South African Council of Natural Scientific Professions (SACNASP).
- International Association of Impact Assessors, South Africa

Fields of Competence

- Environmental Impact Assessments
- Environmental Site Assessments
- Environmental Management Plans
- Environmental Auditing
- Geographical Information Systems (GIS)
- Visual Impact Assessments (VIA)
- Aquatic Impact Assessments (AIA)
- Project Management

Education

- M.Sc. (Marine Biology), Rhodes, 2006
- B.Sc. Honours (Marine Biology), Rhodes, 2003
- B.Sc. (Zoology and Ichthyology), Rhodes, 2002

Key Projects

African Dune Investments (Pty) Ltd

Lee-Anne is currently undertaking the environmental impact assessment and managing the environmental authorization process for the proposed Woodlands Golf Estate.

ABSA Development Company/Bigen Africa

Lee-Anne is the project manager for the environmental management component of the Albany Regional Water Services Project

African Dune Investments (Pty) Ltd

Lee-Anne is currently managing the scoping and environmental impact assessment for the environmental authorization of a proposed Wind Turbine Farm.

Amatola Green Power (Pty) Ltd

Lee-Anne is currently managing the environmental impact assessment for the proposed extraction of landfill gas from three BCM Landfill Sites for the purposes of electricity generation.

The Environmental Law Consultancy

Lee-Anne assisted in the compilation of a Legal Register for a Chrome Tanning Salts Plant in Merebank, with her focus pertaining to the relevant Occupational Health and Safety legislation.

International Finance Corporation

Lee-Anne co-ordinated and reviewed the specialist environmental studies required for the environmental impact assessment for the proposed Kalakundi Copper & Cobalt Mine in the Democratic republic of Congo.

Carpano Investments (Pty) Ltd

Lee-Anne was responsible for the environmental management component of the Spatial Development Framework for the proposed Rock Cliff development area south-east of East London

Kempston Leisure (Pty) Ltd

Lee-Anne managed the environmental authorization process for a proposed motor city

Edcot Trust (Pty) Ltd

Lee-Anne managed the environmental authorization process for a proposed motor city

Kempston Leisure (Pty) Ltd

Lee-Anne is the Environmental Control Officer for the proposed motor city development.

Wild Coast Ski Boat Club

Lee-Anne undertook the renewal application for a boat launching permit and prepared the requested environmental management plan for the Hole in the Wall Launch Site

Wild Coast Fishing Co-operative

Lee-Anne conducted and managed the environmental authorization process for a proposed aquaculture facility

Wild Coast Fishing Co-operative

Lee-Anne conducted and managed the scoping assessment for a proposed fish processing factory

Alvitex 103 (Pty) Ltd

Lee-Anne assisted on the environmental impact assessment for the proposed resort development.

Rakel (Pty) Ltd

Lee-Anne managed the environmental impact assessment for desalination plants servicing the proposed resort developments

Alvitex 103 (Pty) Ltd

Lee-Anne managed the environmental impact assessment for desalination plants servicing the proposed resort developments

Leisure Homes for Senior Citizens

Lee-Anne managed the environmental authorization process for the proposed extension of a retirement village

Fire Ring

Lee-Anne was involved in the compilation of a site assessment report for the prospective purchasing of land

Blue Beacon Investments (Pty) Ltd

Lee-Anne conducted and managed the environmental authorization process for the Connemara Housing Complex

Buffalo City Municipality – Waste Management

Lee-Anne assisted in the environmental audit process on the Buffalo City Regional Waste Disposal Site, focussing on issues such as operations and water-quality monitoring.

Buffalo City Development Agency

Lee-Anne was responsible for the environmental assessment component of the Nahoon Mouth and Sports Precinct Local Spatial Framework Plan.

Southern Palace Investments 414 (Pty) Ltd

Lee-Anne conducted and managed the scoping and environmental impact assessment for environmental authorization for a proposed mixed use development for the purposes of a hospital, retirement village and church.

Nuffield Trust

Lee-Anne conducted and managed the environmental impact assessment for the environmental authorization of a proposed Yellowwood Heights Residential Development

Riverleigh VII

Lee-Anne conducted and managed the Scoping Assessment for a proposed mixed use development for the purposes of entry level residential, office and retail.

True Group Building (Pty) Ltd

Lee-Anne conducted and managed the environmental impact assessment for the environmental authorization of a proposed light industrial site.

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