

ENVIRONMENTAL MANAGEMENT PLAN

The Proposed Utilisation of Borrow Pits Road: DR08372 (Amathole District Municipality)

Department of Roads and Public Works
Province of the Eastern Cape



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1 Proposal Release Notice

<i>Proposal Status</i>	<i>Date</i>	<i>Authorised</i>
Internal Draft	July 08, 2011	Mr. Conroy van der Riet
Client Draft	July 08, 2011	Ms. Lee-Anne Proudfoot
Public Draft	August 12, 2011	Mr. Conroy van der Riet
Final Report	September 23, 2011	Mr. Conroy van der Riet

This 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 Report is exclusive to the client and the described project. BESC accepts no responsibility of whatsoever nature to third parties to whom this Background Information Document, or any part thereof, is made known. Any such persons or parties rely on the report at their own risk.

2 Limitations

BESC has prepared this report for the sole use of the **DEPARTMENT OF ROADS & PUBLIC WORKS** 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 the **DEPARTMENT OF ROADS & PUBLIC WORKS** 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 Pits - Control Civil Services
5. Information on Cultural Heritage/Archaeological resources - ArchaeoMaps

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:

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- 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

Mr Conroy van der Riet 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 Legal Requirements

6.1 National Acts and Regulations

6.1.1 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.

6.1.2 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.

6.1.3 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).

The Department of Roads & Public Works, 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.

6.1.4 Mineral and Petroleum Resources Development Amendment Act

The Mineral and Petroleum Resources Development Amendment Act, 2009 (Act No 49 of 2009) was gazetted on the 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 comes into operation only 18 months after the commencement of the M&PDRA Amendment Act. This Amendment Act is yet to come into effect.

6.1.5 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;
- 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.

6.1.6 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.

6.1.7 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.

6.1.8 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.

6.1.9 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.

6.1.10 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.

6.1.11 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.

Species listed on the NEM: BA Threatened or Protected Species List/Schedule requires permits to be obtained from the Department of Environmental Affairs should a restricted activity involving the specimen be undertaken.

6.1.12 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 from the landowner must be obtained to remove or destroy any plants listed as 'protected' in the Ordinance.

6.1.13 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.

6.1.14 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.

6.1.15 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.

6.1.16 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.

6.1.17 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)

6.1.18 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.

6.2 Plans, Policies & Guiding Principles

6.2.1 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

6.2.2 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.

6.2.3 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.

6.2.4 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

7 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.543: Environmental Impact Assessment Regulations in terms of section 24(5), 24M and 44 of the National Environmental Management Act, 1998;

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 (Department of Roads and Public Works), as an organ of state, has obtained exemption from the provisions of sections 16, 20, 22 and 27 (application processes) 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 the material sources is subject only to the preparation, submission and approval of an Environmental Management Plan compiled in accordance with requirements of the M&PRDA.

8 Responsibilities of the Role Players

8.1 Developer

The Developer (the Department of Roads & Public Works in this instance) remains ultimately responsible for ensuring that the development is implemented according to the requirements of the EMP. 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. BESC has been appointed as the independent Environmental Control Officer (ECO) to oversee all the environmental aspects relating to the development.

8.2 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/her-self with the EMP requirements before coming onto site and shall request clarification on any aspect of these documents, should they be unclear.

8.3 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/her-self 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/Contract Engineer in terms of the EMP.

8.4 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
- The ECO has the right to enter the site and undertake monitoring, auditing and assessment at any time, with the agreement of the Contractor, which agreement shall not be unreasonably withheld.

The ECO shall be responsible for liaising with the DMR. The ECO shall submit quarterly 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.

8.5 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 be ideally be a senior member of the contractor's management team. The ELO 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.

9 Introduction & Overview

The **Department of Roads and Public Works** is responsible for the maintenance of the gravel roads network in the Eastern Cape Province through routine maintenance or re-gravelling contracts. The Department of Roads and Public Works has appointed a consortium of Engineering Consultants (RAMS Management Consultants) to manage the Road Asset Management System (RAMS) which includes the borrow pit management system. Controlab cc is the Professional Services for the conducting of Geotechnical Borrow pits. BESC have been appointed as independent environmental consultants by Controlab cc on behalf of Department of Roads and Public Works 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 utilisation of the borrow pits for the routine maintenance/re-gravelling of the DR08372.

It is proposed that road construction materials be sourced from existing borrow pits located in the vicinity of the DR08372. As mentioned previously, the utilisation 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 applicant, Department of Roads and Public Works, is an Organ of State, exemption has been obtained previously from the application process in terms of the Act. In terms of this exemption only an Environmental Management Plan for the utilisation of the borrow pits is required to be compiled 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.

It is proposed that material sources required for the project will be sourced from four (4) borrow pits located throughout the area (**Figure 1**).

Table 1: Summary Table of Borrow Pits.

Information	Borrow Pits			
	372-BP01	372-BP02	372-BP03	372-BP04
Ownership of Land	Communal	Communal	Communal	Communal
Type of Material	Shale	Decomposed Dolerite	Decomposed Dolerite	Decomposed Dolerite
New/Existing	Existing	Existing	Existing	Existing
Co-ordinates (Latitude)	32° 22' 20.3"	32° 23' 26.7"	32° 23' 47.0"	32° 24' 57.5"
Co-ordinates (Longitude)	28° 07' 19.3"	28° 06' 59.6"	28° 06' 38.5"	28° 05' 29.7"
Nearest Village	Rhala	Ndontshanga	Ndontshanga	Langeni
Distance to access road	10m	40m	10m	10m
Distance to nearest houses	180m	50m	490m	40m
Presence of Servitude	Powerline	Powerline Telephone Line	None	Powerline Telephone Line
Proposed End Use	Closed & Rehabilitated	Closed & Rehabilitated	Closed & Rehabilitated	Closed & Rehabilitated

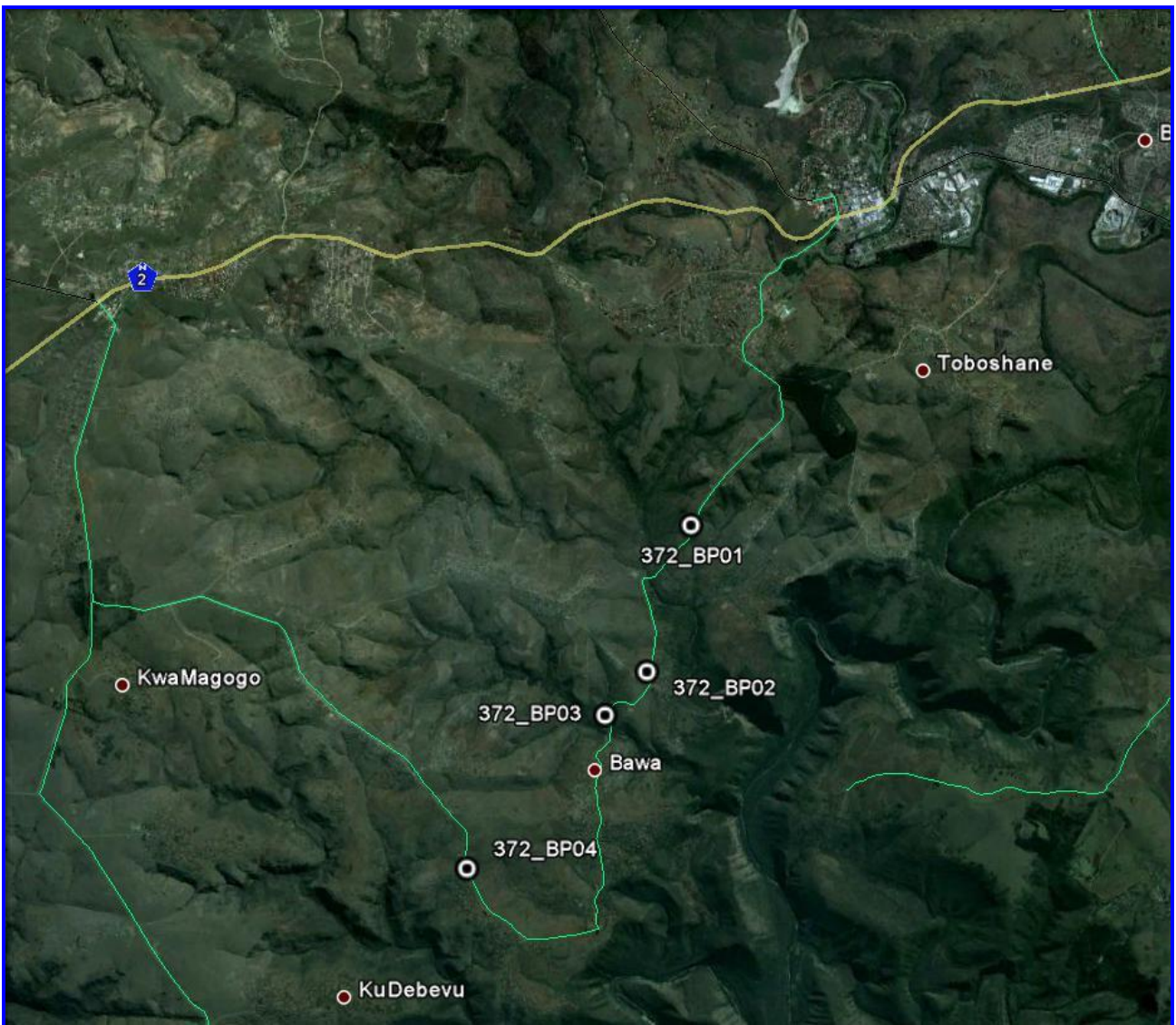


Figure 1: Aerial View - Borrow Pit locations.

9.1 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.

9.2 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.

9.3 Project Details

Applicant:

The Department of Roads & Public Works
 Private Bag X0023
 BHISHO
 5605
 Tel No.: (043) 604 7636
 Fax No.: (086) 532 3972
 Contact Person: Mr. C.J. Xoko or Mr. C. Boshoff

Environmental Consultant

Biotechnology and Environmental Specialist Consultancy cc
 P O Box 8241
 Nahoon
 5210
 Tel: (043) 726 4242
 Fax: (043) 726 3199
 Email: conroy@besc.co.za
 Contact Person: Mr. Conroy van der Riet

Landowner

Borrow Pits #	Property/Allotment Name	Landowner/Custodian
372_BP01	BUTTERWORTH MISSION	Department of Rural Development and Land Reform
372_BP02	TONGWANA	Department of Rural Development and Land Reform
372_BP03	TONGWANA	Department of Rural Development and Land Reform
372_BP04	TONGWANA	Department of Rural Development and Land Reform

10 Need and Desirability

The existing gravel roads in the Amathole District Municipality are in serious need of maintenance and re-gravelling. The proposed maintenance/re-gravelling of the DR08372 will be a benefit to the users of the road by providing proper infrastructure, and improving overall road safety. The proposed borrow pits will provide material for the maintenance/re-gravelling of the DR08372. The identification of these sources follows a materials identification/investigation undertaken by Control Civil Services. A copy of this report can be found under **Appendix C**. The material from the borrow pits were concluded to be suitable for use and that they would yield high quantities of material for the maintenance of the road. As part of the measures to be taken for the borrow pits, rehabilitation is required on closure of the mining, this rehabilitation would be a benefit as this should improve the overall aesthetics of the borrow pits which are currently a visual scar on the landscape, having had no rehabilitation undertaken on them in the past.

11 Description of the Borrow Pits

It is proposed to use four (4) borrow pits for the provision of material for the upgrade/re-gravelling of DR08372. All of the borrow pits have been previously mined. The borrow pits will be used exclusively for the upgrade/re-gravelling of DR08372 and will be rehabilitated and closed on completion of the works.

A number of alternative borrow pits were investigated. A selection process was undertaken whereby the borrow pits having fatal flaws or limited resources were eliminated during the planning process using indicators such as existing/non-existing borrow pits, surrounding land use, materials present, volume of available material, distances to water courses, land capability, vegetation sensitivity, surrounding erosion, visibility, slopes, etc.

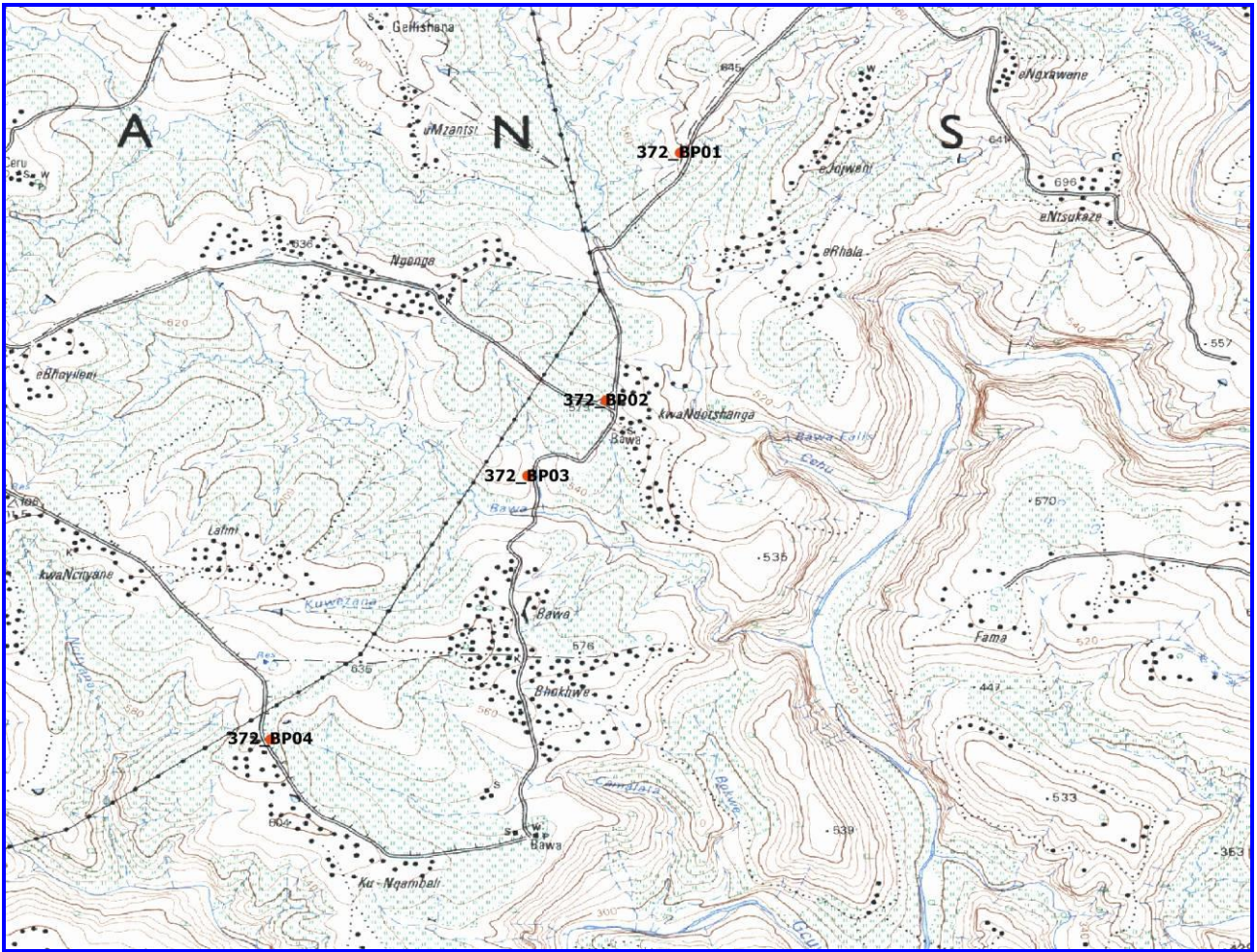


Figure 2: Topographical location of all the borrow pits.

11.1 Borrow Pit 372-BP01

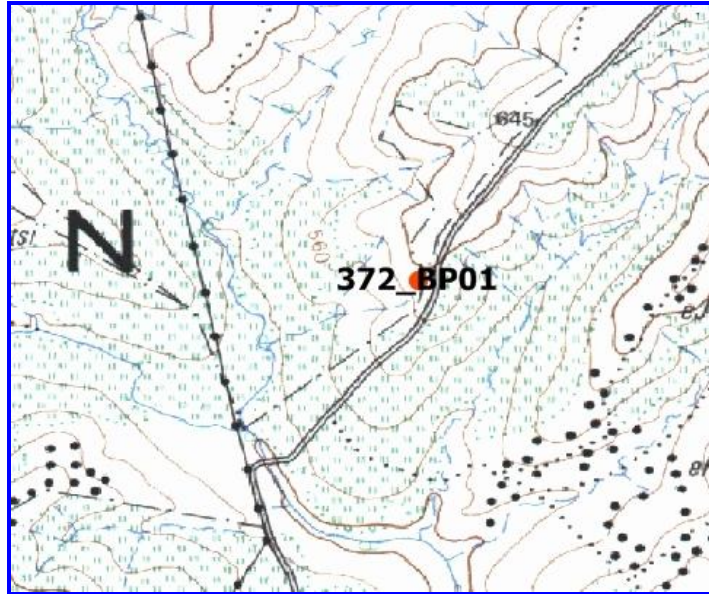


Figure 3: Topographical Location - 372-BP01.

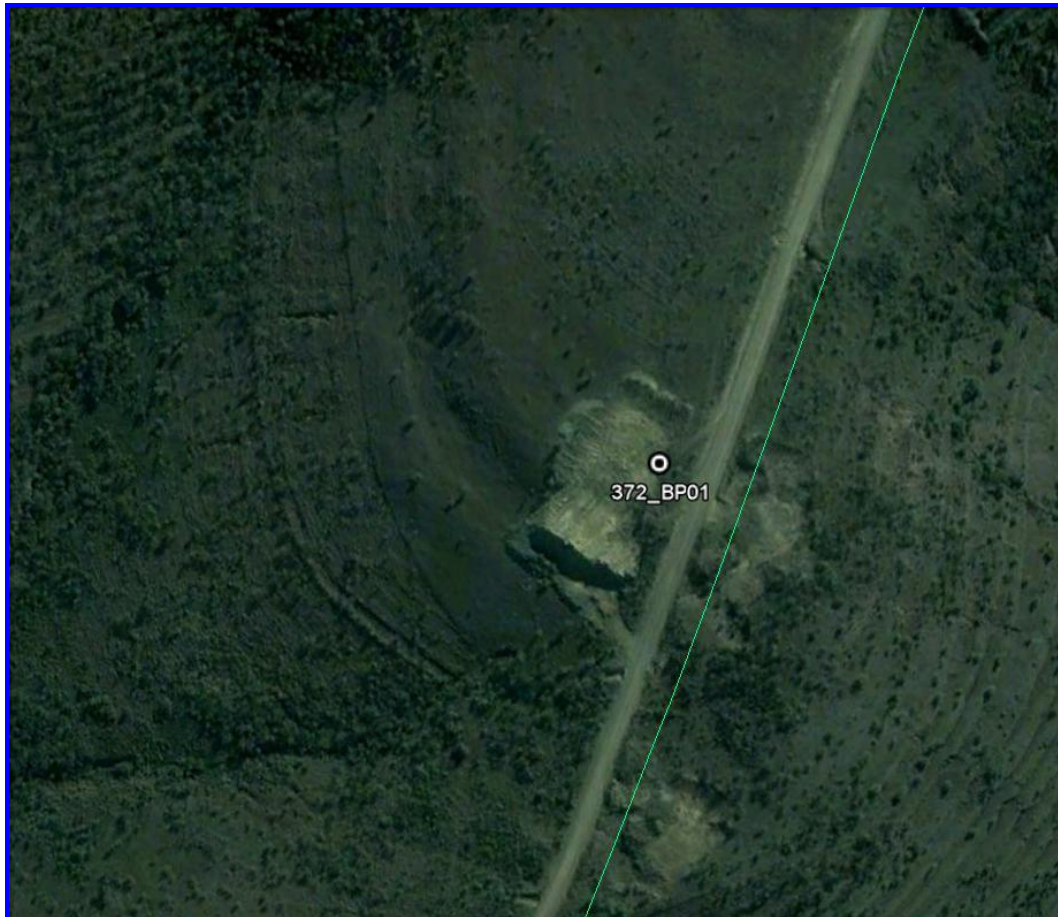


Figure 4: Aerial view - 372-BP01.



Figure 5: Photo - 372-BP01.

General Description

372-BP01 is an existing borrow pit which has been used extensively in the past. It is located on the side of a south-west facing hill. The site is accessed by an unpaved/gravel road which has its intersection on the DR08372. The nearest houses are located +/- 180m from the borrow pit. There is an overhead powerline running along the main road and boundary of the borrow pit. It is the intension that the borrow pit will be mined from the existing borrow pit face in a north-westerly direction, in order to avoid disturbance to the overhead powerline, and within the footprint of the existing borrow pit as indicated on the mining plan (**Appendix B**). It will not be necessary to relocate any households.

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 & overburden (stored separately).

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 face and 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 will be approximately 0.625ha.

Proposed Rehabilitation Measures:

Stormwater control is viewed as a critical component of the borrow pit development. It is suggested that a stormwater cut-off berm be located upslope from the borrow pit face, protecting the active mining area, topsoil and overburden stockpiles from erosion. This storm water will then be channelled towards the natural drainage in the area. A diversion berm with dissipation beds should be installed down slope of the mining area to filter out any sediment washed off the site during heavy rainfall.

On completion of mining, the faces must be sloped to a 1:2 - 1:3 slope and overburden and then topsoil (imported if required) will be spread over the surface of the mining area. The access roads will be ripped. The entire area will be fertilized and hydroseeded with an indigenous grass mix which includes quick-growing pioneers and climax species. The stormwater berms and dissipation beds will be retained on closure. Additionally, near vertical slopes (1:1 to 1:2) should be stabilised by natural rock wall structures 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 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.

11.2 Borrow Pit 372-BP02

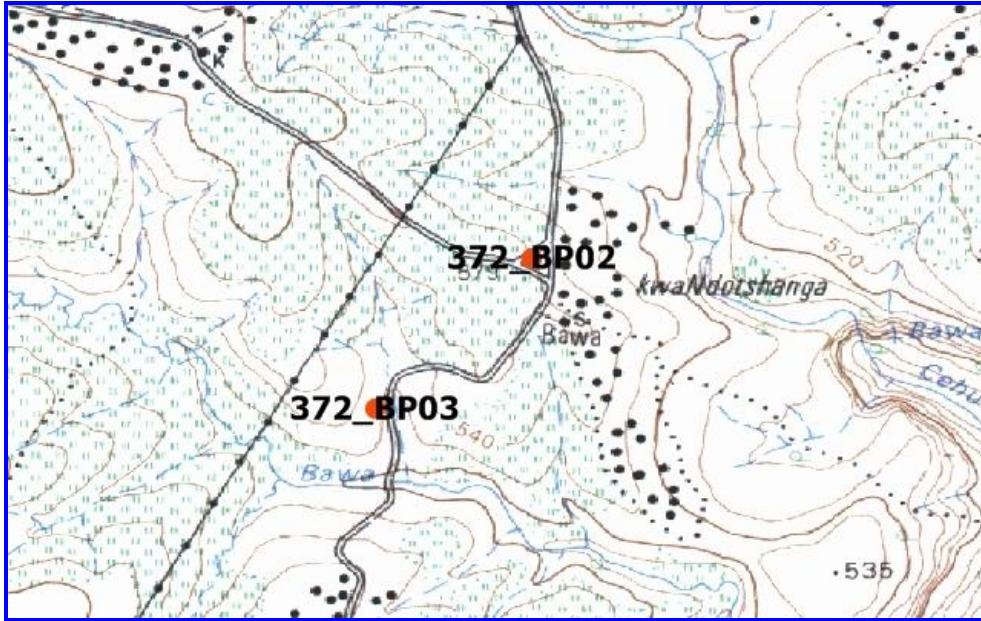


Figure 6: Topographical Location - 372-BP02.



Figure 7: Aerial view - 372-BP02.



Figure 8: Photo - 372-BP02.

General Description

372-BP02 is an existing borrow pit which has been used extensively in the past. It is located on the side of a north-east facing hill. The site is accessed by an unpaved/gravel road which has its intersection on the DR08372. The nearest houses are located +/- 50 m from the borrow pit. There is an overhead powerline running along the main road (on the other side) and along the southern boundary of the mining area. It is the intention that the borrow pit will be mined from the existing borrow pit face in a north and easterly direction, in order to avoid disturbance to the overhead powerline and any nearby homesteads, and within the footprint of the existing borrow pit as indicated on the mining plan (**Appendix B**). It will not be necessary to relocate any households.

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 & overburden (stored separately).

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 face and floor of the borrow pit and if possible loaded directly onto haul trucks. The material to be mined will be decomposed dolerite. It is proposed that the extent of the area to be mined will be approximately 1.423ha.

Proposed Rehabilitation Measures:

Stormwater control is viewed as a critical component of the borrow pit development. It is suggested that a stormwater cut-off berm be located upslope from the borrow pit face, protecting the active mining area, topsoil and overburden stockpiles from erosion. This storm water will then be channelled towards the natural drainage in the area. A diversion berm with dissipation beds should be installed down slope of the mining area to filter out any sediment washed off the site during heavy rainfall.

On completion of mining, the faces must be sloped to a 1:2 - 1:3 slope and overburden and then topsoil (imported if required) will be spread over the surface of the mining area. The access roads will be ripped. The entire area will be fertilized and hydroseeded with an indigenous grass mix which includes quick-growing pioneers and climax species. The stormwater berms and dissipation beds will be retained on closure. Additionally, near vertical slopes (1:1 to 1:2) should be stabilised by natural rock wall structures 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 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.

11.3 Borrow Pit 372-BP03

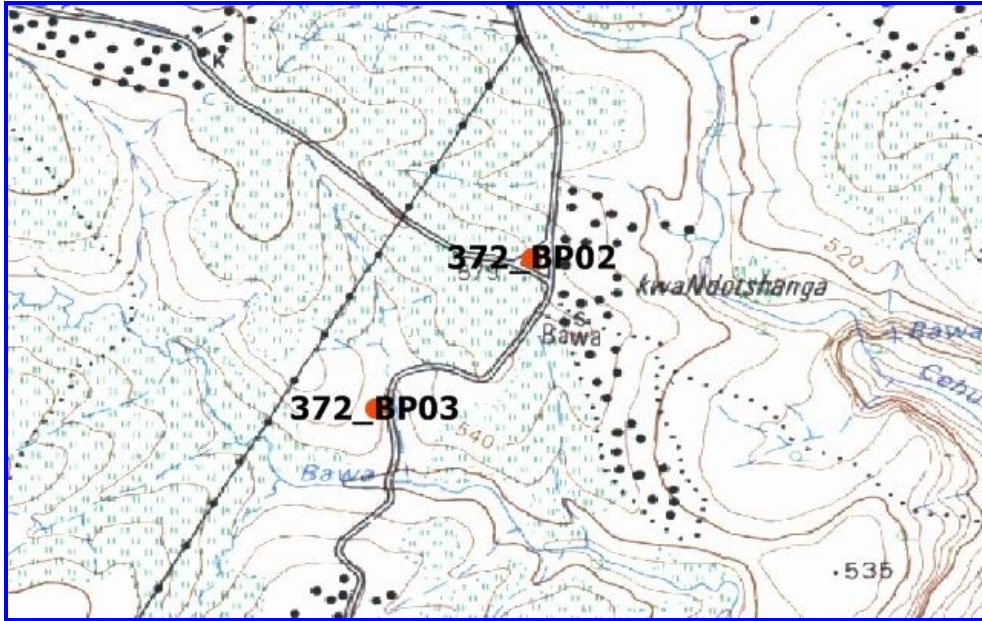


Figure 9: Topographical Location - 372-BP03.

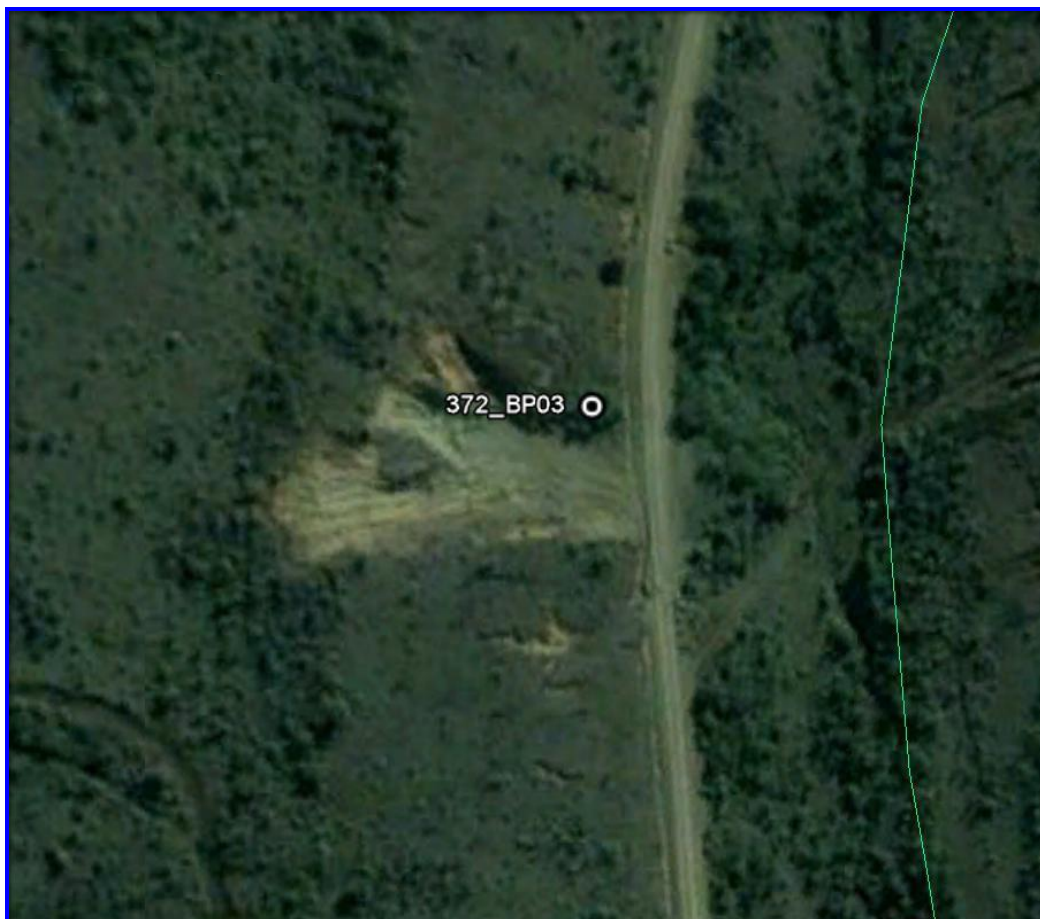


Figure 10: Aerial view - 372-BP03.



Figure 11: Photo - 372-BP03.

General Description

372-BP03 is an existing borrow pit which has been used extensively in the past. It is located on the side of an east-facing hill. The site is accessed by an unpaved/gravel road which has its intersection on the DR08372. The nearest houses are located +/- 490m from the borrow pit. It is the intention that the borrow pit will be mined from the existing borrow pit face in a westerly direction and within the footprint of the existing borrow pit as indicated on the mining plan (**Appendix B**). It will not be necessary to relocate any households.

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 & overburden (stored separately).

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 face and floor of the borrow pit and if possible loaded directly onto haul trucks. The material to be mined will be decomposed dolerite. It is proposed that the extent of the area to be mined will be approximately 0.574ha.

Proposed Rehabilitation Measures:

Stormwater control is viewed as a critical component of the borrow pit development. It is suggested that a stormwater cut-off berm be located upslope from the borrow pit face, protecting the active mining area, topsoil and overburden stockpiles from erosion. This storm water will then be channelled towards the natural drainage in the area. A diversion berm with dissipation beds should be installed down slope of the mining area to filter out any sediment washed off the site during heavy rainfall.

On completion of mining, the faces must be sloped to a 1:2 - 1:3 slope and overburden and then topsoil (imported if required) will be spread over the surface of the mining area. The access roads will be ripped. The entire area will be fertilized and hydroseeded with an indigenous grass mix which includes quick-growing pioneers and climax species. The stormwater berms and dissipation beds will be retained on closure. Additionally, near vertical slopes (1:1 to 1:2) should be stabilised by natural rock wall structures 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 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.

11.4 Borrow Pit 372-BP04

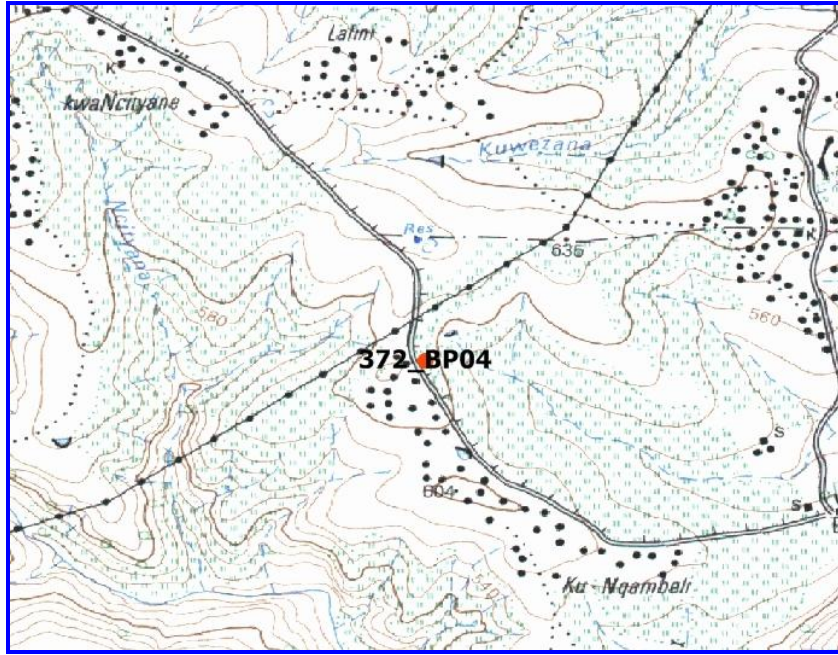


Figure 12: Topographical Location - 372-BP04.



Figure 13: Aerial view - 372-BP04.



Figure 14: Photo - 372-BP04.

General Description

372-BP04 is an existing borrow pit which has been used extensively in the past. It is located on the side of a east facing hill. The site is accessed by an unpaved/gravel road which has its intersection on the DR08372. The nearest houses are located +/- 40m from the borrow pit. There is an overhead power and telephone line running along the main road (on the other side) as well as some cultivated fields directly north and south of the borrow pit.. It is the intension that the borrow pit will be mined from the existing borrow pit face in an easterly direction, in order to avoid disturbance to the road, powerline, telephone line and the cultivated fields, and within the footprint of the existing borrow pit as indicated on the mining plan (**Appendix B**). It will not be necessary to relocate any households.

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 & overburden (stored separately).

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 face and floor of the borrow pit and if possible loaded directly onto haul trucks. The material to be mined will be decomposed dolerite. It is proposed that the extent of the area to be mined will be approximately 1.198ha.

Correspondence received from the Department of Mineral Resources has indicated that this borrow pit (372_BP04) has already been permitted by the Department of Roads and Transport. The permit for this borrow pit expires on 10/02/2015. As this is an already permitted borrow pit, the utilization of the borrow pit is subject to the mitigation and conditions of the EMP that has been approved by the Department of Mineral Resources. The Reference Number for this Approval is D/2004/10/13/002: 2/3/2/1(14) EM.

12 Description of the Environment

12.1 Landform & Geology

12.1.1 Geology & Soils

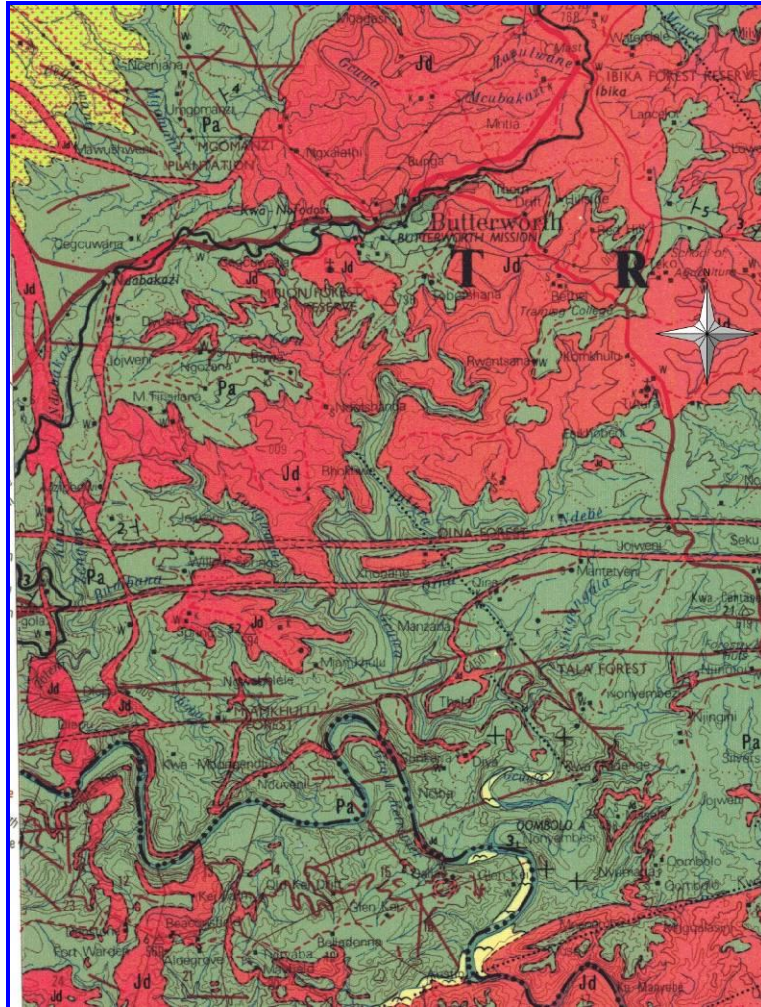


Figure 15: The geology of the study area

The geology of the study site is underlain by the Ecca Group and Adelaide Subgroup (which belongs to the Beaufort Group) falling under the Karoo Sequence (**Figure 15**).

This **Adelaide Subgroup** rests conformably on the Ecca Group and consists of mudstone alternating with subordinate fine-grained lithofeldspathic sandstone, forming upward-fining cycles. The sandstones are usually grey, display through cross-bedding, flat-bedding or micro-crosslamination, and are generally a few meters thick. The mudstones are usually massive and

greenish-grey, though greyish-red mudstones are found in the middle and at the top of the subgroup.

Due to poor exposure the three formations (Middleton, Balfour, Koonap) found in this subgroup were not mapped separately, although the Middleton formation could be recognised as far north as Mount Ayliff.

A total thickness of 1900m is estimated for the Adelaide Subgroup near Elliotdale, decreasing to 1650m near the northern edge of the area. Exposures along the coast near the Mgazana River mouth have an estimated thickness of 1750m. The presence of lenticular sandstones, upward-fining cycles, massive mudstones, plant impressions and terrestrial reptile remains all point to a fluvial mode of deposition with streams meandering across extensive muddy flood plains.

Fossils are rare in the Koonap and Middleton formations, being mainly fragmentary plant remains. A number of specimens of the terrestrial reptile *Lystrosaurus* have, however, been collected from the uppermost part of the Balfour formation.

The **Ecce Group** overlies the Dwyka tillite and is a 1000m thick succession of shale and subordinate sandstone. North of Grahamstown the Ecce Group has been subdivided into the Prince Albert, Whitehill, Coliingham, Ripon and Fort Brown Formations. The three lowermost ones are relatively thin.

Only trace fossils have so far been found in the area. The Ecce shales appear to represent deep-water muds with occasional influxes of coarser arenaceous material brought in by turbidity currents. A gradual swallowing of the basin took place during deposition since the overlying Beaufort Group was deposited under fluvial conditions.

The investigation undertaken by Control Civil Services indicated that the borrow pits comprised of the following materials:

Borrow Pit #	Material Source
372_BP01	Shale
372_BP02	Decomposed dolerite
372_BP03	Decomposed dolerite
372_BP04	Decomposed dolerite

12.1.1.1 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.

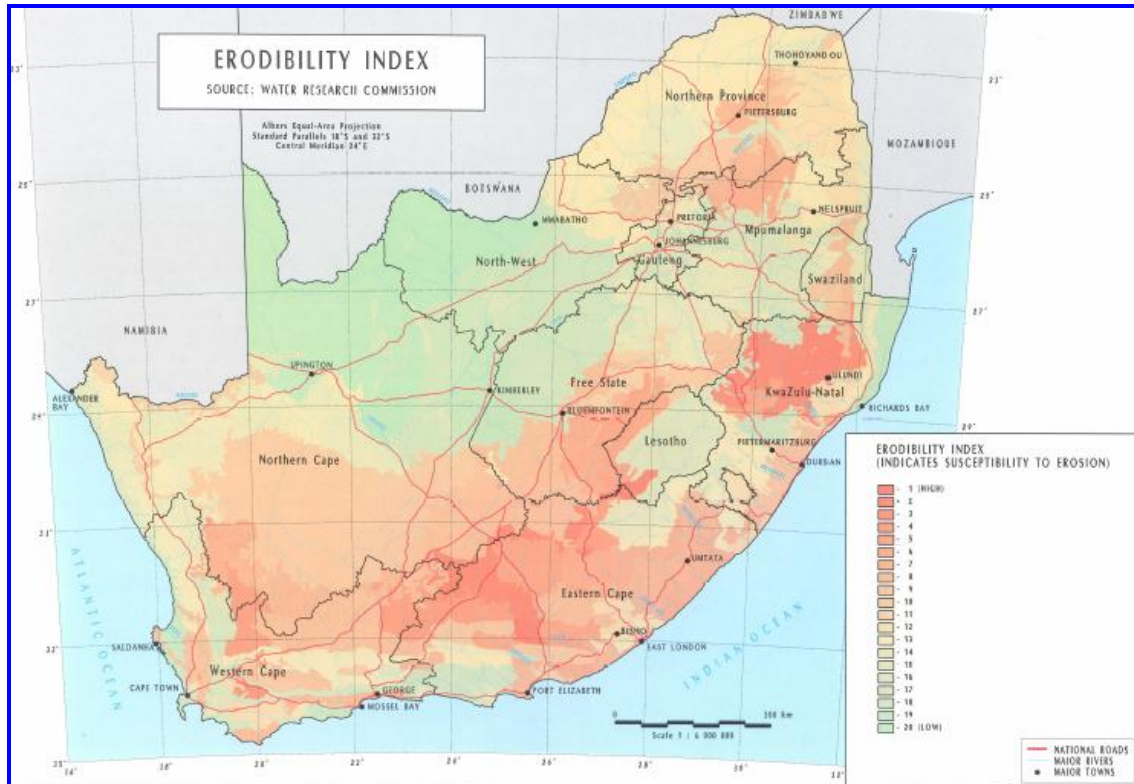


Figure 16: Erodibility Index

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.

12.1.2 Topography and Drainage

The topography of the area consists of the high mountains of the Drakensberg in the interior with the rugged foothills of the mountains falling to a hilly central plateau which is bounded along its south-eastern edge by a coastal strip consisting of very steep grassy hills separated by numerous deeply incised valleys

The study area falls within the Mzimvubu to Keiskamma Water Management Area (WMA) which is bounded in the west by the Fish to Tsitsikamma WMA, the Upper Orange WMA and Lesotho in the north, the Mvoti to Umzimkulu WMA in the north-east, and the Indian Ocean in the south-east. It 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).

12.2 Archaeology, Palaeontology & Heritage Sites

The Beaufort Group is Late Permian (255 million years) to Mid Triassic (237 million years) in age. Characteristic fossils include fish, amphibians and reptiles with a dominance of mammal-like reptiles (Therapsids). In addition, characteristic fossils include plant fossils of the *Glossopteris* flora with occasional invertebrate fossils (freshwater bivalve molluscs). Most of the fossils specimens represent groups that are now extinct. It is estimated that less than 5% of sites have been identified in the Eastern Cape.

Through the Amathole Heritage Initiative a number of heritage sites have been identified. Four heritage routes were then established. These include:

- King Phalo route,
- King Sandile route,
- Chief Maqoma route
- Makhanda route

In each route signage, interpretive text and access road were done to other sites but not to others. In the same context Visitor Information Centres exist in the district where they package, position and market available heritage resources, events, destinations and festivals in each local municipality. As part of this initiative heritage sites were audited and an inventory created. An audit of these sites was done with the aim to have better understanding.

To date more than 300 heritage sites have been identified. The sites are available and can be viewed on municipal website.

A Phase 1 Archaeological Impact Assessment and Palaeontological Impact Assessment were conducted and findings of such can be found under **Appendix C**.

12.3 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 area 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 in the area occurs mainly in summer, but the winter months are not completely dry, with about 30% of the annual rainfall occurring between April and September. There is a great variation of the quantity of rainfall throughout the area. The mean annual precipitation (MAP) along the coastal region ranges from a low of 600mm in the west to a high of 1 208mm in the east, and varies from 400mm to 1200mm in the central plateau and along the northern areas. The rainfall is generally higher in the east than in the west.

The relative humidity is higher in summer than in winter. It is generally highest in February (the daily mean ranges from 60% in the north-west to 82% in the south-east) and lowest in July (the daily mean ranges from 50% in the north-west to 72% in the south-east). Average potential mean annual gross evaporation (MAE) (as measured by Symons-pan) for the WMA ranges from 1700mm in the north-west to less than 1200mm in the south-eastern parts.

12.4 Flora

12.4.1 General vegetation

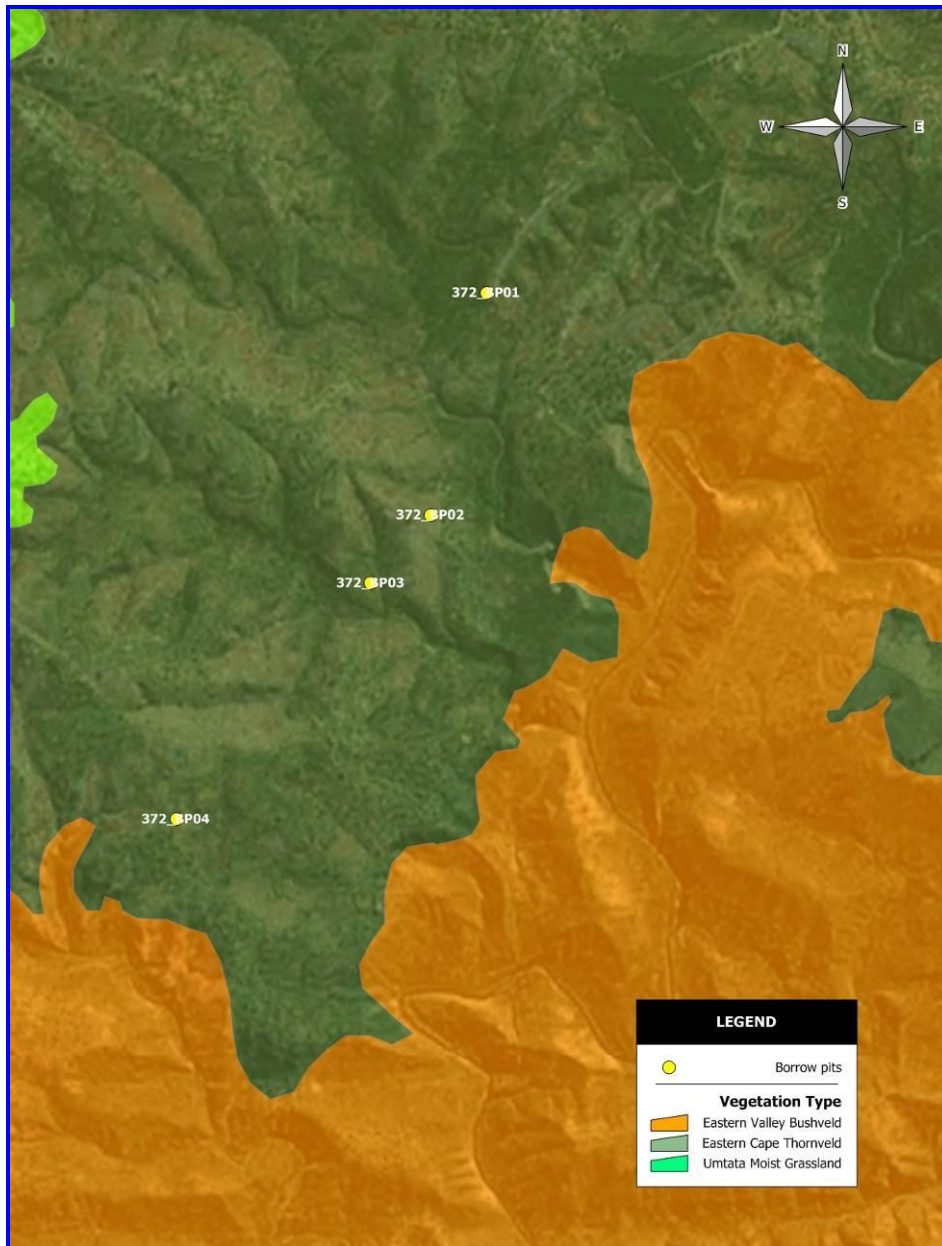


Figure 17: General vegetation.

The borrow pits falls within Bhishe/Eastern Cape Thornveld according to Mucina & Rutherford (2006).

The Bhishe/Eastern Cape 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 at altitudes 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 Double-drift 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.

12.4.2 Eastern Cape Biodiversity Conservation Plan

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.

The borrow pits are located mainly in the following BLMC units (**Figure 18**):

- BLMC 2: Near natural landscapes: where the objective is to maintain the near-natural state with minimal loss in ecosystem integrity and functioning. (372-BP01 & 372-BP03 falls within this unit, and as such the mining area has been limited to below 1ha in extent.)
- BLMC 4: Towns & Settlements - where the objective is to manage land to optimize sustainable agricultural production.
- BLMC 4: Cultivated land - where the objective is to manage land to optimize sustainable agricultural production.
- Degraded Lands - Areas that have been degraded due to bad land use management practices and rural settlements.

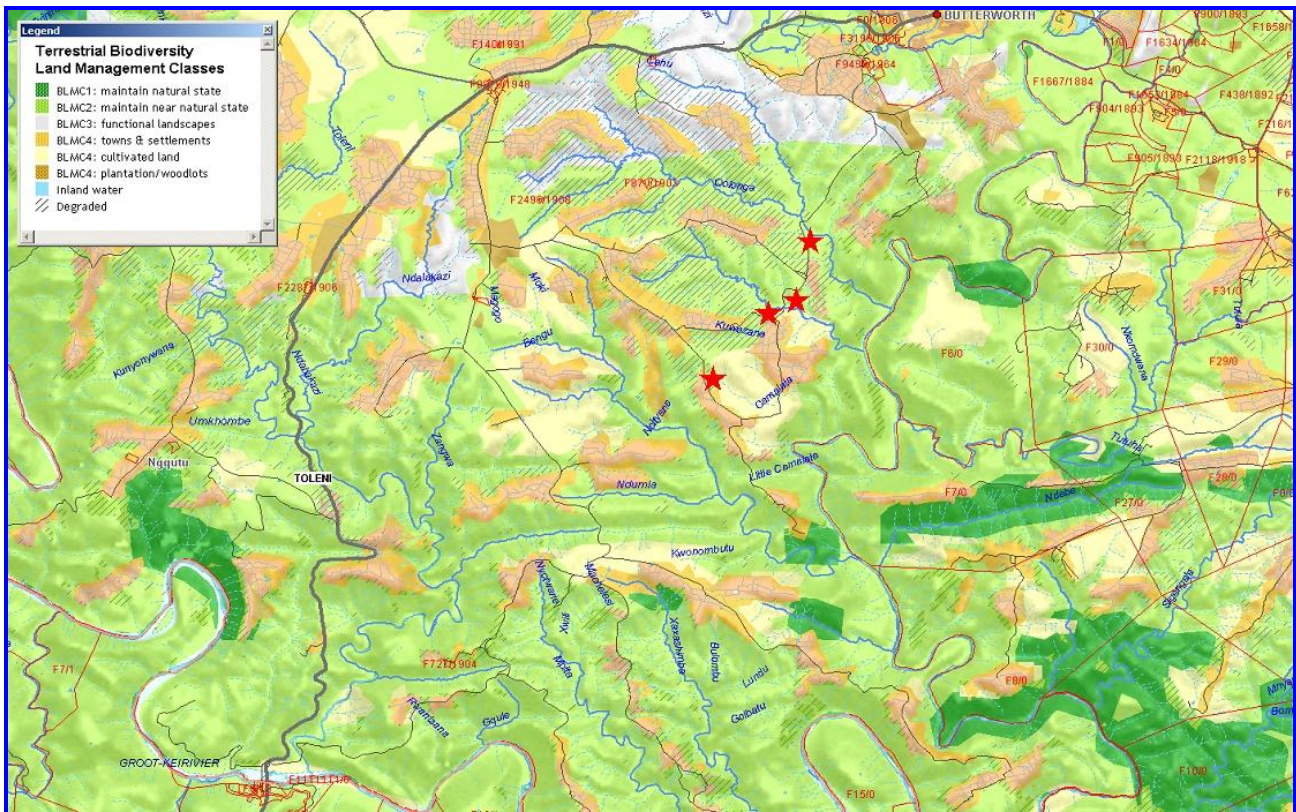


Figure 18: The ECBCP Map and the study area.

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 sites are existing borrow pits utilised in the past and as such the areas have been transformed/disturbed.

12.4.3 Protection status and legislation and Species of Special Concern

While only a preliminary botanical investigation was undertaken, it was observed that none of the indigenous vegetation in the area of the borrow pits was protected or endangered species, except for one single White Milkwood (*Sideroxylon inerme*) near the entrance to the borrow pit (372-BP02). *Sideroxylon inerme* is protected under the National Forest Act (84 of 1998). In terms of Section 15 (1) of the Act, no person may cut, disturb, damage or destroy any protected tree, except under a license granted by the Department of Agriculture, Forestry & Fisheries (DAFF). The mining plan has none the less been designed in such a way as to avoid disturbance of this White Milkwood tree.

12.4.4 Alien Invasive Plant species

A few declared alien invasive plant species are present within the area of the borrow pits. They tend to form scattered clumps of low to moderate density within the borrow pit area. These alien 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 2: Alien Invasive plants present within the site.

No.	Botanical Name	Common Name	Family	Category
2	<i>Cirsium vulgare</i>	Scotch thistle	Asteraceae	CARA 1
4	<i>Lantana camara</i>	Lantana	Verbenaceae	CARA 1
8	<i>Solanum sisymbriifolium</i>	Dense-thorned bitter apple	Solanaceae	CARA 1

12.5 Fauna

12.5.1 Reptiles & Amphibians

Of the 480 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 mombatus*) 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.

There are 102 amphibian species recorded in South Africa and about 47% of these occur in the Eastern Cape. One of these is an Artholeptid (frog), one is a Pipid (aquatic frog), three are Helephrynids (frogs which live in mountain streams and are endemic to South Africa), nine are Bufonids (true frogs) three are Bevicepids (stout bodied frogs), twenty-one are Ranids (frog family) and nine are Hyperolids (reed frogs). 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 Pondoland amphibian fauna is relatively poorly known, as is much of that of the former Transkei. This is unfortunate as the region falls at an important transition zone between a southern temperate amphibian fauna, and a tropical fauna that extends along the coastal littoral in association with the warm waters of the Agulhas Current (Poynton, 1990). The known amphibian fauna includes approximately 31 species. New taxa may well still exist in the poorly studied forest patches, river gorges and coastal grasslands. Species currently known only from coastal locations may also have relict inland populations.

12.5.2 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. 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 3: 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

12.5.3 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.

12.5.4 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).

12.6 Socio - Economic Environment

The Amathole District Municipality (ADM) is situated within the Eastern Cape Province, between Port Alfred and Port St John's, and includes the city of East London. The district stretches from the Indian Ocean coastline in the south to the Amathole Mountains in the north. The District includes the large parts of the former Ciskei and Transkei homeland areas, which means the district has large disparities within its borders. It is bordered by the Cacadu, Chris Hani, and OR Tambo municipalities. The District covers a land area of roughly 23,577.11km².

According to Statistics South Africa (Community Survey, 2007), the population of the Amathole District was about 1,635,433 in 2007. The population is unevenly distributed among the eight Local Municipalities. The majority of the Amathole District population reside within the Buffalo City LM (42.8%), followed by Mnquma LM (16.4%) and Mbashe LM (16.1%). The two Local Municipalities with the smallest percentages of the Amathole District population are Nxuba (1.5%) and Great Kei (2.9%). The ADM is made up predominately by Black South Africans (91.9%), this is followed by White South Africans (4.9%) then Coloureds (2.9%) and finally Indian or Asians (0.3%).

According to figures provided by Global Insight for 2009, only 17% of the adult population (20 years+) had completed Grade 12, while only 8% had a tertiary/higher education qualification. The majority of the adult population had some secondary level education, but had not completed their matric. 12% had completed primary level education up to Grade 7, while 14% had only some primary level education. 11% of the adult population, as measured in 2009, had no schooling whatsoever.

Table 4: Annual Household Income, ADM, 2009.

Income	1995 (%)	2000 (%)	2005 (%)	2009 (%)
R500 - R1000	22.9	17.4	15.7	10
R1001 - R3500	44.1	45.6	44.9	40.3
R3501 - R6000	9.4	10.5	13.8	18.4
R6001 - R11000	6.7	6.5	8.3	12.3
R11001 - R16000	3.5	3.4	3.7	5.1
R16001 - R30000	1.9	3.2	4.8	6.4
R30001 - R50000	0.7	1.5	2.1	3.3
R 50,000 >	0.2	0.4	1.1	2.3

13 Potential Issues & Environmental Impacts

13.1 Geology & Soils

Soil may be lost due to vegetation removal, soil erosion, soil pollution as a result of spillages and loss of viability due to compaction. 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 structural geology of the area.

13.2 Topography & Drainage

The topography may be impacted upon by extensive cut and fill sections being created during mining activities. This could in turn have an effect on the storm water runoff and drainage of the immediate surrounding areas which in turn could lead to erosion.

13.3 Consumption of Non-renewable Resources

The mining activities may impact on the local and regional natural resources as soil and hard rock will be used during construction activities. Due to the fact that the material resources will be used for upgrading/re-graveling purposes, and not for the construction of a new road, the proposed quantities mined from the borrow pits can be seen as relatively low and should therefore not deplete local or regional resources significantly.

13.4 Surface Water

Surface water may become polluted via point source and/or diffuse discharge such as oil, fuel and chemical spills. Mining activities may also lead to soil erosion, which could lead to sedimentation of the rivers, and subsequently, the water quality. This may lead to an impact on downstream biota of the river/stream.

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

13.5 Groundwater

Groundwater may also become polluted via point source and/or diffuse discharge such as oil, fuel and chemical spills. Petroleum products (used by excavation machinery) 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 mining purposes then the contractor must obtain a permit from the Department of Water Affairs prior to any abstraction taking place.

13.6 Vegetation Removal and Habitat Disturbance

All of the borrow pits are located within areas where there is a high level of utilization leading to degradation and transformation. The vegetation units show various stages of over-utilization, and the shifting effects of development have caused continuous disturbance of the soil surface, which has led to secondary succession changes in the grassland and invasion by alien invasive species. Poor grazing management has led to the dominance of unpalatable grasses and invasion by weedy, mostly alien, forbs.

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

13.7 Air Quality

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

13.8 Visual Impact

Borrow pit activities may lead to dust generation and vegetation removal which could have a visual impact visually on the rural character of the area.

13.9 Archaeology, Palaeontology & Heritage Sites

An Archaeological Impact Assessment was conducted on the proposed borrow pits. A summary of the findings are presented in the table below:

Table 5: Summary of Archaeological/Heritage Assessment.

Rd #	BP #	AIA Finding	AIA Recommendation
DR08372	372_BP01	No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during the Phase 1 AIA assessment of borrow pit 372_BP01.	It is recommended that use of borrow pit 372_BP01 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.
DR08372	372_BP02	No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during the Phase 1 AIA assessment of borrow pit 372_BP02.	It is recommended that use of borrow pit 372_BP02 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.
DR08372	372_BP03	No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during the Phase 1 AIA assessment of borrow pit 372_BP03.	It is recommended that use of borrow pit 372_BP03 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.
DR08372	372_BP04	No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during the Phase 1 AIA assessment of borrow pit 372_BP04.	It is recommended that use of borrow pit 372_BP04 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.

A Palaeontological Impact Assessment was conducted on the proposed borrow pits. A summary of the findings are presented in the table below:

Table 6: Summary of Palaeontological Impact Assessment.

Rd #	BP #	Findings	Recommendations
DR08372	372_BP01	No palaeontological resources found.	All borrow pits in the study area containing sedimentary rocks should be resurveyed by a palaeontologist at the end of excavations and prior to any form of rehabilitation. This will allow survey and sampling of freshly exposed palaeontological material and possible recommendations regarding strata to be left un-rehabilitated for future access by professionals

Rd #	BP #	Findings	Recommendations
DR08372	372_BP02	No palaeontological resources found.	All borrow pits in the study area containing sedimentary rocks should be resurveyed by a palaeontologist at the end of excavations and prior to any form of rehabilitation. This will allow survey and sampling of freshly exposed palaeontological material and possible recommendations regarding strata to be left un-rehabilitated for future access by professionals
DR08372	372_BP03	No palaeontological resources found.	All borrow pits in the study area containing sedimentary rocks should be resurveyed by a palaeontologist at the end of excavations and prior to any form of rehabilitation. This will allow survey and sampling of freshly exposed palaeontological material and possible recommendations regarding strata to be left un-rehabilitated for future access by professionals
DR08372	372_BP04	No palaeontological resources found.	All borrow pits in the study area containing sedimentary rocks should be resurveyed by a palaeontologist at the end of excavations and prior to any form of rehabilitation. This will allow survey and sampling of freshly exposed palaeontological material and possible recommendations regarding strata to be left un-rehabilitated for future access by professionals

13.10 Land use

All of the borrow pits are existing, and has therefore been disturbed significantly, with few of the borrow pits showing more than 30% vegetation cover. As such the land use of the areas will remain mostly as is, with small portions of the borrow pits being extended into grassland (grazing) areas. The areas will be fenced off temporarily to prevent access by humans and livestock. As such it is not expected to have a significant impact on the land use of the area.

13.11 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.

13.12 Health and Safety

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. Community health and safety risks should be controlled through the implementation of a Health & Safety Management Plan to be implemented by the contractor. Existing unsafe excavations (with vertical faces) should be "made safe" on closure.

14 Environmental Impact Assessment

14.1 Environmental Impact Assessment Risk Assessment

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 affect 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 7: 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.

14.2 Sensitivity

An overall sensitivity assessment will be made by including 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.

14.3 Impacts and Mitigation Measures

Four factors will 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 degree of confidence placed in the assessment

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 a 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 Specific:** having an impact only within the confines of the development.
2. **Localized:** having an impact within close proximity of the development.
3. **Municipal:** having an impact within the municipal area
4. **Regional:** having an impact within the regional context
5. **National:** having an impact at the National Level

- 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 will be applied.
1. **Very High:** These impacts are considered by the specialist as constituting a major and usually permanent change to the environment, and usually result in severe or very severe effects, or beneficial or very beneficial effects
 2. **High:** These impacts will usually result in long-term effects on the natural environment. Impacts rated as high are considered by the specialist as constituting an important and usually long-term change to the environment.
 3. **Moderate:** These impacts will usually result in medium- to long-term effects on the natural environment. Impacts rated as moderate are considered by the specialist as constituting a fairly important and usually medium term change to the environment. These impacts are real but not substantial.
 4. **Low:** These impacts will usually result in medium- to short-term effects on the natural environment. Impacts rated as low are considered by the specialist as constituting a fairly unimportant and usually short-term change to the environment. These impacts are not substantial and are likely to have little real effect.
 5. **Positive:** These impacts will usually result in a positive impact on the environment. These impacts can range from slightly beneficial to very beneficial for the environment.
- D. It is also necessary to state the **degree of confidence** with which one has predicted the significance of an impact.
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% sure of a particular fact, or of the likelihood of that impact occurring.
 3. **Possible:** Only over 40% sure of a particular factor of the likelihood of an impact occurring.
 4. **Unsure:** Less than 40% sure of a particular fact or the likelihood of an impact occurring.

Table 8: Assessment of Significance 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
Geology & Soils	Soil Erosion	Negative	Construction, Operational & Closure	Site Specific	3	4	2	High	Minimize the areas of disturbance or vegetation clearance. Revegetate areas that have been disturbed as soon as possible. Cut and fill slopes shall be made stable and be revegetated as soon as possible during the operational phase.	Site Specific	5	4	2	Moderate
Geology & Soils	Soil Pollution	Negative	Construction & Operational	Site Specific	5	4	2	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 organization 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 Specific	5	4	4	Low
Geology & Soils	Soil Compaction	Negative	Construction, Operational & Closure	Site Specific	5	4	2	Moderate	Minimize the areas of disturbance or vegetation clearance. Scarify & Revegetate areas that have been compacted as soon as possible.	Site Specific	5	7	5	Low
Geology & Soils	Topsoil Loss	Negative	Construction, Operational & Closure	Local	3	4	3	Moderate	Minimize 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 Specific	5	4	3	Low
Topography & Drainage	Cut & Fill/Excavations	Negative	Construction & Operational	Site Specific	5	3	4	Low	Cut and fill slopes/Excavations shall be made stable and be revegetated as soon as possible	Site Specific	7	6	4	Low
Topography & Drainage	Increased Stormwater Runoff	Negative	Construction & Operational	Site Specific	5	8	3	Low	All areas of stormwater release must be suitable stabilized	Site Specific	8	9	5	Low

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
Topography & Drainage	Increased Soil Erosion	Negative	Construction & Operational	Site Specific	3	4	2	High	Minimize 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.	Site Specific	5	7	4	Low
Non-renewable Resources	Consumption of Non-renewable Resource	Negative	Operational	Municipal	3	2	3	High	The proposed quantities mined should not exceed limits specified in the mining plans/permits issued by DMR	Local	5	4	2	Moderate
Non-renewable Resources	Material Resources for roads not imported from far off distances	Positive	Operational	Municipal	5	5	2	Low	No Mitigation Required	N/A				#N/A
Surface Water	Surface water contamination	Negative	Construction & Operational	Local	4	5	5	Low	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 Specific	8	5	8	Low
Surface Water	Sedimentation	Negative	Construction & Operational	Local	4	6	5	Low	Minimize 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 Specific	8	5	8	Low
Surface Water	Decreased water quality	Negative	Construction & Operational	Local	5	6	5	Low	A stormwater cut-off berm shall be provided upslope from the mining areas. Gabions shall be provided at stormwater release areas	Site Specific	8	5	8	Low
Surface Water	Decrease in Benthic microalgae	Negative	Construction & Operational	Local	5	6	5	Low	A stormwater cut-off berm shall be provided upslope from the mining areas. Gabions shall be provided at	Site Specific	8	5	8	Low

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
									stormwater release areas					
Surface Water	Decrease in Submerged macrophytes	Negative	Construction & Operational	Local	5	6	5	Low	A stormwater cut-off berm shall be provided upslope from the mining areas. Gabions shall be provided at stormwater release areas	Site Specific	8	5	8	Low
Surface Water	Decrease in Macrobenthos	Negative	Construction & Operational	Local	5	6	5	Low	A stormwater cut-off berm shall be provided upslope from the mining areas. Gabions shall be provided at stormwater release areas	Site Specific	8	5	8	Low
Surface Water	Change in fish community structure	Negative	Construction & Operational	Local	5	6	5	Low	A stormwater cut-off berm shall be provided upslope from the mining areas. Gabions shall be provided at stormwater release areas	Site Specific	8	5	8	Low
Surface Water	Surface water abstraction	Negative	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. Abstraction rates should not exceed those specified in the water use license	Local	4	5	4	Low
Groundwater	Groundwater contamination	Negative	Construction & Operational	Local	4	3	3	Moderate	Areas of spillages and/or contamination shall be cleaned up immediately and disposed of at a licensed landfill site	Site Specific	5	4	5	Low
Groundwater	Groundwater abstraction	Negative	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. Abstraction rates should not exceed those specified in the water use license	Local	4	5	4	Low
Vegetation and Habitat	Loss of indigenous vegetation	Negative	Construction & Operational	Local	3	4	3	Moderate	Minimize the areas of disturbance or vegetation clearance. Revegetate areas that have been disturbed as soon as possible.	Site Specific	6	5	5	Low
Vegetation and Habitat	Disturbance of habitat	Negative	Construction & Operational	Site Specific	5	4	3	Low	Minimize the areas of disturbance or vegetation clearance. Revegetate areas that have been disturbed as soon as possible. No hunting/trapping of any animals is strictly forbidden.	Site Specific	8	8	5	Low
Vegetation and Habitat	Alien Invasive Plant Species	Negative	Construction, Operational &	Local	3	4	3	Moderate	All alien invasive plant species should be removed according to the Conservation of Agricultural Resources	Site Specific	5	7	8	Low

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
			Closure						Act.					
Vegetation and Habitat	Removal of alien invasive species	Positive	Construction, Operational & Closure	Local	5	5	4	Low	No Mitigation Required	N/A				#N/A
Air Quality	Dust Generation	Negative	Construction & Operational	Local	6	8	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 Specific	8	8	7	Low
Air Quality	Fugitive Emissions	Negative	Construction & Operational	Site Specific	8	8	3	Low	Vehicles should be properly maintained and serviced.	Site Specific	8	8	5	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	3	2	3	High	Borrow Pits are to be rehabilitated to represent the former habitat/surrounding land use character.	Local	5	4	6	Low
Visual	Decreased Visual Quality	Negative	Construction, Operational & Closure	Local	4	2	4	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 utilizes these facilities and that they are placed where they are not visible to the public.	Local	8	5	6	Low

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
Visual	Rehabilitation of existing borrow pits	Positive	Closure	Local	4	4	2	Moderate	No Mitigation Required	N/A				#N/A
Archaeology, Palaeontology & Heritage Sites	Disturbance of sites	Negative	Construction & Operational	Local	4	3	3	Moderate	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 archaeological artefacts.	Local	8	6	7	Low
Archaeology, Palaeontology & Heritage Sites	Loss of sites	Negative	Construction & Operational	Local	3	3	2	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 archaeological artefacts.	Local	5	6	7	Low
Archaeology,	Discovery of	Positive	Construction &	Municipal	2	3	5	Moderate	No Mitigation Required	N/A				#N/A

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
Palaeontology & Heritage Sites	new/buried sites		Operational											
Land Use	Change in land use	Negative	Construction, Operational & Closure	Local	3	3	4	Moderate	Borrow Pits are to be rehabilitated to represent the former habitat/surrounding land use character.	Local	8	4	8	Low
Socio - Economic	Disturbance to rural character	Negative	Construction, Operational & Closure	Local	5	3	3	Low	Borrow Pits are to be rehabilitated to represent the former habitat/surrounding land use character.	Local	8	5	6	Low
Socio - Economic	Job Creation	Positive	Construction & Operational	Municipal	4	3	3	Moderate	No Mitigation Required	N/A				#N/A
Socio - Economic	Skills Development	Positive	Construction & Operational	Municipal	4	3	3	Moderate	No Mitigation Required	N/A				#N/A
Socio - Economic	Improved Road Quality	Positive	Operational	Municipal	4	3	3	Moderate	No Mitigation Required	N/A				
Socio - Economic	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.	Site Specific	2	2	8	Moderate

15 Mitigatory Measures

These guidelines, operating procedures and rehabilitation/pollution control requirements contained in this Environmental Management Plan will be binding on the holder of the mining permit/prospecting permission/ reconnaissance permission after approval of this Environmental Management Plan by the Department of Minerals. It is essential that this portion be carefully studied, understood, implemented and adhered to at all time.

15.1 General Requirements

15.1.1 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.

15.1.2 Demarcating the mining area

- The mining area must be clearly demarcated by means of beacons at its corners and/or 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.

15.2 Infrastructural Requirements

15.2.1 Topsoil Management

- Stripping of topsoil shall be undertaken in such a manner as to minimise erosion by wind or runoff.
- All available topsoil shall be stripped to a depth not exceeding 300mm 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.
- 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 on steep slopes.
- Stockpiles shall be protected to prevent erosion and invasion of weeds.
- Stockpiled topsoil shall not be compacted.
- Topsoil shall be used for rehabilitation of disturbed areas only.

15.2.1.1 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 hydro seeding 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 woody 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 200mm 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.

15.2.1.2 Soil stockpiling

- Stripped topsoil shall be stockpiled in areas, which have been approved by the Engineer.
- Topsoil stripped from different soil zones shall be stockpiled separately and clearly identified as such.
- Soil stockpiles shall not be higher than 2.5m. 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 to prevent erosion and invasion of weeds. This may include the use of erosion control fabric or grass seeding.

15.2.2 Access to the Site

15.2.2.1 Establishment of Access Roads

- The access road to the mining area and the camp-site/site office must be established in consultation with the landowner/tenant.
- Existing roads shall be used as far as practicable.
- Should a portion of the access road be 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.
- The erection of gates in fence lines and the open/closed status of gates in new and existing positions shall be clarified in consultation with the landowner/tenant and maintained throughout the operational period.
- No other routes will be used by vehicles or personnel for the purpose of gaining access to the site.

15.2.2.2 Maintenance of Access Roads

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

15.2.2.3 Dust control on the access and haul roads

- The liberation of dust into the surrounding environment shall be effectively controlled by the use of 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.

15.2.2.4 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 and which will no longer be required by the landowner/tenant, shall be removed and/or rehabilitated in order to represent the former habitat.
- Any gate or fence erected by the holder which is not required by the landowner/tenant, shall be removed and the situation restored to the pre mining/ prospecting situation.
- 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 soil may be analyzed and any deleterious effects on the soil arising from the mining operation be corrected and the area be re-seeded with a seed mix to the ECO/Engineer's specification.

15.2.3 Office/Camp Sites

15.2.3.1 Establishing Office/Camp Sites

- Any offices and camp sites (where applicable) that may be required shall be established within the boundaries of the mining area.
- Such camp or office sites 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.
- Designated cooking facilities shall be provided.
- 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.

15.2.3.2 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 or other approved toilet facilities such as a septic drain shall preferably be used and sited on the camp site at least 100 meters away from any river/stream/watercourse. The use of existing facilities must take place in consultation with the landowner/tenant.

- All effluent water from the camp washing facility (if applicable) 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 waste 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 Engineer/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.
- 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.

15.2.3.3 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.
- 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 soil may be analyzed and any deleterious effects on the soil arising from the mining operation be corrected and the area be re-seeded with a seed mix to the ECO/Engineer 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.

15.2.4 Maintenance Yard & Storage Areas

15.2.4.1 Establishing the vehicle maintenance yard and secured storage areas

- The vehicle maintenance yards and secured storage areas (where applicable) 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.
- 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.
- Provide collection systems (i.e. trays or impervious linings) under machinery or equipment that may dispense hazardous substances (i.e. generators and pumps).

15.2.4.2 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..

15.2.4.3 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.
- 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/Engineer by removing the spillage together with the polluted soil and by disposing of them at a licensed waste disposal facility

15.2.4.4 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.

15.3 Operational Procedures

15.3.1 Limitations on mining/prospecting

- 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 shall not be conducted closer than one and a half times the height of the bank from the edge of any river channel/stream. Damage to the bank of the river/stream caused by the operations, shall be rehabilitated to a condition acceptable to the ECO/Engineer at the expense of the contractor.

15.3.2 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 and submitted together with supporting documentation.

15.3.3 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.

15.3.4 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 areas shall be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded (by hand or hydro 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 other forms with mortar forced between the structures. All structures must have a 'natural' look and provide 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) after the placement of topsoil 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.

15.4 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 the Department of Minerals.

15.5 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.
- 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 firefighting 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.
- 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 may only be practiced in designated smoking areas.
- Smoking near refueling depots or near any flammable substances shall be prohibited.
- Cigarette butt bins (wet sand filled), where provided, shall be emptied on a daily basis

15.6 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 Engineer, 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 OHSA agent. 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.

15.7 Archaeology, Palaeontology & Heritage Sites

- All recommendations in the Archaeological and Palaeontological reports, as well as the recommendations made by SAHRA must be adhered to.
- 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.
- Should fossils be encountered during excavations, they should be inspected, and if needed, carefully collected by an accredited palaeontologist, with adherent matrix where necessary. The site should be given a provisional reference number (*e.g.* marked on masking tape)

and carefully packaged. It is essential that the locality where the fossil is found be accurately marked on a 1: 50 000 map or recorded by GPS.

- The fossils should be inspected by an accredited palaeontologist at the earliest opportunity. If the material is deemed to be of scientific value then it should be deposited in an approved repository (*e.g.* Albany Museum, Grahamstown or East London Museum). Other specimens of educational value may be donated for display purposes.

15.8 Site Closure

- All infrastructure, equipment, plant, temporary housing 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.
- 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 and which will no longer be required by the landowner/tenant, shall be removed and/or rehabilitated in order to represent the former habitat. Access roads shall be rehabilitated as described in this EMP.
- 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.
- Areas showing signs of erosion due to mining activities shall be suitably stabilized or rehabilitated.
- All ablution facilities shall be removed from site.
- All fences surrounding the construction site shall be removed.
- 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.
- Final rehabilitation shall be completed within a period specified by DMR and should take cognizance of the season.

16 Quantum of Financial Provision for Rehabilitation

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

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

Table B.11: Rates (per hectare) to determine the quantum for financial provision (Class C mines)

	Environmental sensitivity of mine area		
	Low	Medium	High
Rate per hectare to determine the quantum (rands)	20 000.00	50 000.00	80 000.00
Minimum amount	R 10 000.00		

17 Environmental Awareness

The ECO shall be responsible for compiling and implementing an Environmental Awareness Training Programme for all staff members that aims at explaining the mitigation measures described in this report. Before commencing with any work, all staff members shall attend the Environmental Awareness Training Programme. After attending the Environmental Awareness Training Programme, all contractors and sub-contractors shall sign an Environmental Training register as proof of their training.

18 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 Department of Roads and Public Works 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).

19 Environmental Objectives and Goals

19.1 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 return the mining area, 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 DMR.

19.2 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 Amathole District 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.

19.3 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.

20 Public Participation

The public participation process for the utilisation of the borrow pits identified on DR08372 was held in conjunction with the public participation process for all the identified road sections and their relevant identified borrow pits.

20.1 Advertisement & Notification

- Public participation was initiated by the placement of a Legal Notice (English and Xhosa) in the only regional daily newspaper, The Daily Dispatch on 25 March, 2011 (**Appendix D**). The general public were given 30 days (from 25 March, 2011) to register as Interested & Affected Parties and to submit any issues/concerns they might have regarding this proposed project.
- Signboards, in English and Xhosa, were erected on 25 March, 2011 strategically at intersections of roads to be upgraded & main roads in the area, and in some instances, also at the start and end of each road section to be upgraded/re-gravelled, or at each individual Borrow Pit, in order to notify the general public/community and passers-by of the proposed activity (**Appendix E**).
- Notices were handed out during the site assessments (March 15 - March 18, 2011) to surrounding landowners/occupiers who could not be identified through the landowner identification process.

20.2 Key Interested and Affected Parties

- A Letter of Notification and the Background information documents were posted via parcel mail to the legal custodian of the land, Department of Rural Development and Land Reform - District Manager Mr. M. Hlopekazi, in which the proposed borrow pits are located informing him of the proposed activity on March 23, 2011.
- Notice of the activity and a background information document was posted via registered mail to Mr. Vuyo Mlokoti the Municipal Manager for Amathole District Municipality on March 23, 2011.
- Notice of the activity and a background information document was posted via registered mail to Mr. N Parkade, the Municipal Manager for Mquma Local Municipality on March 23, 2011.
- Notice of the activity and a background information document was posted via registered mail to Advocate Sphiwo Sohena the Municipal Manager for Mbashe Local Municipality on March 23, 2011.

- A Background Information Document was posted to the Mnquma Local Municipality/ for Cllr Ntobongwane (Ward 9) on March 23, 2011.
- A Background Information Document was posted to the Mnquma Local Municipality/ for Cllr Mvalo (Ward 10) on March 23, 2011.
- Identified Key Interested and Affected Parties (**Table 9**) were posted either via registered or parcel mail notification of the proposed activity and the Background Information Document for this project on March 23, 2011.

Table 9: Identified Key Interested & Affected Parties.

ADM Borrow Pits - Key I & AP's							
	Name		Tel/Fax		Mobile/Email	Postal	Comments
1	Mr. N Parkade	Tel:	(047) 491 3586	Mbl:		Mnquma Local Municipality, PO Box 36, BUTTERWORTH, 4960	Municipal Manager
		Fax:	(047) 491 0195	Eml:	npakade@mnquma.gov.za		
2	Mr. Z. Ngovela	Tel:	(047) 491 3586	Mbl:		Mnquma Local Municipality, PO Box 36, BUTTERWORTH, 4960	Director of the Department of Infrastructural Development and Planning
		Fax:	(047) 491 0195	Eml:	hngovela@mnquma.gov.za		
3	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@dme.gov.za		
4	Jimmy Calder, Phillip Wilkinson	Tel:	043 748 6246	Mbl:	082 900 0840	P O Box 2909, Beacon Bay 5205	WESSA
		Fax:		Eml:	jimjan@iafrica.com , phillip@wessabk.co.za		
5	Dr. 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		
6	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		
7	Mr. Nico	Tel:	043 701 4000	Mbl:		Amathole	Director:

ADM Borrow Pits - Key I & AP's							
	Name		Tel/Fax		Mobile/Email	Postal	Comments
	Jonker					District Municipality, 40 Cambridge Street, East London, Eastern Cape, South Africa, 5200, P O Box 320, East London, Eastern Cape, South Africa, 5200	Engineering
		Fax:	043 742 0337	Eml:	nicoj@amatoledm.co.za		
8	Sr.Nomvula Solomon	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	Director: Health & protection
		Fax:	043 742 0337	Eml:	nomvulas@amatoledm.gov.za		
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	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		
11	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		
12	Advocate Siphwiwo	Tel:	(047) 489 5800	Mbl:		Mbhashe Local Municipality,	Mbhashe Municipality:

ADM Borrow Pits - Key I & AP's						
Name		Tel/Fax		Mobile/Email	Postal	Comments
	Sohena				PO Box 25, INDUTYWA, 5000 3 Kiddley Street, INDUTYWA	Municipal Manager
		Fax: (047) 489 1137		Eml:		
13	Cllr Ntobongwane				Mnquma Local Municipality, PO Box 36, BUTTERWORT H, 4960	Mnquma Local Municipality: Ward 9 Councillor
		Tel:		Mbl: 071 474 6685		
		Fax:		Eml:		
14	Cllr Mvalo				Mnquma Local Municipality, PO Box 36, BUTTERWORT H, 4960	Mnquma Local Municipality: Ward 10 Councillor
		Tel:		Mbl: 082 925 6645		
		Fax:		Eml:		
		Fax:		Eml:		

20.3 Registered Interested and Affected Parties

No Interested and Affected Parties from the general public registered in response to the notifications, advertisements or signage.

20.4 Public Draft Environmental Management Plan Report

A public draft Environmental Management Plan Report will be made available to registered and key I&AP's for a 40-day commenting period. This document is not the final draft and any comments received from I&AP's during the above stipulated commenting period will be included into the final Environmental Management Plan Report to be submitted to the Department of Mineral Resources - Eastern Cape.




BESC were informed on 15 September 2011 by Mnquma Local Municipality that the ward councilors to which the public draft EMP's were posted for review, were no longer the current ward councilors at Mnquma Local Municipality and that new ward councilors had taken position since June 2011. As such we were informed that the public draft EMP's would be distributed to the new ward councilors in Mnquma Local Municipality for the relevant ward areas. The new ward councilors for the wards in which the identified borrow pits are located are as follows:

Local Municipality	Ward	Councilor Name
Mnquma	9	Cllr Jiya Nomonde
Mnquma	10	Cllr Plaatjie Nomabhele

21 Appendix A: Letters of Confirmation, Financial Provision & Undertaking

Electronic Adobe PDF Version Only

DOUBLE CLICK the PAPER CLIPS here to access the Letters

Letter of Confirmation - EC Department of Roads and Public Works	
Letter for Financial Provision - EC Department of Roads and Public Works	
Letter of Undertaking - EC Department of Roads and Public Works	

Hardcopy/Paper Version - See overleaf

22 Appendix B: Mining Plans

Electronic Adobe PDF Version Only
DOUBLE CLICK the PAPER CLIP here to access the
Mining Plans.

Mining Plan (372-BP01)	
Mining Plan (372-BP02)	
Mining Plan (372-BP03)	






Hardcopy/Paper Version - See overleaf

23 Appendix C: Specialist Reports

23.1 Preliminary Material Identification Investigations

Electronic Adobe PDF Version Only

DOUBLE CLICK the PAPER CLIPS here to access the reports.



DR08372 - Initial Assessment Report	
DR08372 - Borrow Pit Data Sheet - BP1	
DR08372 - Borrow Pit Data Sheet - BP2	
DR08372 - Borrow Pit Data Sheet - BP3	
DR08372 - Borrow Pit Data Sheet - BP4	

Hardcopy/Paper Version - See overleaf

23.2 Archaeology, Heritage & Palaeontology

Electronic Adobe PDF Version Only

DOUBLE CLICK the PAPER CLIPS here to access the reports.

Archaeological Impact Assessment - ArchaeoMaps	
Palaeontological Assessment - Robert Gess Consulting	

Hardcopy/Paper Version - See overleaf

24 Appendix D: Legal Notice

Daily Dispatch, Friday, March 25, 2011

Legal Notices 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 ka ne Minerals akunge ne Petroleum Resources Development Act (No. 28 of 2002) nezihlomelo zawo zokwenza oku kulandelayo:

Activity/Umsebenzi ozakwenziwa: The Department of Roads & Public Works proposes to utilize borrow pits for road upgrade/re-gravelling projects located throughout the Amathole District Municipality / Isebe lezendlela ne zemisebenzi kawonke-wonke icela ubuhlobo nentsebenziswana yokuboleka umlindi. Iqweba ukwenyusa isinga lezemisebenzi yezendlela zonke ne Amathole District Municipality.

List of Roads/Uluhlu ka indlela:

Road #	Area	Number of borrow pits
DR08049	CENTANE	2
DR08182	NQAMAKWE	1
DR08344	BUTTERWORTH	5
DR08348	WILLOWVALE	6
DR08352	WILLOWVALE	1
DR08355	CENTANE	3
DR08356	CENTANE	2
DR08359	MAZEPPA BAY	1
DR08371	BUTTERWORTH	5
DR08372	BUTTERWORTH	4
DR08386	NQAMAKWE	8
DR08395	BUTTERWORTH	1
DR08401	IDUTWYA/NQAMAKWE	4
DR08408	BUTTERWORTH	1
DR08486	BUTTERWORTH	2

Proponent/Abanikazi zimemo:
Department of Roads & Public Works
(Eastern Cape)
Private Bag X0023
Bhisho
5605

Consultant/Umniki macebiso:
BESC
PO Box 8241, Nahoon, 5210, East London.
Mr. Conroy van der Riet/Ms. Lee-Anne Proudfoot
Tel: (043) 726 4242
Fax: (043) 726 3199
E-mail: conroy@besc.co.za/lee-anne@besc.co.za

In order to ensure that you are identified as an interested and affected party, please submit your name, contact information, and interest in the project, to the Consultant within 30 days of this advertisement/ Ukuba unqwenela ukyubandakanywa njenomnye onomdla nochaphazelekayo, nceda faka igama lakho, nenkcukacha apho unokuqhagamisheleka khona, nento ekutsalayo nekuchaphazelayo koluphuhliso, uyigqithise kumniki- Macebiso zingadlulanga iintsuku ezi mashumi mathathu (30 days) sibhengeziwe esi saziso.

Date of advertisement:
March 25, 2011

Figure 19: Legal Notice - Daily Dispatch.

25 Appendix E: Signboards



Figure 20: Images of the Signboards erected for DR08372.

26 Appendix F: Correspondence - I&AP's



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

March 2, 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 existing borrow pits for the resurfacing/regravelling/maintenance of district roads located in the Amathole District Municipality, Eastern Cape.

BESC have been appointed by the Department of Roads and Public Works to prepare the Environmental Management Plans (EMP) required for the utilisation of the identified borrow pits in Amathole District in the Eastern Cape, for the maintenance/regravelling/resurfacing of the identified district roads.

Twenty - one District Roads requiring routine maintenance/resurfacing/regravelling have been identified within the Amathole District. These are as follows:

AMATOLE DISTRICT MUNICIPALITY								
No.	Road Number	Kilometers	LMA	Comments / Priority	Start Co-ordinates		End Co-ordinates	
					S	E	S	E
1	DR08043	28.5	Mnquma	Regravelling	32° 12' 24"	27° 56' 08"	32° 20' 01"	28° 08' 26"
2	DR08047	57.4	Mnquma	Patch gravelling	32° 17' 22"	28° 12' 43"	32° 18' 33"	28° 13' 43"
3	DR08049	17.4	Mnquma	Regravelling	32° 30' 18"	28° 18' 52"	32° 25' 28"	28° 24' 9"
4	DR08181	6.7	Mnquma	Regravelling	32° 25' 32"	28° 27' 56"	32° 25' 18"	28° 31' 53"
5	DR08182	7.5	Mnquma	Patch gravelling	32° 12' 05.8"	27° 56' 19.7"	32° 09' 23.4"	27° 58' 47.2"
6	DR08344	31.4	Mnquma	Patch gravelling	32° 17' 40"	28° 13' 10"	32° 9' 12"	28° 27' 33"
7	DR08348	26.0	Mnquma	Patch gravelling	32° 25' 33"	28° 26' 40"	32° 16' 10"	28° 30' 52"
8	DR08352	10.1	Mnquma	Regravelling	32° 21' 47"	28° 29' 34"	32° 21' 36"	28° 34' 08"
9	DR08355	23.4	Mnquma	Patch gravelling	32° 28' 40"	28° 22' 56"	32° 35' 09"	28° 31' 22"
10	DR08356	19.3	Mnquma	Patch gravelling	32° 29' 10"	28° 24' 03"	32° 32' 39"	28° 33' 57"
11	DR08359	10.6	Mnquma	Patch gravelling	32° 26' 05"	28° 31' 42"	32° 29' 22"	28° 34' 39"
12	DR08362	3.8	Mnquma	Patch gravelling	32° 21' 50"	28° 13' 56"	32° 19' 56"	28° 14' 27"
13	DR08367	11.3	Mnquma	Patch gravelling	32° 21' 50"	28° 13' 55"	32° 24' 16"	28° 8' 48"
14	DR08368	7.3	Mnquma	Patch gravelling	32° 25' 48.7"	28° 14' 49.9"	32° 27' 11"	28° 11' 00"
15	DR08371	28.8	Mnquma	Regravelling	32° 20' 56"	28° 02' 07"	32° 30' 17"	27° 58' 52"
16	DR08372	21.5	Mnquma	Regravelling	32° 20' 01"	28° 08' 29"	32° 23' 06"	28° 02' 12"
17	DR08386	35.4	Mnquma	Patch gravelling	32° 13' 06"	27° 56' 11"	32° 12' 15"	27° 40' 54"
18	DR08395	2.8	Mnquma	Patch gravelling	32° 22' 56"	27° 59' 58"	32° 22' 44"	27° 58' 17"
19	DR08401	40.8	Mnquma	Patch gravelling	32° 10' 49"	27° 56' 51"	32° 04' 56"	27° 15' 22"
20	DR08408	10.1	Mnquma	Regravelling	32° 16' 13"	28° 11' 56"	32° 16' 06"	28° 06' 38"
21	DR08486	8.1	Mnquma	Patch gravelling	32° 18' 55"	28° 10' 52"	32° 16' 14"	28° 11' 50"

Page 1 of 4

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



Located along each district road is a number of borrow pits which have been identified for the sourcing of material for the routine maintenance/resurfacing/regravelling of these roads. Of these twenty –one road sections, borrow pits are still to be identified along six of these road sections, these being the DR08043, DR08047, DR08181, DR08362, DR08367 & DR08368. Please see the attached table for the position of the identified borrow pits on the remaining 15 road sections where the borrow pits have been identified. When the positions of the borrow pits become available along the mentioned six district roads these will be forwarded to the department.

It is our intended approach to prepare an environmental management plan per district road identified in the above table which will cover the identified borrow pits along these sections of roads, thus twenty-one EMP's will be prepared for submission and approval by DMR. As confirmed telephonically, the Department of Roads and Public Works has received exemption from the provisions of sections 16, 20, 22 and 27 of the M&PRDA, 2002, in respect of any activity to remove any mineral for the construction and maintenance of dams, harbours, roads and railway lines and as such the utilisation of the material sources is subject to the preparation, submission and approval of an Environmental Management Plan compiled in accordance with requirements of the M&PRDA. It is the Department of Roads and Public Works preference to proceed in this manner, i.e. separate application/environmental management plan for the borrow pits identified per district road, as there is a considerable distance between the identified district roads and to circumvent any possible delays which may arise during the process and which would then result in the delay of the entire project.

Please could you assist me in determining if any of these identified borrow pits have already been previously permitted.

In addition, as there are 21 road sections identified and a total of approximately 59 borrow pits, as with the Chris Hani Region, we would like to put the following forward in terms of the public participation process:

- Legal Notice in respective newspapers.
- As the number of borrow pits are high, to place signboards at each particular borrow pit seems impractical, therefore we propose to group road sections and place signboards at main intersections/entrances of roads to be regavelled.
- Notifying the Relevant Municipal and Government Departments
- Notifying the Department of Rural Development as the custodian of the rural land (thereby notifying surrounding communities for borrow pits located in communal land)
- Notifying the Municipal Ward Councilors
- Where applicable notify Relevant Landowners of Private Land

Please would you confirm if this would suffice, if not please suggest practical steps to be taken.

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



Table of Identified Borrow pit locations in Amathole District

Rd_Nr_	No_	Lat (S)	Long (E)
DR08049	049_BP02	-32.4786	28.34289
DR08049	049_BP03	-32.4808	28.36456
DR08182	182_BP02	-32.1563	27.89664
DR08344	344_BP01	-32.2786	28.22408
DR08344	344_BP02	-32.2584	28.25361
DR08344	344_BP03	-32.2528	28.26256
DR08344	344_BP04	-32.233	28.33956
DR08344	344_BP05	-32.1748	28.43431
DR08348	348_BP01	-32.4004	28.46061
DR08348	348_BP02	-32.3839	28.4675
DR08348	348_BP03	-32.3662	28.48936
DR08348	348_BP04	-32.3139	28.48969
DR08348	348_BP05	-32.3064	28.48808
DR08348	348_BP06	-32.295	28.48675
DR08352	352_BP03	-32.3604	28.53064
DR08355	355_BP02	-32.5033	28.40503
DR08355	355_BP03	-32.5304	28.43386
DR08355	355_BP05	-32.5622	28.466
DR08356	356_BP01	-32.5004	28.43122
DR08356	356_BP02	-32.5101	28.46978
DR08359	359_BP01	-32.4835	28.56783
DR08371	371_BP01	-32.3836	28.03903
DR08371	371_BP02	-32.3963	28.03064
DR08371	371_BP03	-32.3946	28.04722
DR08371	371_BP05	-32.4531	28.51381
DR08371	371_BP06	-32.458	28.05247
DR08372	372_BP01	-32.3723	28.12203
DR08372	372_BP02	-32.3908	28.11656
DR08372	372_BP03	-32.3964	28.11069
DR08372	372_BP04	-32.416	28.09158
DR08386	386_BP01	-32.2304	27.88539
DR08386	386_BP03	-32.23	27.865
DR08386	386_BP04	-32.2303	27.82344
DR08386	386_BP05	-32.2277	27.77997



DR08386	386_BP06	-32.2188	27.76961
DR08386	386_BP07	-32.2308	27.74672
DR08386	386_BP08	-32.2433	27.74942
DR08386	386_BP10	-32.2246	27.69731
<hr/>			
DR08395	395_BP01	-32.3803	27.97919
<hr/>			
DR08401	401_BP02	-32.1242	28.02417
DR08401	401_BP03	-32.1076	28.08017
DR08401	401_BP04	-32.1062	28.07856
DR08401	401_BP07	-32.104	28.22328
<hr/>			
DR08408	408_BP01	-32.2698	28.17414
<hr/>			
DR08486	486_BP01	-32.3015	28.17281
DR08486	486_BP02	-32.2848	28.17817

From: Deidre Watkins [Deidre.Watkins@dmr.gov.za]
Sent: 02 March 2011 02:30 PM
To: Siyanda Lurwenga; lee-anne@besc.co.za
Subject: FW: Borrow pits - Amathole District

Dear Lee-Anne,

The Department of Mineral resources hereby confirms receipt of your email dated 02nd March 2011, with thanks. I have perused the contents thereof, and the Department is content with the efforts that will be made with respect to the public participation process. I am also satisfied with the approach for a EMP for each district road.

Should you have any further queries, please do not hesitate to contact this office. Thanks.

Best regards,
Deidre

From: Siyanda Lurwenga [mailto:Siyanda.Lurwenga@dmr.gov.za]
Sent: 07 March 2011 09:50 AM
To: lee-Anne Proudfoot
Subject: FW: Borrow pits - Amathole District

Good Day Lee-Anne,

I have completed the spatial search, and according to our records the ONLY sites with authorized borrow pits are the ones proposed for Road Number DR038371, No_ 371_BP01 and Road Number DR08401, No_401_BP02 both issued to the Department of Roads and Transport. There are other proposed sites as well where the Department received applications, however those applications were refused like for instance site No_ 049_BP03 for road DR08049, there was an application lodged over the relative area but it was refused.

Should you have any unanswered questions please do not hesitate to contact this office. Thanks.

Regards
Siyanda



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

March 15 – March 18, 2011

NOTICE –Landowners and/or Surrounding Landowners (Occupiers)

Notice is hereby given in terms of the Environmental Impact Assessment Regulations of the National Environmental Management Act 1998 (Act No. 107 of 1998) as amended and in terms Regulations of the Minerals and Petroleum Resources Development Act (No. 28 of 2002) of intent to carry out the following activity:

The Department of Roads & Public works proposes to utilize borrow pits for road upgrade/re-gravelling projects located throughout the Amathole District Municipality. BESC have been appointed to conduct the Environmental Impact Assessments and/or Environmental Management Plans for these borrow pits. Attached is a list of the roads, properties and borrow pit locations.

You are hereby invited to participate in the Public Participation Process. In order to ensure that you are identified as an interested and affected party, please submit your name, contact information, and interest in the project (on the attached form), to the Consultant within 30 days of this notice.

Please feel free to contact BESC if you have any further queries.

Yours sincerely,

Mr. Conroy van der Riet
(Cand. Sci. Nat. - Environmental Scientist)
 Senior Environmental Consultant
 Tel: 043 726 4242
 Fax: 043 726 3199
 Email: conroy@besc.co.za

Lee-Anne Proudfoot
(Pr.Sci.Nat – Environmental Scientist)
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Page 1 of 4

Malcolme Logie

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 CK 95.10210/23



ISAZO – Nngqogileyo Umnini-mhlaba

Esi saziso sikhutshwa phantsi kwesaziso somgaqo ka Environmental Impact Assessment Regulations ka National Environmental Management Act 1998 (Act No. 107 of 1998) ne Minerals akunge ne Petroleum Resources Development Act (No. 28 of 2002) nezihlomelo zawo zokwenza oku kulandelayo:

Isebe lezendlela ne zemisebenzi kawonke-wonke icela ubuhlobo nentsebenziswana yokuboleka umlindi. Iqweba ukwenyusa isinga lezemisebenzi yezendlela zonke ne Amathole District Municipality. BESC bona ilungiselwe kakuhle i Environmental Impact Assessment ne/okanye Environmental Management Plans ukuboleka umlindi. Nokuzimanya kulhlu lwezendlela, nezindlu kunye nemoleko umlindi.

Ukuba unqwenela ukubandakanywa njenomnye onomdla nochabhazekayo, nceda faka igama lakho, nenkcukacha zakho ughagamshelaka khona, nento ekutsalayo nekuchaphazelayo koluphuhliso, uyigqithise kumniki- Macebiso zingadlulanga iintsuku ezi mashumi mathathu (30 days) sibhengeziwe esi saziso.

Yours sincerely,

Mr. Conroy van der Riet
(Cand. Sci. Nat. - Environmental Scientist)
 Senior Environmental Consultant
 Tel: 043 726 4242
 Fax: 043 726 3199
 Email: conroy@besc.co.za

Lee-Anne Proudfoot
(Pr.Sci.Nat – Environmental Scientist)
 Senior Environmental Consultant
 Email: lee-anne@besc.co.za



Road #	Borrow Pit #	Latitude	Longitude	Municipal Area	Ward	Farm #/Allotment Name
DR08049	049_BP02	-32.478556	28.342889	MNQUMA LM	26	RE/94
DR08049	049_BP03	-32.480833	28.364556	MNQUMA LM	26	RE/147
DR08182	182_BP02	-32.156333	27.896639	MNQUMA LM	16	SOBEKWA
DR08344	344_BP01	-32.278611	28.224083	MNQUMA LM	22	GWADANA
DR08344	344_BP02	-32.258417	28.253611	MNQUMA LM	22	GWADANA
DR08344	344_BP03	-32.252833	28.262556	MNQUMA LM	22	RE/295
DR08344	344_BP04	-32.233028	28.339556	MBHASHE LM	11	RE/299
DR08344	344_BP05	-32.174778	28.434306	MBHASHE LM	10	RE/303
DR08348	348_BP01	-32.400444	28.460611	MNQUMA LM	25	RE/140
DR08348	348_BP02	-32.383944	28.4675	MNQUMA LM	25	RE/333
DR08348	348_BP03	-32.366167	28.489361	MNQUMA LM	25	RE/333
DR08348	348_BP04	-32.313944	28.489694	MBHASHE LM	25	COMMUNAL (KWANYANA LOC 14)
DR08348	348_BP05	-32.306389	28.488083	MBHASHE LM	25	COMMUNAL (KWANYANA LOC 14)
DR08348	348_BP06	-32.295028	28.48675	MBHASHE LM	25	COMMUNAL (KWANYANA LOC 14)
DR08352	352_BP03	-32.360361	28.530639	MBHASHE LM	25	COMMUNAL (MHLAHLANE LOC 5)
DR08355	355_BP02	-32.50325	28.405028	MNQUMA LM	28	RE/154
DR08355	355_BP03	-32.530444	28.433861	MNQUMA LM	28	RE/155
DR08355	355_BP05	-32.562167	28.466	MNQUMA LM	28	RE/155
DR08356	356_BP01	-32.500361	28.431222	MNQUMA LM	28	RE/157
DR08356	356_BP02	-32.510111	28.469778	MNQUMA LM	28	RE/137
DR08359	359_BP01	-32.4835	28.567833	MNQUMA LM	27	RE/135
DR08371	371_BP01	-32.383583	28.039028	MNQUMA LM	9	CEGCUANA
DR08371	371_BP02	-32.396333	28.030639	MNQUMA LM	12	TONGWANA
DR08371	371_BP03	-32.394611	28.047222	MNQUMA LM	10	TONGWANA
DR08371	371_BP05	-32.453111	28.513806	MNQUMA LM	11	NDABAKAZI
DR08371	371_BP06	-32.458	28.052472	MNQUMA LM	11	NDABAKAZI
DR08372	372_BP01	-32.372306	28.122028	MNQUMA LM	9	BUTTERWORTH MISSION
DR08372	372_BP02	-32.39075	28.116556	MNQUMA LM	10	TONGWANA
DR08372	372_BP03	-32.396389	28.110694	MNQUMA LM	10	TONGWANA
DR08372	372_BP04	-32.415972	28.091583	MNQUMA LM	10	TONGWANA
DR08386	386_BP01	-32.230444	27.885389	MNQUMA LM	16	NOBANDA
DR08386	386_BP03	-32.23	27.865	MNQUMA LM	15	HEBEHEBE
DR08386	386_BP04	-32.230278	27.823444	MNQUMA LM	15	HEBEHEBE
DR08386	386_BP05	-32.227722	27.779972	MNQUMA LM	15	MBATSHA
DR08386	386_BP06	-32.218806	27.769611	MNQUMA LM	15	MBATSHA
DR08386	386_BP07	-32.23075	27.746722	INTSIKA YETHU LM	13	MBULU
DR08386	386_BP08	-32.24325	27.749417	AM AHLATHI LM	13	MFULA
DR08386	386_BP10	-32.224639	27.697306	AM AHLATHI LM	13	MBULU
DR08395	395_BP01	-32.38025	27.979194	MNQUMA LM	12	TOLENI
DR08401	401_BP02	-32.124194	28.024167	MNQUMA LM	17	MAXEGWANAS
DR08401	401_BP03	-32.107611	28.080167	MNQUMA LM	19	SHOSHA
DR08401	401_BP04	-32.106194	28.078556	MNQUMA LM	19	SHOSHA
DR08401	401_BP07	-32.104	28.223278	MNQUMA LM	21	MAZAMISA
DR08408	408_BP01	-32.269806	28.174139	MNQUMA LM	7	GCUWA
DR08486	486_BP01	-32.301472	28.172806	MNQUMA LM	7	GCUWA
DR08486	486_BP02	-32.284778	28.178167	MNQUMA LM	7	GCUWA



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**ENVIRONMENTAL IMPACT ASSESSMENT
 INTERESTED & AFFECTED PARTY FORM
 Return Facsimile: 043 726 3199**

Name

Telephone Number Mobile Number

Facsimile Number Email Address

Postal Address		Physical Address	
Address	<input type="text"/>	Address	<input type="text"/>
City	<input type="text"/> Zip Code <input type="text"/>	City	<input type="text"/> Zip Code <input type="text"/>
Country	<input type="text"/>	Country	<input type="text"/>

EIA Project

Submission

Signature _____ Name (Print) _____ Date _____



BIOTECHNOLOGY & ENVIRONMENTAL SPECIALIST CONSULTANCY CC

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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**

March 23, 2011

Attention: Mr. Hlopekazi
Regional Manager – Amathole District
Department of Rural Development & Land Reform
P.O.BOX 1958
East London
5201

Tel: 043 722 1762
Fax: 043 722 1788

RE: Notification of the compilation of Environmental Management Plans for the utilisation of borrow pits in the Amathole District Municipality, Eastern Cape.

Notice is hereby given in terms of the Regulations of the Minerals and Petroleum Resources Development Act (No. 28 of 2002) of the intent to carry out the following activity:

The Department of Roads & Public works proposes to utilize borrow pits for road upgrade/re-gravelling projects (15 road sections) located throughout the Amathole District Municipality. 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). The Department of Roads & Public Works have been exempted from provisions in terms of Section 106(1) of the M&PRDA, and thus exploration of any materials sources would be subject to the preparation, submission and approval of an Environmental Management Plan compiled in accordance with Section 39(1) of the M&PRDA and Regulation 52 of the M&PRDA regulations. BESC have been appointed to compile the Environmental Management Plans for these borrow pits.

A number of these borrow pits are located on rural/communal land or state owned land. The purpose of this letter is to notify and inform you, the custodian/landowner of all rural / communal land and the identified state owned land of the proposed utilisation of these borrow pits.

You have been identified as a Key Interested & Affected Parties (I&AP's). Accompanying this letter is a CD containing the Background Information Document(s) (BID'(s)) pertaining to the relevant proposed borrow pits and roads sections in the Amathole District Municipality. Please refer to attached table for the borrow pits and road sections.

Please feel free to contact BESC if you have any further queries.

Page 1 of 3

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



Yours Sincerely
Lee-Anne Proudfoot
(Pr.Sci.Nat – Environmental Scientist)
Senior Environmental Consultant
Mobile: +27 83 421 3991
Email: lee-anne@besc.co.za

Mr. Conroy van der Riet
(Cand. Sci. Nat. - Environmental Scientist)
Senior Environmental Consultant
Mobile: 083 993 1243
Email: conroy@besc.co.za



Road #	Borrow Pit #	Latitude	Longitude	Municipal Area	Ward	Farm #/Allotment Name
DR08049	049_BP02	-32.478556	28.342889	MNQUMA LM	26	RE/94
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DR08344	344_BP02	-32.258417	28.253611	MNQUMA LM	22	GWADANA
DR08344	344_BP03	-32.252833	28.262556	MNQUMA LM	22	RE/295
DR08344	344_BP04	-32.233028	28.339556	MBHASHE LM	11	RE/299
DR08344	344_BP05	-32.174778	28.434306	MBHASHE LM	10	RE/303
DR08348	348_BP01	-32.400444	28.460611	MNQUMA LM	25	RE/140
DR08348	348_BP02	-32.383944	28.4675	MNQUMA LM	25	RE/333
DR08348	348_BP03	-32.366167	28.489361	MNQUMA LM	25	RE/333
DR08348	348_BP04	-32.313944	28.489694	MBHASHE LM	25	COMMUNAL (KWANYANA LOC 14)
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DR08355	355_BP05	-32.562167	28.466	MNQUMA LM	28	RE/155
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DR08386	386_BP08	-32.24325	27.749417	AM AHLATHI LM	13	MFULA
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DR08395	395_BP01	-32.38025	27.979194	MNQUMA LM	12	TOLENI
DR08401	401_BP02	-32.124194	28.024167	MNQUMA LM	17	MAXEGWANAS
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DR08401	401_BP07	-32.104	28.223278	MNQUMA LM	21	MAZAMISA
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& Safety, Health & Environmental Management Systems

March 23, 2011

Attention: Mr Briant Noncembu
Regional Manager: DEDEA – Amathole Region
Palm Square Business Park,
Beacon Bay
East London

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The Department of Roads & Public works proposes to utilize borrow pits for road upgrade/re-gravelling projects (15 road sections) located throughout the Amathole District Municipality. BESC have been appointed to compile the Environmental Management Plans for these borrow pits.

Please note that in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998): Listing Notices 1, 2 & 3 (GN 544, GN 545 & GN546, 2010), no listed activities will be triggered by the above mentioned utilisation of the identified borrow pits.

You have been identified as a Key Interested & Affected Parties (I&AP's). Accompanying this letter is a CD containing the Background Information Document(s) (BID'(s)) pertaining to the relevant proposed borrow pits and roads sections in the Amathole District Municipality. Please refer to attached table for the borrow pits and road sections.

Please feel free to contact BESC if you have any further queries.

Yours Sincerely
Lee-Anne Proudfoot
(*Pr.Sci.Nat – Environmental Scientist*)
Senior Environmental Consultant
Mobile: +27 83 421 3991
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Senior Environmental Consultant
 Mobile: 083 993 1243
 Email: conroy@besc.co.za

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& Safety, Health & Environmental Management Systems

March 23, 2011

Attention: Key Interested and Affected Parties

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You have been identified as a Key Interested & Affected Parties (I&AP's). Accompanying this letter is/are the Background Information Document(s) (BID'(s)) pertaining to the proposed borrow pits and roads sections relevant to your area of jurisdiction. Please refer to attached table for relevant borrow pits and road sections.

Please feel free to contact BESC if you have any further queries.

Yours Sincerely
Lee-Anne Proudfoot
(*Pr.Sci.Nat – Environmental Scientist*)
Senior Environmental Consultant
Mobile: +27 83 421 3991
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March 23, 2011

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Please note that a Phase 1 Archaeological and Heritage Assessment is currently being undertaken by Ms Karen van Ryneveld (Archaeomaps) for the identified borrow pits.

Please feel free to contact BESC if you have any further queries.

Yours Sincerely
Lee-Anne Proudfoot
(Pr.Sci.Nat – Environmental Scientist)
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DR08182	182_BP02	-32.156333	27.896639	MNQUMA LM	16	SOBEKWA
DR08344	344_BP01	-32.278611	28.224083	MNQUMA LM	22	GWADANA
DR08344	344_BP02	-32.258417	28.253611	MNQUMA LM	22	GWADANA
DR08344	344_BP03	-32.252833	28.262556	MNQUMA LM	22	RE/295
DR08344	344_BP04	-32.233028	28.339556	MBHASHE LM	11	RE/299
DR08344	344_BP05	-32.174778	28.434306	MBHASHE LM	10	RE/303
DR08348	348_BP01	-32.400444	28.460611	MNQUMA LM	25	RE/140
DR08348	348_BP02	-32.383944	28.4675	MNQUMA LM	25	RE/333
DR08348	348_BP03	-32.366167	28.489361	MNQUMA LM	25	RE/333
DR08348	348_BP04	-32.313944	28.489694	MBHASHE LM	25	COMMUNAL (KWANYANA LOC 14)
DR08348	348_BP05	-32.306389	28.488083	MBHASHE LM	25	COMMUNAL (KWANYANA LOC 14)
DR08348	348_BP06	-32.295028	28.48675	MBHASHE LM	25	COMMUNAL (KWANYANA LOC 14)
DR08352	352_BP03	-32.360361	28.530639	MBHASHE LM	25	COMMUNAL (MHLAHLANE LOC 5)
DR08355	355_BP02	-32.50325	28.405028	MNQUMA LM	28	RE/154
DR08355	355_BP03	-32.530444	28.433861	MNQUMA LM	28	RE/155
DR08355	355_BP05	-32.562167	28.466	MNQUMA LM	28	RE/155
DR08356	356_BP01	-32.500361	28.431222	MNQUMA LM	28	RE/157
DR08356	356_BP02	-32.510111	28.469778	MNQUMA LM	28	RE/137
DR08359	359_BP01	-32.4835	28.567833	MNQUMA LM	27	RE/135
DR08371	371_BP01	-32.383583	28.039028	MNQUMA LM	9	CEGCUANA
DR08371	371_BP02	-32.396333	28.030639	MNQUMA LM	12	TONGWANA
DR08371	371_BP03	-32.394611	28.047222	MNQUMA LM	10	TONGWANA
DR08371	371_BP05	-32.453111	28.513806	MNQUMA LM	11	NDABAKAZI
DR08371	371_BP06	-32.458	28.052472	MNQUMA LM	11	NDABAKAZI
DR08372	372_BP01	-32.372306	28.122028	MNQUMA LM	9	BUTTERWORTH MISSION
DR08372	372_BP02	-32.39075	28.116556	MNQUMA LM	10	TONGWANA
DR08372	372_BP03	-32.396389	28.110694	MNQUMA LM	10	TONGWANA
DR08372	372_BP04	-32.415972	28.091583	MNQUMA LM	10	TONGWANA
DR08386	386_BP01	-32.230444	27.885389	MNQUMA LM	16	NOBANDA
DR08386	386_BP03	-32.23	27.865	MNQUMA LM	15	HEBEHEBE
DR08386	386_BP04	-32.230278	27.823444	MNQUMA LM	15	HEBEHEBE
DR08386	386_BP05	-32.227722	27.779972	MNQUMA LM	15	MBATSHA
DR08386	386_BP06	-32.218806	27.769611	MNQUMA LM	15	MBATSHA
DR08386	386_BP07	-32.23075	27.746722	INTSIKA YETHU LM	13	MBULU
DR08386	386_BP08	-32.24325	27.749417	AMAHLATHI LM	13	MFULA
DR08386	386_BP10	-32.224639	27.697306	AMAHLATHI LM	13	MBULU
DR08395	395_BP01	-32.38025	27.979194	MNQUMA LM	12	TOLENI
DR08401	401_BP02	-32.124194	28.024167	MNQUMA LM	17	MAXEGWANAS
DR08401	401_BP03	-32.107611	28.080167	MNQUMA LM	19	SHOSHA
DR08401	401_BP04	-32.106194	28.078556	MNQUMA LM	19	SHOSHA
DR08401	401_BP07	-32.104	28.223278	MNQUMA LM	21	MAZAMISA
DR08408	408_BP01	-32.269806	28.174139	MNQUMA LM	7	GCUWA
DR08486	486_BP01	-32.301472	28.172806	MNQUMA LM	7	GCUWA
DR08486	486_BP02	-32.284778	28.178167	MNQUMA LM	7	GCUWA



BIOTECHNOLOGY & ENVIRONMENTAL SPECIALIST CONSULTANCY CC

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

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

To: Mr. T. Letlaka	From: Mr. Conroy van der Riet
Company: Lathuto Construction	Pages: Page 1 of 1
Fax: 047 531 0420	Date: June 13, 2011
Phone: 083 963 6080	CC:
Re: Borrow Pits – Amathole District Municipality	

Dear Mr. Letlaka,

The correspondence letter received from you dated June 09, 2011 refers.

Please note that we are an environmental consultancy and have been appointed by the Department of Roads & Public Works to compile the Environmental Management Plans for the utilization of the Borrow Pits intended for usage on various road upgrade/re-graveling projects.

The notice in the Daily Dispatch serves to notify the public who might be interested or affected by the permitting and utilization of the borrow pits as material sources for road upgrading/re-graveling projects (i.e. people living in close proximity to the borrow pits, or community members who have an environmental concern). As such we do not deal with contracts or tenders regarding the project and therefore I suggest that you contact the supply chain management unit at the Department of Roads & Public Works.

If you do think that you have a valid environmental/social concern, please submit your comments and contact details to our office in writing before July 08, 2011.

Yours truly,

Mr. Conroy van der Riet
 (Pr. Sci. Nat – Environmental Scientist)
 Senior Environmental Consultant
 Mobile: 083 993 1243
 Tel: 043 726 4242
 Fax: 043 726 3199
 Email: conroy@besc.co.za

Malcolme Logie

Page 1 of 1
 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

From: lee-Anne Proudfoot [lee-anne@besc.co.za]
Sent: 12 August 2011 08:27 AM
To: 'MARIAGRAZIA GALIMBERTI'
Subject: PIA - Utilization of borrow pits, Amathole Municipal District, EC
Attachments: Palaeontological survey and report for borrow pits in the Amathole district.pdf

Dear Mariagrazia,

Please find attached for SAHRA's review and comment the Palaeontological Assessment undertaken by Rob Gess for the proposed utilisation of borrow pits in the Amathole District Municipality. The Phase 1 Archaeological Impact Assessment which was undertaken by Karen van Ryneveld (ArchaeoMaps) has already been submitted to SAHRA on 08 June 2011, please see correspondence below. Should you require me to send this AIA to you again please do not hesitate to let me know.

Please acknowledge receipt of the attached Palaeontological Assessment Report. 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)

SAHRA AIA Review Comment FORM A



SOUTH AFRICAN HERITAGE RESOURCES AGENCY
111 HARRINGTON STREET, CAPE TOWN, 8001
PO BOX 4637, CAPE TOWN, 8000
TEL: 021 462 4502 FAX: 021 462 4509

FOR ATTENTION: **PHRA: Eastern Cape****FOR OFFICIAL USE ONLY:**

SAHRA File No: **9/2/053/0001**
Date Received: **8 June 2011 (AIA)**
12 August 2011 (PIA)
Date of Comment: **20 September 2011**.....
Sent to Peer Review:
Date to Peer Review:
SAHRA Contact Person: **Dr Mariagrazia Galimberti**
DMR Ref. no:

REVIEW COMMENT ON ARCHAEOLOGICAL AND PALAEOONTOLOGICAL IMPACT ASSESSMENTS

BY ARCHAEOLOGY/ PALAEOONTOLOGY UNIT OF THE HERITAGE RESOURCES AGENCY

South Africa has a unique and non-renewable archaeological and palaeontological heritage. Archaeological and palaeontological sites are protected in terms of the National Heritage Resources Act (Act No 25 of 1999) and may not be disturbed without a permit. Archaeological Impact Assessments (AIAs) and Palaeontological Impact Assessments (PIAs) identify and assess the significance of the sites, assess the potential impact of developments upon such sites, and make recommendations concerning mitigation and management of these sites. On the basis of satisfactory specialist reports SAHRA or the relevant heritage resources agency can assess whether or not it has objection to a development and indicate the conditions upon which such development might proceed and assess whether or not to issue permission to destroy such sites.

AIAs and PIAs often form part of the heritage component of an Environmental Impact Assessment or Environmental Management Plan. They may also form part of a Heritage Impact Assessment called for in terms of section 38 of the National Heritage Resources Act, Act No. 25, 1999. They may have other origins. In any event they should comply with basic minimum standards of reporting as indicated in SAHRA Regulations and Guidelines.

This form provides review comment from the Archaeologist of the relevant heritage resources authority for use by Heritage Managers, for example, when informing authorities that have applied to SAHRA for comment and for inclusion in documentation sent to environmental authorities. It may be used in conjunction with Form B, which provides relevant peer review comment.

- A. PROVINCIAL HERITAGE RESOURCES AUTHORITY: **Eastern Cape**
- B. AUTHOR(S) OF REPORT: **Ms Karen van Ryneveld**
- C. ARCHAEOLOGY CONTRACT GROUP: **Archaeomaps**
- D. CONTACT DETAILS: **Postnet Suite 239, Private Bag X3, Beacon Bay, 5205, email: kvanryneveld@gmail.com**
- E. DATE OF REPORT: **May 2011**
- F. TITLE OF REPORT: **Utilization Of Borrow Pits - Amathole District Municipality, Eastern Cape, South Africa**
- B. AUTHOR(S) OF REPORT: **Dr Robert Gess**
- C. ARCHAEOLOGY CONTRACT GROUP: **Bernard Price Institute for Palaeontological Research, Wits**
- D. CONTACT DETAILS: **PO Box 40, Bathurst, 6166, email: robg@imagnet.co.za**
- E. DATE OF REPORT: **August 2011**
- F. TITLE OF REPORT: **Palaeontological survey and report for borrow pits in the Amathole district centred on Nqamakwe, Butterworth, Idutywa, Centane and Willowvale.**

1

G. Please circle as relevant: Archaeological and Palaeontological components of EIA / **EMP** / HIA / CMP/ Other (Specify)

H. REPORT COMMISSIONED BY (**CONSULTANT** OR DEVELOPER): **Ms Lee-Anne Proudfoot,**

I. CONTACT DETAILS: **Biotechnology & Environmental Specialist Consultancy cc, PO Box 8241, Nahoon, 5210, East London, South Africa**

J. COMMENTS:

Please see comment on next page.....

REVIEW COMMENT ON ARCHAEOLOGICAL AND PALAEOLOGICAL IMPACT ASSESSMENTS

Ms Karen van Ryneveld

Dated: 6 May 2011, Received: 8 June 2011

Utilization Of Borrow Pits – Amathole District Municipality, Eastern Cape, South Africa

Dr Robert Gess

Dated: August 2001, Received: 12 August 2011

Palaeontological survey and report for borrow pits in the Amathole district centred on Nqamakwe, Butterworth, Idutywa, Centane and Willowvale.

INTRODUCTION

The Department of Roads and Public Works applied to the Department of Mineral Resources for the mining rights for 57 borrow pits in the Amathole District Municipality. The intent is to upgrade and resurface about 20 roads in the municipality.

In accordance with the legislative requirements, the independent environmental assessment practitioner required that a Heritage Impact Assessment be undertaken for the borrow pits. Both an archaeologist and a palaeontologist undertook a field survey and their reports were submitted to SAHRA for comments.

DISCUSSION

In terms of archaeology and palaeontology, the area affected by the proposed development has not been previously widely researched, with much of the existing knowledge on this municipality deriving from Cultural Resources Management work undertaken in the last few years.

Despite the expectations, the study area proved not to be archaeologically sensitive, with no Stone Age sites identified in the proximity of the 57 borrow pits. From an Iron Age perspective, remains of households are often recorded in the area, witnessing a continuous occupation of the sites, however, in this instance, only one Iron Age site was identified. Other recorded resources of cultural significance, not necessarily related to archaeology are: a colonial period church complex, the Cunningham Mission Church and Homestead, a contemporary memorial stone and a contemporary tribal court building in the village of Luxeni. The colonial period church complex is erected in close proximity to the Iron Age site, which comprises one rectangular stock enclosure and five huts, some with daga walls still visible. The Iron Age site, which has previously been disturbed by power lines, is not expected to be impacted by the activities of the borrow pit.

Palaeontologically, the area is vastly underlain by the Adelaide Formation, which is here often intruded by dolerite. Very few borrow pits are located within the fossiliferous Katberg and Balfour Formation of the Beaufort Group.

During his survey, Dr Gess identified few palaeontological occurrences, amongst which were many burrows of different species of invertebrates found for instance at 348_BP05, 386_BP01 and 182_BP02. Glassopterid plant fossils and stems of sphenophytes and other plants were recorded at borrow pits close to Willowvale, including 248_BP06 and adjacent, 367_BP01, 371_BP01 and 386_BP05 and 06. Some of these palaeontological occurrences present unique or rare characteristics within the palaeontology of the country, therefore their preservation and protection is of great importance and they should not be impacted without a permit from SAHRA.

SAHRA RECOMMENDATIONS

SAHRA supports the recommendations of the authors and requires that:

- Since the Iron Age site is located within 20m from the borrow pit 182_BP02, a Phase 2 Archaeological Impact Assessment in the form of recording and test excavation is

recommended. The number of test excavations will be decided by the archaeologist after the recording process is completed. The archaeologist requires a mitigation permit from SAHRA in terms of s. 35 of the National Heritage Resources Act (Act 25 of 1999). On receipt of a satisfactory mitigation (Phase 2) permit report from the archaeologist, SAHRA will make further recommendations on the future of the site.

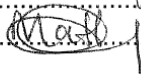
- Invertebrate burrows from the occurrences of pit 182 BP02 are rescued for research before exploitation of the borrow pit commences. The removal of the burrows must be undertaken by a professional palaeontologist. The specialist will require a mitigation permit from SAHRA. On receipt of a satisfactory mitigation (Phase 2) permit report from the palaeontologist, the heritage authority will make further recommendations in terms of the site.
- It is suggested that other aspects of heritage, such as living heritage, are considered. The community must be consulted in the development of borrow pits 047_BP02 and 368_BP01 since a contemporary memorial stone and a tribal court building are located in proximity of these proposed borrow pits. The integrity of these cultural heritage resources may be compromised by the activities surrounding the borrow pits.
- Inspection by a palaeontologist is required after opening for borrow pit 182_BP02, 344_BP05, 348_BP06 and 348_BP04, as well as 371_BP01 to identify potential newly uncovered fossils. Should new material be discovered, the specialist will require a collection permit from the relevant Heritage Resources Authority. A monitoring report must be submitted to SAHRA.
- At the end of their usage and prior to any form of rehabilitation, a palaeontologist will be required to resurvey the borrow pits within the sedimentary rocks of the study area. This will allow survey and sampling of freshly exposed palaeontological material and will result in possible recommendations regarding strata to be left unrehabilitated for future access by professionals. A monitoring report from this survey must be submitted to SAHRA.

CONCLUSION

If the recommendations made in the specialist's reports and in this comment are adhered to, the SAHRA Archaeology, Palaeontology and Meteorites Unit has no objection to the development (in terms of the archaeological and palaeontological components of the heritage resources). If any new evidence of archaeological sites or artefacts, palaeontological fossils, graves or other heritage resources are found during mining activities, SAHRA (Tel: 021 462 4502) and a professional archaeologist or palaeontologist, according to the findings, must be alerted immediately.

SIGNATURE OF ARCHAEOLOGIST PROCESSING REPORT: 

EMAIL: mgalimberti@sahra.org.za

SIGNATURE OF SAHRA HEAD ARCHAEOLOGIST: 

EMAIL: nndobochani@sahra.org.za

NAME OF HERITAGE RESOURCES AGENCY: SAHRA.....

PLEASE NOTE THAT THE COMMENT (ABOVE OR APPENDED) CONSTITUTES THE COMMENT OF THE HERITAGE RESOURCES AGENCY ARCHAEOLOGIST AND THAT ANY DEVELOPMENT THAT INVOLVES DESTRUCTION OF ANY ARCHAEOLOGICAL/PALAEONTOLOGICAL SITE IS STILL SUBJECT TO A PERMIT/PERMISSION FOR DESTRUCTION OF SUCH SITE GIVEN TO THE DEVELOPER BY THE RELEVANT HERITAGE RESOURCES AGENCY ARCHAEOLOGICAL AND PALAEONTOLOGICAL PERMIT COMMITTEE (THIS WILL BE SUBJECT TO APPROVAL OF THE PHASE 2 OR ARCHAEOLOGICAL/ PALAEONTOLOGICAL MITIGATION AS NECESSARY). THIS REPORT MAY BE TAKEN ONLY AS APPROVAL IN TERMS OF SECTION 35 OF THE NATIONAL HERITAGE RESOURCES ACT. THE PROVINCIAL MANAGER OF THE HERITAGE RESOURCES AUTHORITY MUST ADVISE AS TO APPROVAL IN TERMS OF HERITAGE ISSUES ENCOMPASSED BY OTHER ASPECTS OF THE LEGISLATION, SUCH AS ISSUES OF THE BUILT ENVIRONMENT (STRUCTURES (E.G. FARM HOUSES), OVER 60 YEARS), INDIGENOUS KNOWLEDGE SYSTEMS OR OF CULTURAL LANDSCAPES AS THIS IS NOT WITHIN THE SCOPE OF THE ARCHAEOLOGIST.

27 Appendix G: Site Photographs

27.1 372-BP01



Figure 21: 372-BP01 - Photo 1



Figure 22: 372-BP01- Photo 2

27.2 372-BP02



Figure 23: 372-BP02 - Photo 1



Figure 24: 372-BP02- Photo 2

27.3 372-BP03



Figure 25: 372-BP03 - Photo 1



Figure 26: 372-BP03- Photo 2

27.4 372-BP04



Figure 27: 372-BP04 - Photo 1

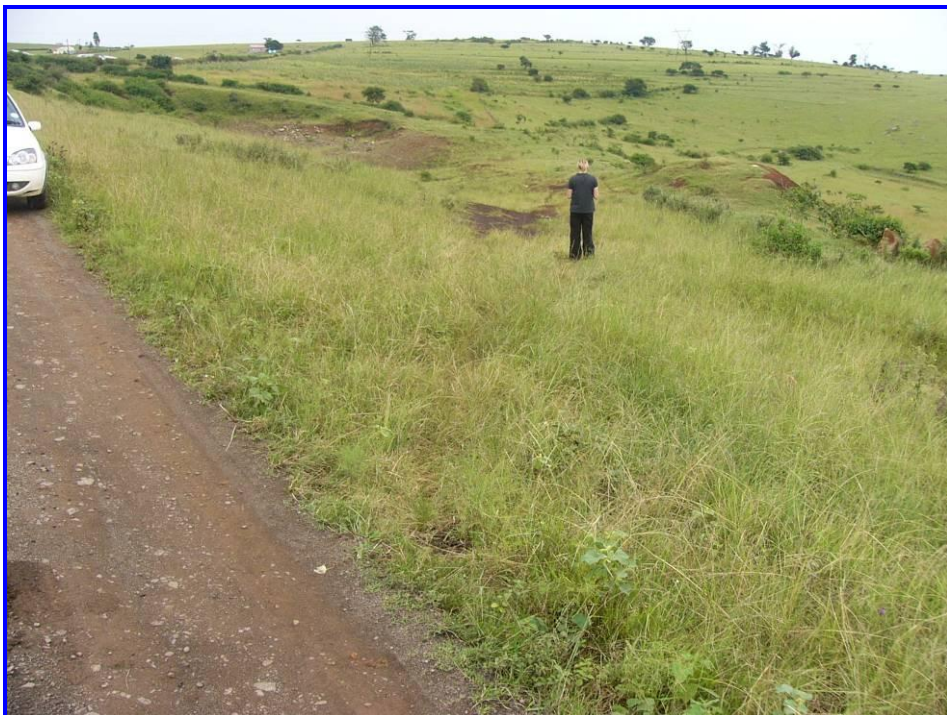


Figure 28: 372-BP04- Photo 2

28 Appendix H: Competency of Environmental Professional

Dr. Malcolm Logie Principal and Managing Director

Malcolm 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. Malcolm 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

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

Safety, Health & Environmental Management Systems

Malcolm'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

Malcolm 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

Malcolm'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

Malcolm 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
- Certification Board of Environmental Assessment Practitioners of South Africa
- International Association of Impact Assessors
- Royal Society of South Africa
- South African Association of Botanists
- Phycology Society of South Africa
- South African Auditor & Training Certification Association (SAATCA) – EMS Verification Auditor
- Bureau Veritas Quality International – Lead EMS Auditor

South African Council of Natural Scientific Professions

Malcolm 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

Malcolm 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.

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)

1. 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.
2. 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.
3. 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.
4. 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

1. 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.
2. 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

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

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, desalinisation 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 was the project manager for the environmental management component of the Albany Regional Water Services Project and conducted the environmental impact assessment

African Dune Investments (Pty) Ltd

Lee-Anne managed the scoping assessment for a proposed Wind Turbine Farm.

Amatola Green Power (Pty) Ltd

Lee-Anne managed and conducted 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.

KRAFT Foods SA

Lee-Anne reviewed and assisted in the preparation of an Environmental Impacts and Aspects Register, inclusive of the significance assessment and proposed mitigation/management strategies for all the Kraft Foods SA – Tunney Plant's activities for purposes of implementation of an Environmental Management System.

Element Consulting

Lee-Anne is currently undertaking the environmental impact assessment and environmental management plan for the construction of roads and utilisation of borrow pits in the Eastern Cape

SAB (PTY) LTD

Lee-Anne conducted the phase 1 Environmental Site Assessment for a prospective land purchase.

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.

**Mr. Conroy van der Riet
Senior Environmental Consultant
BSc Honours (Environmental Geography)**

Conroy van der Riet has more than 4 years experience in the fields of Marine and Terrestrial Ecology, Geography, Geographical Information Systems (GIS), Mining, Environmental Impact Assessments, Environmental Site Assessments, Environmental Management Plans, Environmental Management Systems, Environmental Auditing, Visual Impact Assessments, Site Rehabilitation, Water Use Licensing, Waste Licensing and project management throughout South Africa.

Conroy's project experience includes:

Environmental Impact Assessments

Conroy assisted in and managed a broad range of environmental impact assessments ranging from: agri-industrial & industrial facilities, residential & resort developments, golfing estates, informal settlement planning & formalisations, storm water management, water supply, desalinisation and sewage.

Environmental Site Assessments

Conroy has experience in many Phase I and II site assessments in accordance with ASTM Standards, SASS 5 freshwater aquatic systems assessments, field sampling & monitoring, permit applications and in the compilation of reports for prospective land buyers.

Environmental Management Plans

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

Environmental Management Systems

Conroy's experience includes Environmental Management System design and implementation, legal compliance audits, and risk assessments in compliance with relevant ISO Standards.

Environmental Auditing

Conroy'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 sectors in South Africa.

Geographical Information Systems (GIS)

Conroy has experience in using ArcView, Idrisi and Manifold software in assessing & producing environmental sensitivity maps, site plans, aerial photographs, satellite imagery, etc.

Visual Impact Assessments (VIA)

Conroy has experience in conducting VIA's and compiling VIA reports.

Site Rehabilitation

Conroy has experience in the rehabilitation of a variety of disturbed areas.

Water Use Licensing

Conroy has experience in a range of Water Use License application and related projects.

Waste Licensing

Conroy has experience in Waste License Applications for a range of projects

Project Management

Conroy 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 Management Plans
- Environmental Site Assessments
- Environmental Management Systems
- Environmental Auditing
- Geographical Information Systems (GIS)
- Visual Impact Assessments (VIA)
- Site Rehabilitation
- Water Use Licensing
- Waste Licensing
- Project Management

Education

- BSc Hons (Environmental Geography) NMMU, 2006
- BSc (Zoology and Geography) NMMU, 2005

Employment Record

- Biotechnology & Environmental Specialist Consultancy cc: 2006 - Present:

Key Projects**PG Bison**

Conroy assisted in the preparation of an Environmental Aspects Register, inclusive on significance assessment and proposed mitigation/management strategies for all the PG Bison activities at the board plant in Ugie, Eastern Cape for purposes of implementation of an Environmental Management System.

Kraft Foods SA

Conroy conducted the Phase I Environmental Site Assessment in accordance with the ASTM standards, and assisted in the preparation of an Environmental Aspects Register, inclusive on significance assessment and proposed mitigation/management strategies for all the Kraft Foods SA - Tunney Plant's activities for purposes of implementation of an Environmental Management System.

Goodyear SA

Conroy managed the Scoping process for the proposed installation of Underground Storage Vessels at the Goodyear SA factory.

Pragma Africa (Pty) Ltd

Conroy managed the environmental authorization process for the removal of underground fuel storage vessels.

Buffalo City Municipality - Waste Management

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

SANRAL

Conroy is managed the environmental authorization process for the proposed improvement of National Route 02, Section 18 for the South African National Roads Agency Limited. Conroy is also managing the mining permit applications of the borrow pits for the proposed road improvement, and has been appointed to act as Environmental Control Officer for the implementation of the project.

Bigen Africa (Pty) Ltd & Ndlambe Local Municipality

Conroy managed the environmental authorization process for the proposed Port Alfred Waste Water Treatment Works upgrade project. Conroy has also been appointed to act as the Environmental Control Officer for the implementation of the project.

Uhambiso

Conroy managed the environmental authorization and Waste License Application process for the proposed Tsolo Waste Water Treatment Works upgrade project.

Chris Hani District Municipality - Bulk Services

Conroy is currently managing the environmental authorization and Waste License Application process for the proposed upgrading of the Bulk Services for the proposed Rathwick Development, Queenstown, inclusive of the Waste Water Treatment Works, Water Treatment Works, Stormwater and associated infrastructure.

Chris Hani District Municipality - Water Supply

Conroy is currently managing the environmental authorization process for the Water Supply Backlog projects in the Cluster 2 area of the Chris Hani District Municipality.

Alvitex 103 (Pty) Ltd

Conroy managed the environmental authorization process for a proposed golfing estate development and assisted in the environmental authorization for the sewage works servicing the proposed resort developments, and.

African Dune Investments

Conroy assisted in the environmental authorization for the proposed golf estate development.

Thynk Property Partners (Pty) Ltd

Conroy managed the environmental authorization process for the proposed retail & residential development.

Eskom

Conroy is currently managing the environmental authorization process for the proposed upgrading of the Qumbu Substation and associated infrastructure.

Buffalo City Municipality - Planning and Economic Development

Conroy managed the environmental authorization for various settlement planning & formalization projects in the Amathole district.

The Diocese of Grahamstown

Conroy managed the environmental authorization for the proposed rezoning and residential development of the St Lukes Mission Land.

Bunker Hills Investments (Pty) Ltd

Conroy managed the environmental management plan for the proposed residential development.

Rakel (Pty) Ltd

Conroy assisted in managing the environmental authorization for the proposed residential development and assisted in the environmental impact assessment for the proposed desalination plant servicing the proposed residential development.

Rapitrade (Pty) Ltd

Conroy assisted in managing the environmental management plan for the proposed residential development and managed the applications to the South African Heritage Resources Agency (SAHRA) and the Department of Water Affairs & Forestry.

Golden Falls (Pty) Ltd

Conroy assisted in the environmental authorization and the environmental management plan for the proposed residential development.

Beautiful Connections (Pty) Ltd

Conroy managed the environmental authorization for a proposed wildlife resort in the Queenstown area and the proposed development of Eco-Type chalets in the East London area.

Riverleigh VII cc

Conroy managed the environmental authorization process for the proposed warehousing and light industrial manufacturing processes developments.

Purple Moss 29 (Pty) Ltd

Conroy managed the rehabilitation of the Quenera River bank on the site and the environmental authorization process for the proposed township establishment consisting of business, mixed use and residential areas.

Silicon Smelters (Pty) Ltd (FerroAtlantica)

Conroy managed the environmental impact assessment process and CAPCO permit applications for various charcoal burners in the East Cape, West Cape, Free State, North-West, Limpopo and Gauteng Provinces.

Wild Coast Fishing Co-operative

Conroy assisted in the environmental authorization for the proposed fish works factory.

ELGC

Conroy managed the EIA Process and prepared the rehabilitation management plan for the proposed realignment of the 6th fairway & minor upgrades in order to upgrade the East London Golf Club (ELGC).

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