

ENVIRONMENTAL MANAGEMENT PLAN

The Proposed Utilisation of Borrow Pits Road: DR18030 (OR Tambo 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	August 26, 2011	Mr Conroy van der Riet
Client Draft	August 26, 2011	Ms Lee-Anne Proudfoot
Public Draft	September 27, 2011	Mr Conroy van der Riet
Final Report	November 04, 2011	Mr Conroy van der Riet

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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 - Controlab
5. Information on Cultural Heritage/Archaeological resources - ArchaeoMaps
6. Information on Palaeontological Resources - Mr. Lloyd Rossouw

4 Special Conditions

None

5 Natural Science Professions Act

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

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

Senior Environmental Consultants:

Ms Lee-Anne Proudfoot is registered with the:

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

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.

6.1.19 Transkei Decree (9 of 1992)

The purpose of the Transkei Decree is to consolidate and amend laws relating to the conservation, management, protection and commercial utilization of indigenous fauna and flora and their habitats on land, in fresh water and in the sea; excluding national parks. To provide for the establishment of national wildlife reserves, protected natural environments, limited development areas, camping areas, hiking trails and coastal conservation areas.

In terms of this decree, the coastal conservation areas applies to the 1 km strip along the entire former Transkei coastline (excluding Municipal land), which is measured from the high water mark of the seashore and relevant tidal estuaries to 1 km inland. The Decree makes provision for various forms of legislation to manage development and conserve, protect and control the utilisation of indigenous fauna and flora within the coastal strip. This implies that any development within the 1 km coastal strip requires approval in terms of the Transkei Decree, 1992. The administration of this Decree is the responsibility of the Eastern Cape DEDEA. In the event of an environmental authorization being authorised (in terms of the EIA procedures), a development permit will be issued by DEDEA based on such environmental authorization. However the development site is not located within this 1 km strip.

This decree provides a number of schedules which protect indigenous endangered & protected Fauna & Flora. According to Chapter 3 permits are required from the Eastern Cape DEDEA should a person hunt, kill, capture, sell, buy, donate, receive, remove, disturb, interfere etc any endangered or protected fauna listed in the schedules of the Transkei Decree. According to Chapter 4 no person may without a permit from the Eastern Cape DEDEA be in possession of, pick, sell etc any endangered or protected flora listed in the schedules of the Transkei Decree.

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 OR Tambo District Municipality - Integrated Development Plan (2010-2011)

The Municipal Systems Act 32 of 2000, Chapter 5 - part 3 prescribes that Municipal Council must review its Integrated Development Plan (IDP) annually in accordance with its performance measurements to the extent that changing circumstances so demand. This involves an assessment of the Municipality's performance and achievement of its targets and strategic objectives. The Council must also amend its IDP in accordance with a prescribed process. The IDP is annually reviewed to reflect the impact of successes, while corrective measures are applied to address development problems that may arise. This is done to ensure its relevance as the Municipality's Strategic Plan, informing other components of the municipal business processes including institutional development, financial planning, cyclical inter-governmental planning and budgeting. Section 26 of the MSA prescribes the following peremptory components that an IDP must reflect on:

- The municipal council's vision including the municipal critical developmental and transformation needs;
- An assessment of existing level of development in the municipality;
- The council's developmental priorities and objectives including its local economic development aims;
- The councils' development strategies which must be aligned to national and provincial sector plans;
- A spatial development framework which must include the provisions of basic guidelines for a land use management system;
- The council's operational strategies;

- Applicable disaster management plans;
- A financial plan, which must include a budget projection for the next three years; and
- The key performance indicators and performance targets determined in terms of section 41.

The Municipal Planning and Performance Management Regulations (2001) set out the following further requirements for an IDP:

- An institutional framework for implementation of the IDP and to address the municipality's internal transformation;
- Investment initiatives must be clarified;
- Development initiatives including infrastructure, physical, social and institutional development and;
- All known projects, plans and programmes to be implemented within the municipality by any organ of state.

The Municipal Finance Management Act (MFMA) provides for closer alignment between the Annual Budget and the compilation of the IDP.

To give effect to the said mandates, the IDP has been legislated as a planning mechanism to be adopted by municipalities (Chapter 5 of the MSA No. 32 of 2000). The council of O.R Tambo district municipality is reviewing an Integrated Development Plan (IDP) to adopt it for implementation during (2010/2011) financial year. The IDP as a strategic development plan is reviewed annually to guide all development in a municipal area and inform municipal budgeting and resource allocation. It also plays a pivotal role in informing all planning processes of the other spheres of government (National and Provincial) as well as all state owned enterprises. The development of an IDP as legislated in chapter 5 of the Local Government Municipal Systems Act No.32 of 2000, amongst others prescribes the content of such a plan (section 27 of this Act), as follows:

- The municipal council's vision for the long-term development of the municipality with special emphasis on the municipality's most critical development and internal transformation needs;
- An assessment of the existing level of development in the municipality, including identification of communities which do not have access to basic services;
- The council's development priorities and objectives for its elected term, including its local economic development aims and its internal transformation needs;
- The council's development strategies aligned with those of national and provincial sectoral plans and planning requirements binding on the municipality in terms of legislation;

- A spatial development framework including basic guidelines for land use management system for the municipality;
- The council's operational strategies;
- Applicable disaster management plans;
 - A financial plan and budget projection for the next three year; and
 - The key performance indicators and performance targets determined in terms of section 41 of the Municipal Systems Act.

The main purpose of an IDP is to foster more appropriate service delivery by providing the framework for economic and social development within the municipality. In doing so it:-

- i. Contributes towards eradicating the development legacy of the past.
- ii. Operationalizes the notion of developmental local government.
- iii. Foster a culture of co-operative governance.

Projects related to Roads and Transport include the following:

Table 1: Projects planned 2010/2011 Financial Year

Department of Roads and Transport Projects planned 2010/2011 Financial Year					
Name of project	Indicative Budget	Location of project	Implementing agent	Project output	Duration
Wild Coast Meander Zithulele to Coffee Bay (Ph 1)	13,000	Port St Johns,	DORT	Tarred roads / Surfaced roads	Mar-11
Wild Coast Meander: Madwaleni Hospital Road (Ph 2)	20,000	KSD	DORT	Tarred roads / Surfaced roads	Mar-11
Greenville Hospital Road (Ph 2)	20,000	Mbizana	DORT	Tarred roads / Surfaced roads	Mar-11
R61 to Holy Cross Hospital	18,200	Mbizana	DORT	Surfaced Road	Mar-10
Continuation to Holy Cross Hospital	7,800	Mbizana	DORT	Surfaced Road	Aug-10
Ngqeleni to Mthatha Mouth	10,400	KSD	DORT	Surfaced Road	Nov-09
R61 Sitshayela to Tembukazi	11,700	Ngquza	DORT	Surfaced Road	Nov-10
Bizana to Port Edward (Magusheni-Mzamba)	600,000	Mbizana	DORT	Tarred roads / Surfaced roads	Mar-15
Phakade to Magusheni	220,000	Bizana , Ngquza	DOR	Tarred roads / Surfaced roads	Mar-11
T125: Siphetu Hospital	350,000	Ntabankulu	DOR	Tarred roads / Surfaced roads	Mar-11

Hluleka Road Project	28,000	Nyandeni	DORT	Tarred roads / Surfaced roads	Mar-11
Urban Renewal Lusikisiki	13,000	Ngquza	DORT	Tarred roads / Surfaced roads	Mar-11
Household Contractor Road Maintenance	34,000	KSD, Mhlontlo	DORT	Minor maintenance works (culverts cleaning, surface maintenance, grass cutting, control stray animals, etc.)	Mar-11
EPWP projects	8,360	7 Local Municipalities	DORT	Minor maintenance works (surface maintenance, fencing, grass cutting and bush clearing, etc).	Mar-11
DR 08313 to Canzibe Hospital	33,800	Nyandeni	DORT	Tarred roads / Surfaced roads	Jun-11
DR 08170 to Lutana Clinic	23,400	Mhlontlo	DORT	Tarred roads / Surfaced roads	Dec-10
DR 08026 & DR 08149 to Magwa Tea Plantation	22,100	Quakeni	DORT	Tarred roads / Surfaced roads	Oct-10
DR 08269 (Lindile)	5,200	KSD	DORT	Tarred roads / Surfaced roads	Sep-11
DR 08288 & DR 08033 & DR 08289 Mvezo Great Place and Museum	33,800	KSD	DORT	Tarred roads / Surfaced roads	Nov-12
DR 08167 to Tina Falls	19,500	Mhlontlo	DORT	Tarred roads / Surfaced roads	Jan-12
DR 08019 to Ntabankulu Town	14,300	Quakeni	DORT	Tarred roads / Surfaced roads	May-12
Flagstaff to Lusikisiki	300,000	Quakeni	DORT	Tarred roads / Surfaced roads	Mar-12
Pt St Johns to Ntafufu	20,000	Port St Johns	DORT	Tarred roads / Surfaced roads	Nov-11
Mampube to Pt St Johns	35,000	Port St Johns	DORT	Tarred roads / Surfaced roads	Nov-11
N2 to Tabankulu	20,000	Ntabankulu	DORT	Tarred roads / Surfaced roads	Apr-12
Lusikisiki to Mbotyi	40,000	Ngquza	DORT	Tarred roads / Surfaced roads	Nov-11
Vidiesville to Mqaunduli	40,000	King Sabata Dalinyebo	DORT	Tarred roads / Surfaced roads	Feb-11
Magusheni to Flagstaff	20,000	Ngquzai/ Mbizana	DORT	Tarred roads / Surfaced roads	Nov-12
Lusikisiki Bambisane Hospital	35,000	Ngquza	DORT	Tarred roads / Surfaced roads	Mar-12
Mthatha Airport	R60, 000	KSD LM	DORT	Civil Works, Fencing, Terminal Bldg Upgrade, Fire detectors, Lift installation, Air conditioning and ventilation	Mar-12
Qumbu Bus and Taxi Rank	R 2 million	Mhlontlo	DORT	Bus and Taxi Rank	July 10 - June 2012

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 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 DR18030.

It is proposed that road construction materials be sourced from existing borrow pits located in the vicinity of the DR18030. 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 six (6) borrow pits located throughout the area (**Figure 1**).

Table 2: Summary Table of Borrow Pits.

Information	Borrow Pits					
	030-BP01	030-BP02	030-BP03	030-BP04	030-BP05	030-BP06
Ownership of Land	Communal	Communal	Communal	Communal	Communal	Communal
Type of Material	Sandstone	Sandstone	Sandstone and Shale	Sandstone and Shale	Sandstone and Shale	Sandstone and Shale
New/Existing	Existing	Existing	Existing	Existing	Existing	Existing
Co-ordinates (Latitude)	31°40'46.2" S	31°40'46.8" S	31°40'42.8" S	31°42'29.3" S	31°46'43.5" S	31°48'02.2" S
Co-ordinates (Longitude)	29°02'13.3" E	29°02'10.8" E	29°02'03.1" E	29°01'40.8" E	29°09'33.4" E	29°10'13.1" E
Nearest Village	Ngceleni	Ngceleni	Ngceleni	No village nearby (>1km)	Ntibane	Ntibane
Distance to access road	5m	5m	100m	20m	5m	5m
Distance to nearest houses	20m	50m	180m	>1km	100m	340m
Presence of Servitude	Access Road	None	Overhead Powerline	Underground water line	None	Overhead Powerline
Proposed End Use	Closed & Rehabilitated	Closed & Rehabilitated	Closed & Rehabilitated	Closed & Rehabilitated	Closed & Rehabilitated	Closed & Rehabilitated

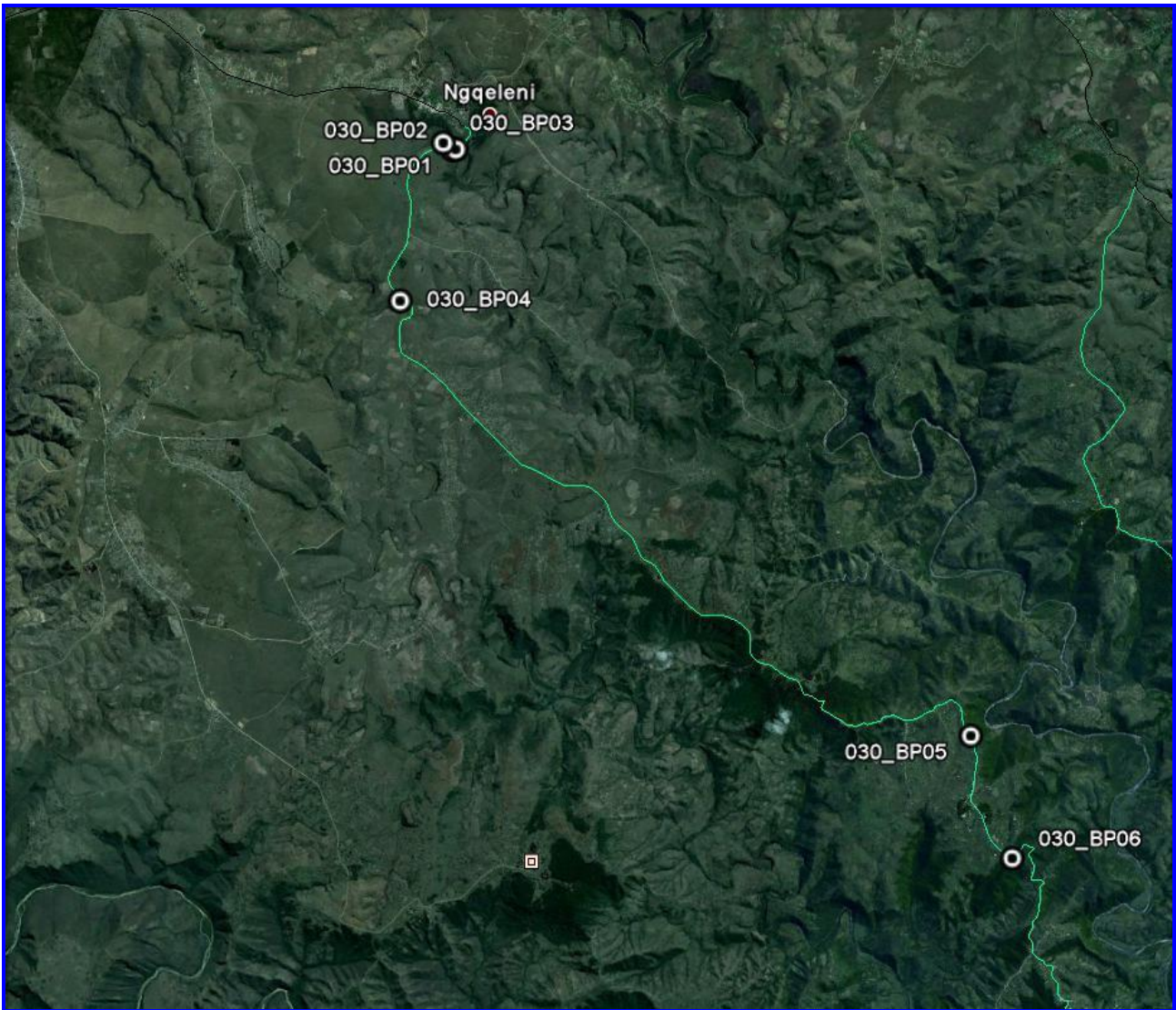


Figure 1: Aerial View - Borrow Pit locations.

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/Custodian:

Borrow Pits #	Property/Allotment Name	Landowner/Custodian
030_BP01	Ngqeleni	Department of Rural Development and Land Reform
030_BP02	Ngqeleni	Department of Rural Development and Land Reform
030_BP03	Ngqeleni	Department of Rural Development and Land Reform
030_BP04	Farm 72	Department of Rural Development and Land Reform
030_BP05	Farm RE/96	Department of Rural Development and Land Reform
030_BP06	Farm RE/96	Department of Rural Development and Land Reform

10 Need and Desirability

The existing gravel roads in the OR Tambo District Municipality are in serious need of maintenance and re-gravelling. The region in particular has recently experienced severe weather conditions which has resulted in severe deterioration of the road conditions and has exacerbated the need for maintenance and re-gravelling of the existing gravel roads. The proposed maintenance/re-gravelling of the DR18030 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 DR18030. The identification of these sources follows a materials identification/investigation undertaken by Controlab. 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 positive impact 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. Rehabilitation should also reduce the potential erosion and subsequent sedimentation of rivers/streams.

11 Description of the Borrow Pits

It is proposed to use six (6) borrow pits for the provision of material for the upgrade/re-gravelling of DR18030. All of the borrow pits have been previously mined. The borrow pits will be used exclusively for the upgrade/re-gravelling of DR18030 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 use, land capability, vegetation sensitivity, surrounding erosion, visibility, slopes, etc.



Figure 2: Topographical location of all the borrow pits.

11.1 Borrow Pit 030-BP01

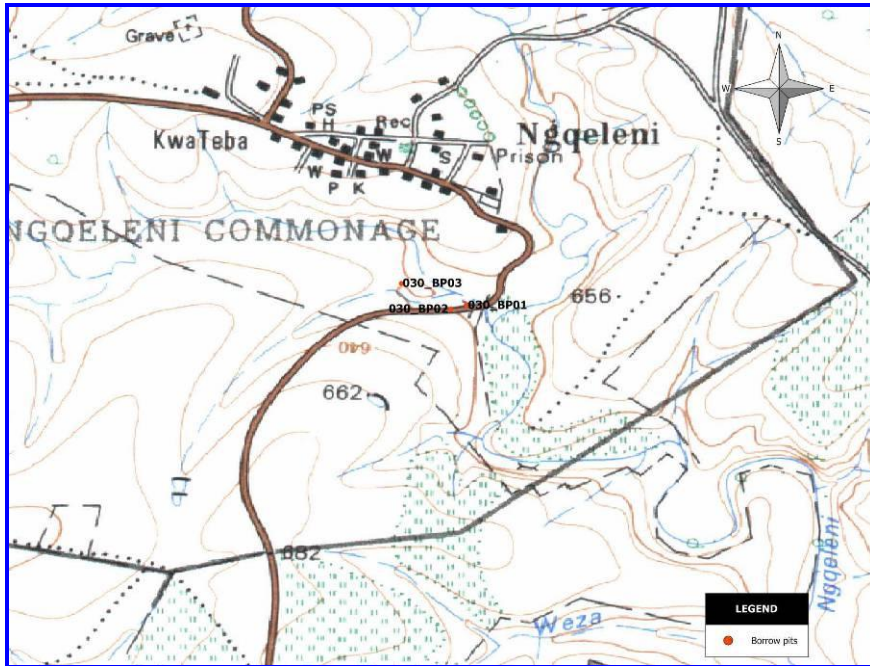


Figure 3: Topographical Location - 030-BP01.

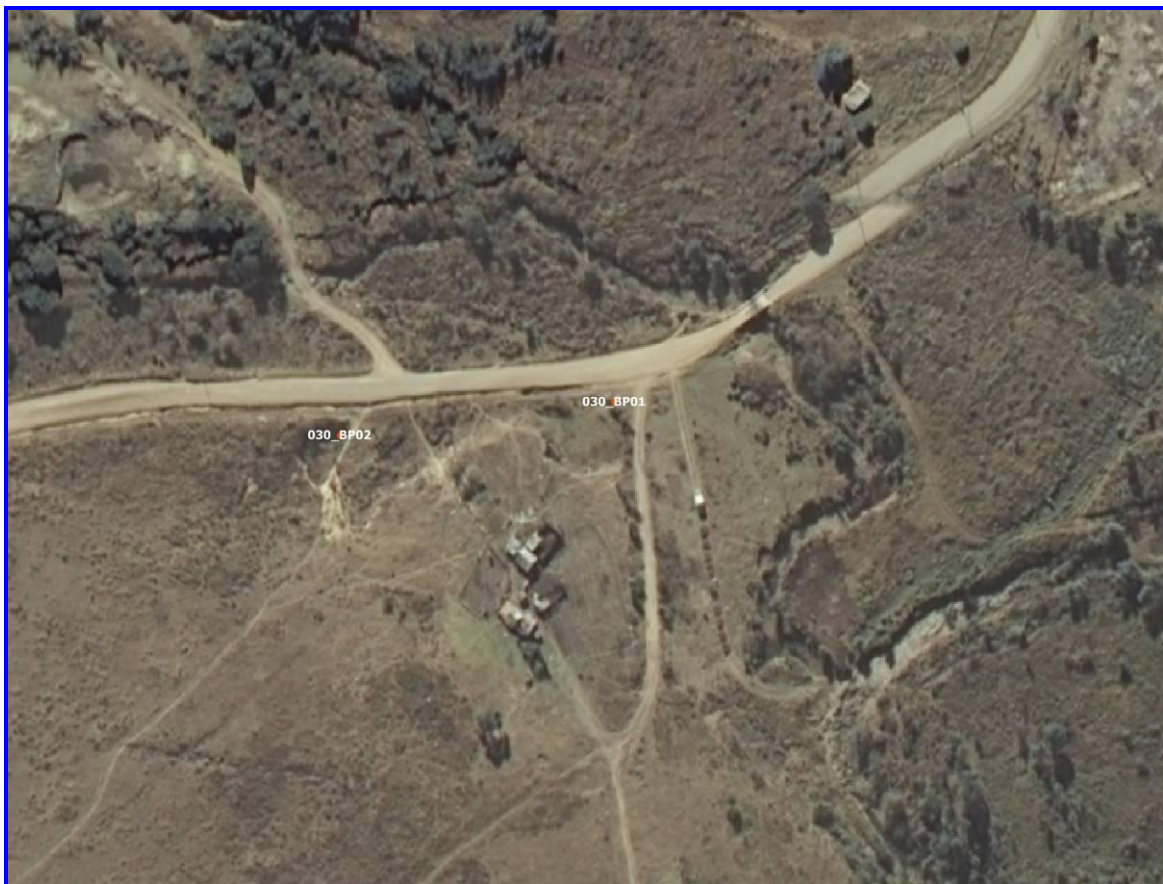


Figure 4: Aerial view - 030-BP01.



Figure 5: Photo - 030-BP01.

General Description

030-BP01 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 borrow pit is accessed directly from DR18030. There are some dwellings in very close proximity to the borrow pit (20m from BP face), and as such it is the intension that the borrow pit will be mined from the existing borrow pit face in a southerly and westerly direction and within the footprint of the existing borrow pit as indicated on the mining plan (**Appendix B**) in order to avoid damage to the dwellings. It should not be necessary to relocate any households.

Prior to mining the access road will be demarcated to prevent vehicles damaging natural vegetation. 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 livestock. The area to be fenced will be bigger than the area to be mined to allow for a storage area for topsoil & overburden (to be 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 sandstone. It is proposed that the extent of the area to be mined will be approximately 0.107ha.

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 030-BP02

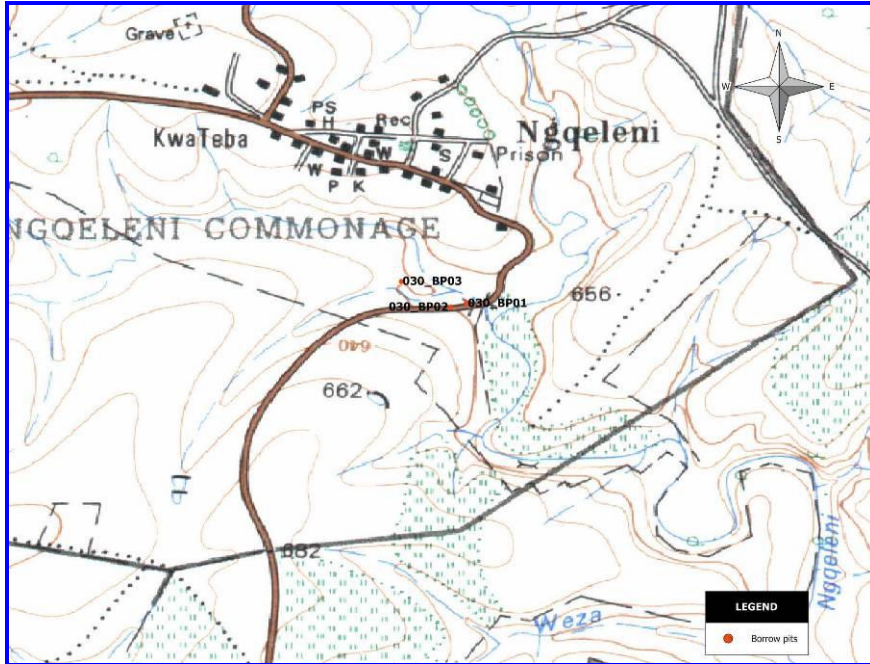


Figure 6: Topographical Location - 030-BP02.

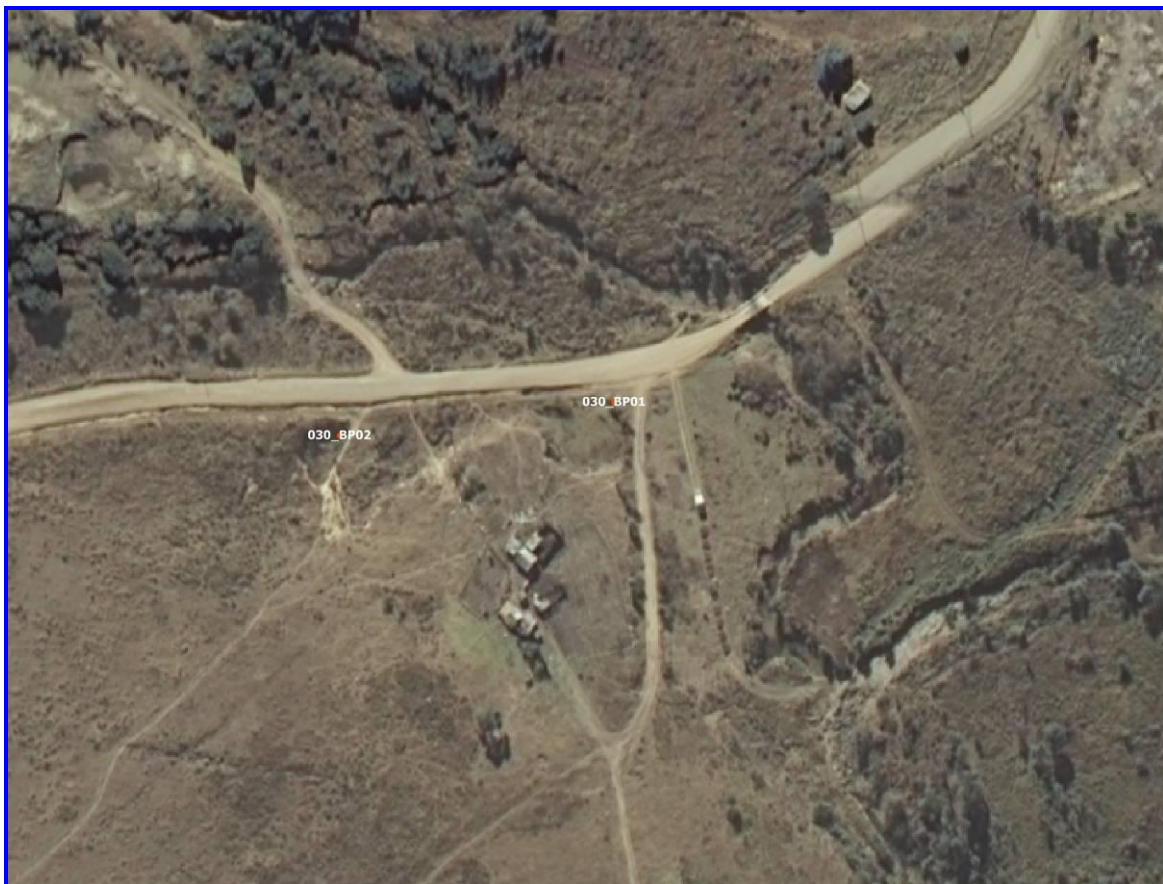


Figure 7: Aerial view - 030-BP02.



Figure 8: Photo - 030-BP02.

General Description

030-BP02 is an existing borrow pit which has been used extensively in the past and is currently being utilised. It is located on the side of a north facing hill. The borrow pit is accessed directly from DR18030. The nearest houses are located +/- 50m south-east of the borrow pit, and as such it is the intension that the borrow pit will be mined from the existing borrow pit face in 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. 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 livestock. The area to be fenced will be bigger than the area to be mined to allow for a storage area for topsoil & overburden (to be 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 sandstone. It is proposed that the extent of the area to be mined will be approximately 0.104ha.

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 030-BP03

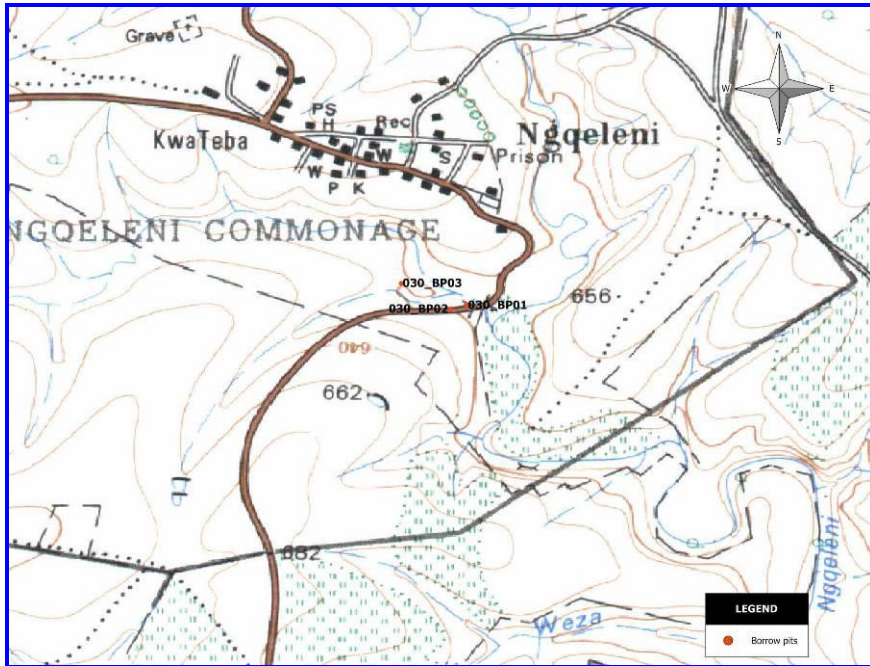


Figure 9: Topographical Location - 030-BP03.

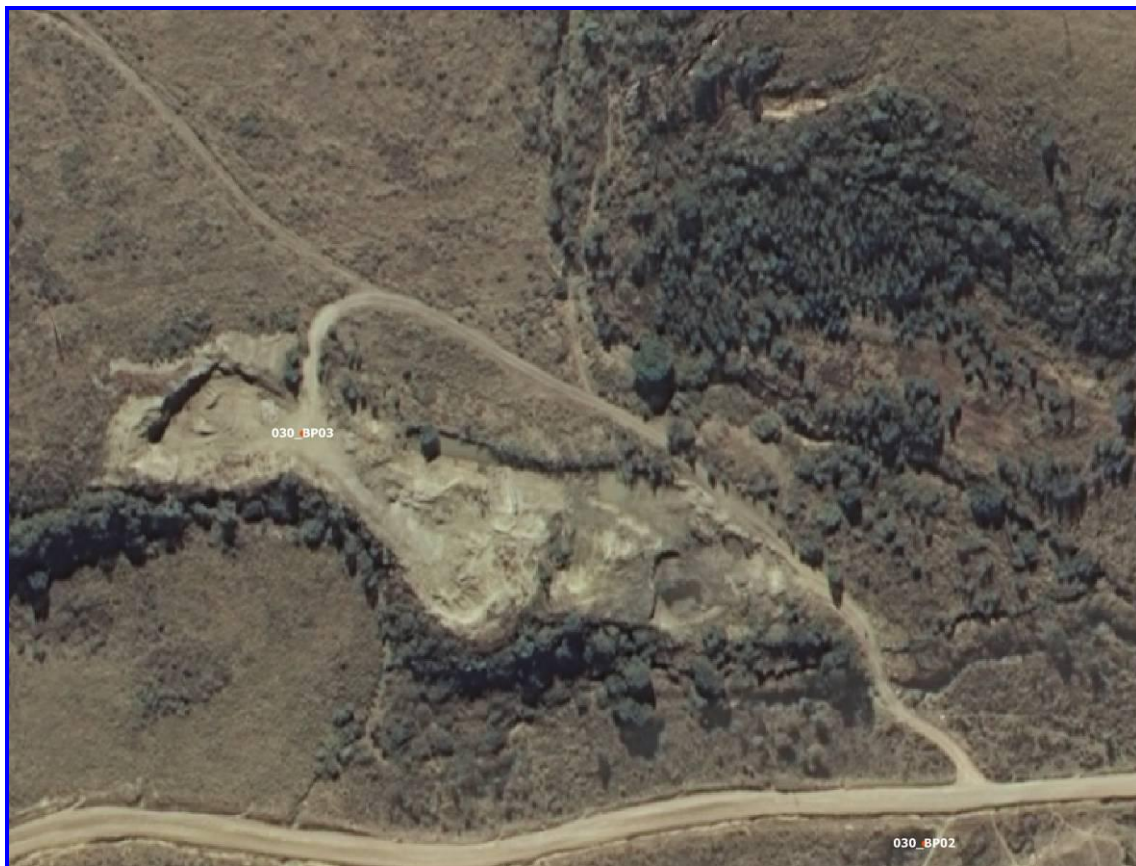


Figure 10: Aerial view - 030-BP03.



Figure 11: Photo - 030-BP03.

General Description

030-BP03 is an existing borrow pit which has been used extensively in the past and is currently being utilised. 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 DR18030. The nearest houses are located +/- 180m from the borrow pit. There is overhead powerline located approximately 50m north of the BP, and as such it is the intension 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**) in order to avoid damage to the overhead powerline. It will not be necessary to relocate any households.

Prior to mining the access road will be demarcated to prevent vehicles damaging natural vegetation. 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 livestock. The area to be fenced will be bigger than the area to be mined to allow for a storage area for topsoil & overburden (to be 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 sandstone & shale. It is proposed that the extent of the area to be mined will be approximately 0.441ha.

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 030-BP04

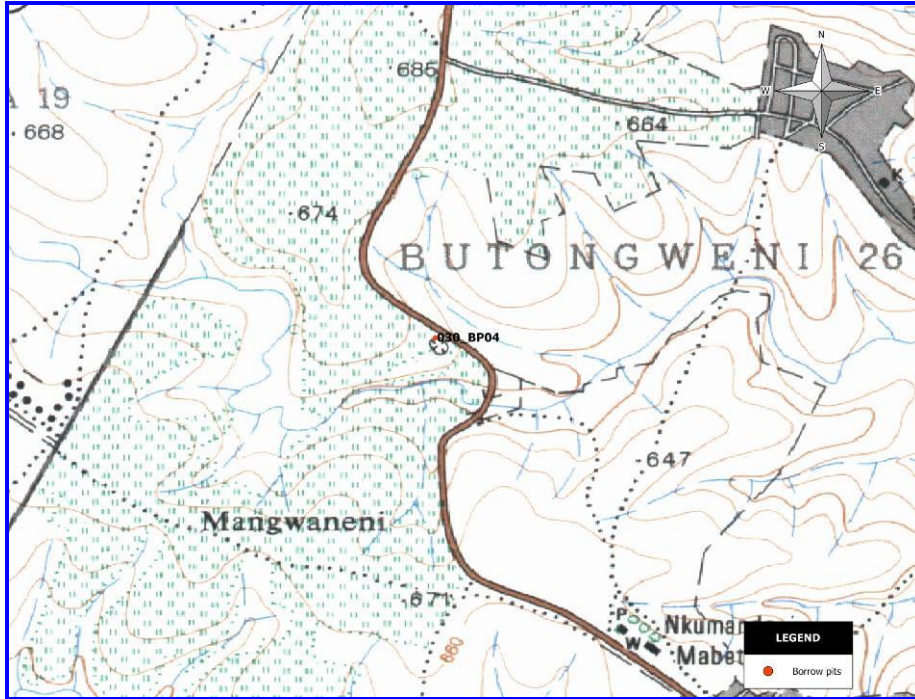


Figure 12: Topographical Location - 030-BP04.



Figure 13: Aerial view - 030-BP04.



Figure 14: Photo - 030-BP04.

General Description

030-BP04 is an existing borrow pit which has been used extensively in the past. It is located on the side of a south-east facing hill. The site is accessed by an unpaved/gravel road which has its intersection on the DR18030. The nearest houses are located more than 1km away from the borrow pit. There is a spring located within 030-BP04. As such the mining plan has been designed in such a way as to exclude the spring from the mining area in order to allow for livestock and community members to access the spring. It is the intension that the borrow pit will be mined from the existing borrow pit face in a northerly & southerly 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. 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 livestock. The area to be fenced will be bigger than the area to be mined to allow for a storage area for topsoil & overburden (to be 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 sandstone & shale. It is proposed that the extent of the area to be mined will be approximately 0.890ha.

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

11.5 Borrow Pit 030-BP05

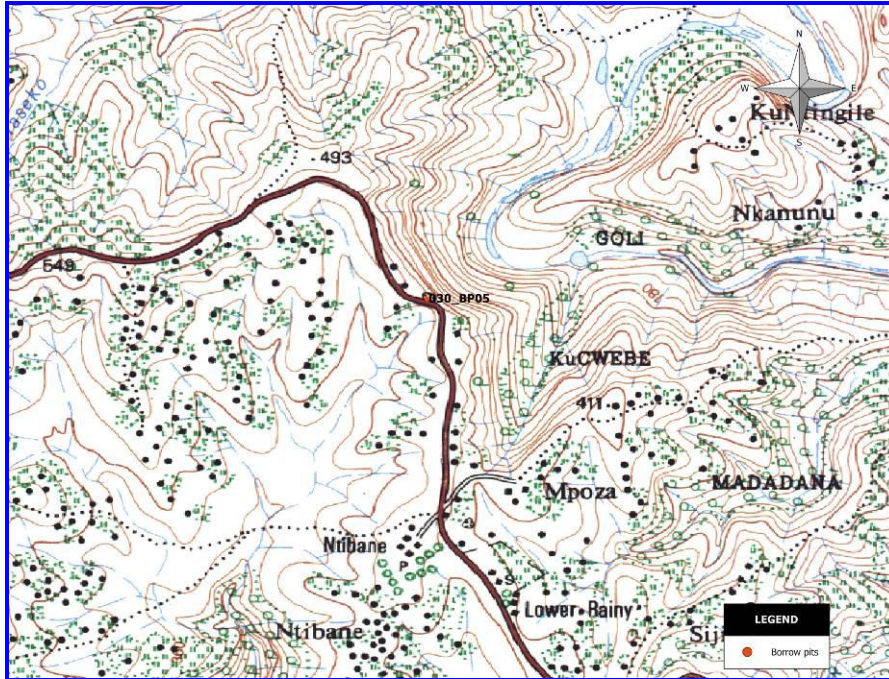


Figure 15: Topographical Location - 030-BP05.

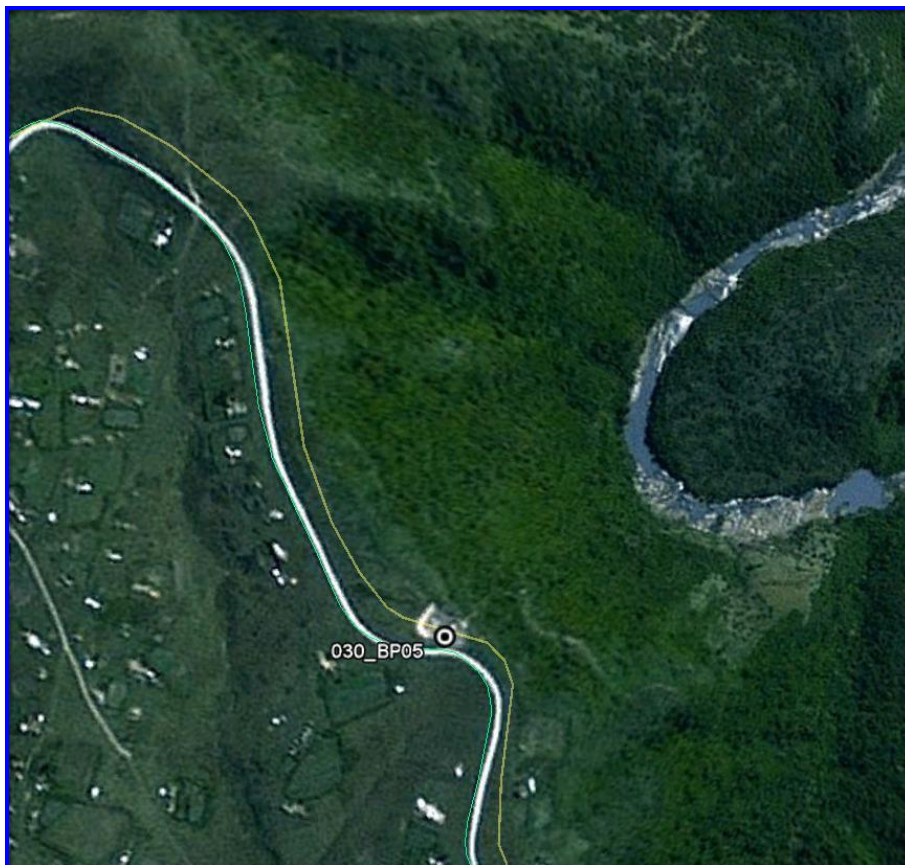


Figure 16: Aerial view - 030-BP05.



Figure 17: Photo - 030-BP05.

General Description

030-BP05 is an existing borrow pit which has been used extensively in the past and is currently being utilised. It is located on the side of a north-east facing hill. There is a very steep valley (more than 70% slope) located directly north-east of the BP which slopes directly into the Mthakatye River. The current BP extends right to the edge and as such there is a serious need for sufficient stormwater and erosion control on the northern and eastern side of the BP. The borrow pit is accessed directly from DR18030. The nearest houses are located +/- 100m from the borrow pit. It is the intention that the borrow pit will be mined from the existing borrow pit face in north-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. 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 livestock. The area to be fenced will be bigger than the area to be mined to allow for a storage area for topsoil & overburden (to be 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 sandstone & shale. It is proposed that the extent of the area to be mined will be approximately 0.572ha.

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.

11.6 Borrow Pit 030-BP06

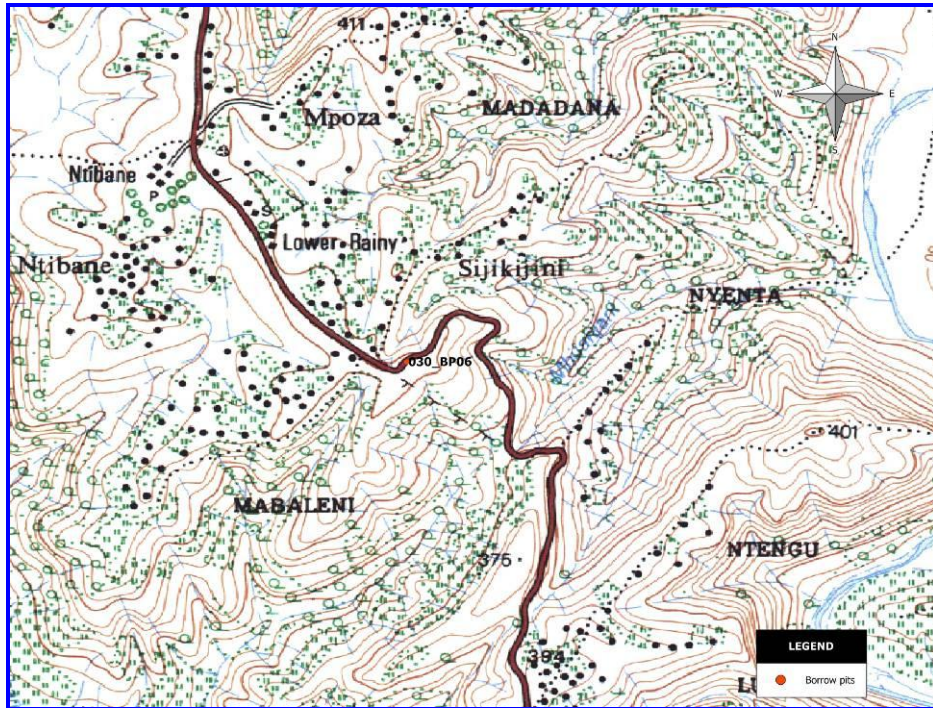


Figure 18: Topographical Location - 030-BP06.



Figure 19: Aerial view - 030-BP06.



Figure 20: Photo - 030-BP06.

General Description

030-BP06 is an existing borrow pit which has been used extensively in the past and is currently being utilised. It is located on the side of a north-west facing hill. The borrow pit is accessed directly from DR18030. The nearest houses are located +/- 340m from the borrow pit. There is overhead powerline running south-east of the BP, and as such it is the intension that the borrow pit will be mined from the existing borrow pit face in a north-easterly direction and within the footprint of the existing borrow pit as indicated on the mining plan (**Appendix B**) in order to avoid damage to the overhead powerline. It will not be necessary to relocate any households.

Prior to mining the access road will be demarcated to prevent vehicles damaging natural vegetation. 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 livestock. The area to be fenced will be bigger than the area to be mined to allow for a storage area for topsoil & overburden (to be 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 sandstone & shale. It is proposed that the extent of the area to be mined will be approximately 0.538ha.

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.

12 Description of the Environment

12.1 Landform & Geology

12.1.1 Geology & Soils

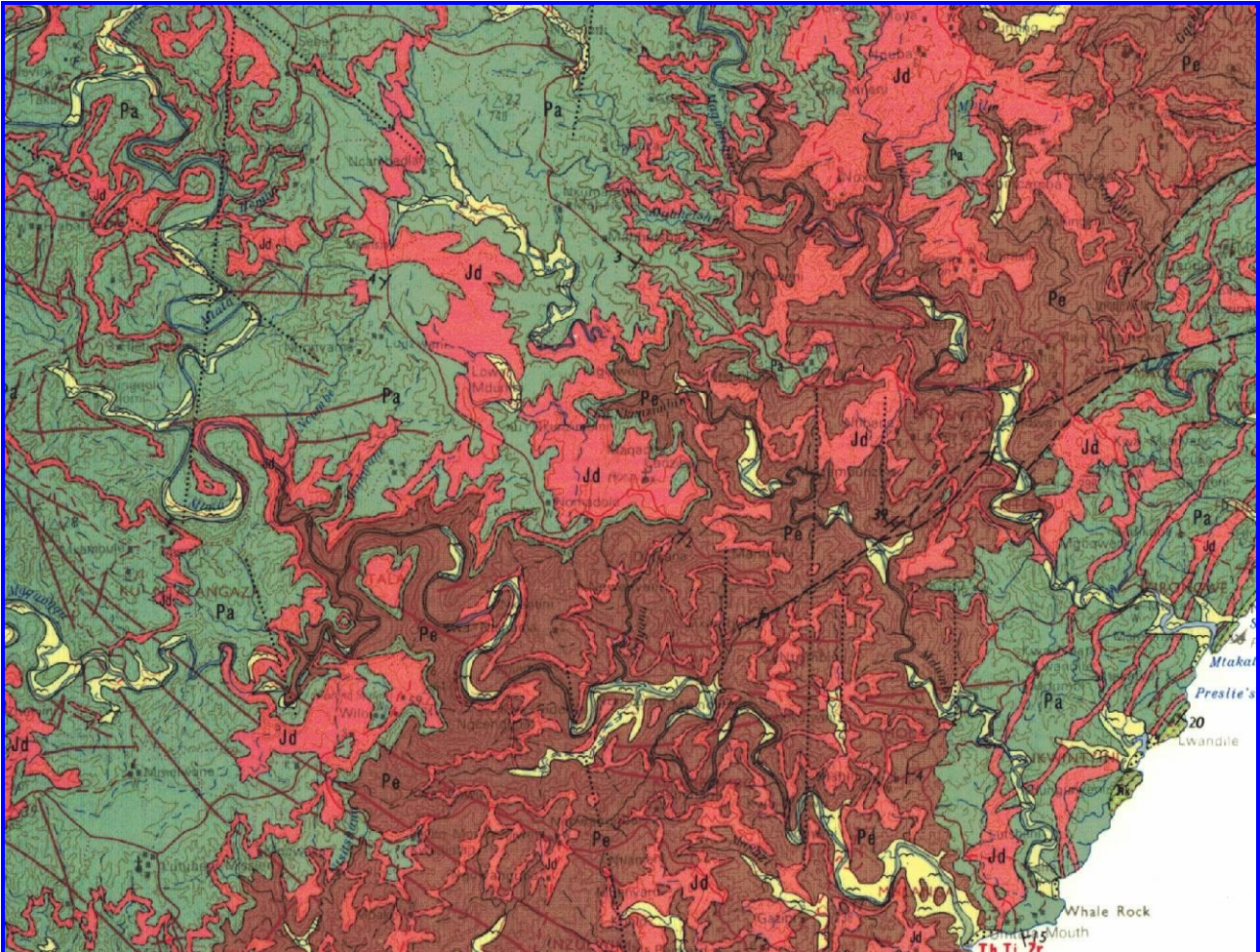


Figure 21: The geology of the study area

The area is underlain by horizontal to very gently dipping rocks of the Karoo Supergroup (shale, mudstones and sandstones) with dolerite intrusions often in the form of ring structures. Soils are poorly developed, being shallow and rocky and mostly not suitable for crop production. In general shallow residual soils and rock occur on hilltops with talus on the slopes and slightly deeper residual soils in the valleys.

The area is underlain by dark grey shale, mudstone and sandstone belonging to the Ecca Group, which falls under the Karoo Sequence. There are also underlain by grey & brownish-red mudstone

and sandstone belonging to the Adelaide Subgroup. This subgroup falls under the Beaufort Group which belongs to the Karoo Sequence. There are also wide spread dolerite intrusion throughout the area (**Figure 21**).

This **Adelaide Subgroup** rests conformably on the Ecce 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 Controlab indicated that the borrow pits comprised of the following materials:

Borrow Pit #	Material Source
030_BP01	Sandstone
030_BP02	Sandstone
030_BP03	Sandstone and Shale
030_BP04	Sandstone and Shale
030_BP05	Sandstone and Shale
030_BP06	Sandstone and Shale

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.

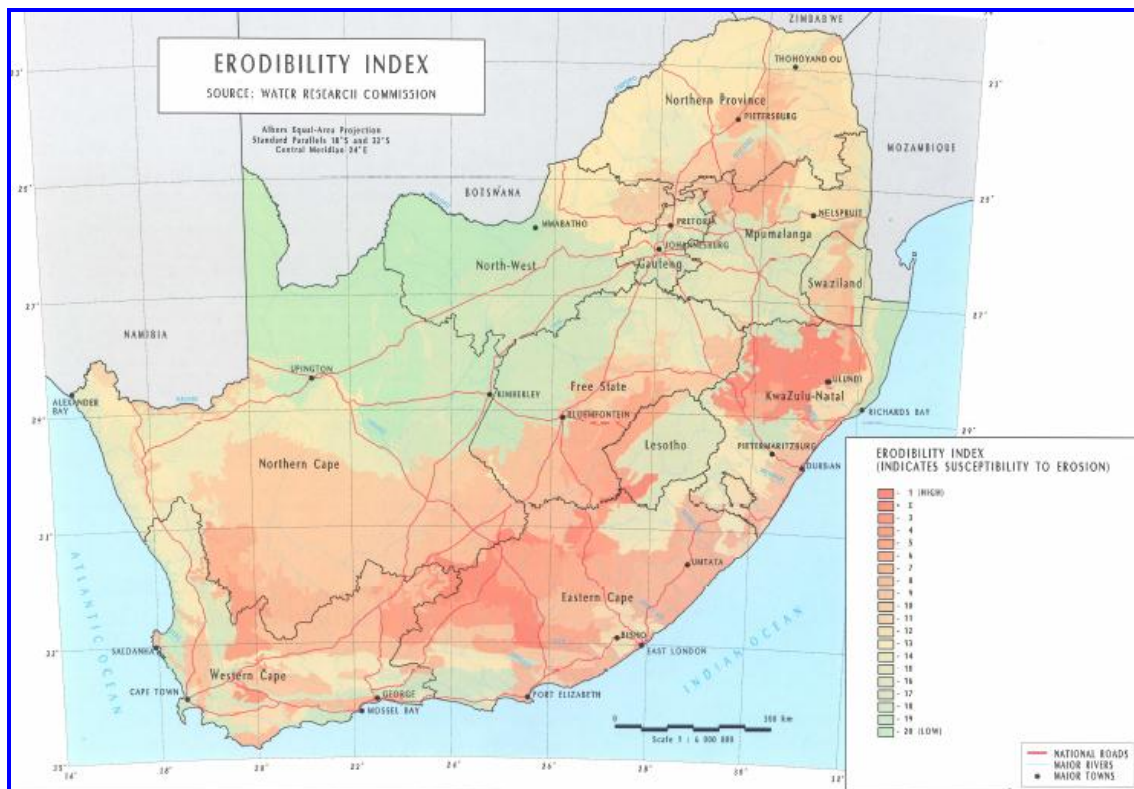


Figure 22: Erodibility Index

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 OR Tambo area has one large river, Umzimvubu and two medium - sized rivers, Mthatha and Umthamvuna as well as a number of smaller coastal rivers with limited catchments that stretch no more than 60 km inland. It is these smaller coastal rivers and their estuaries that give the Wild Coast much of its character as they form deeply incised and highly meandering valleys.

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. There is a lack of identified sites in the district.

A Phase 1 Archaeological Impact Assessment and Palaeontological Impact Assessment was 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 area 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

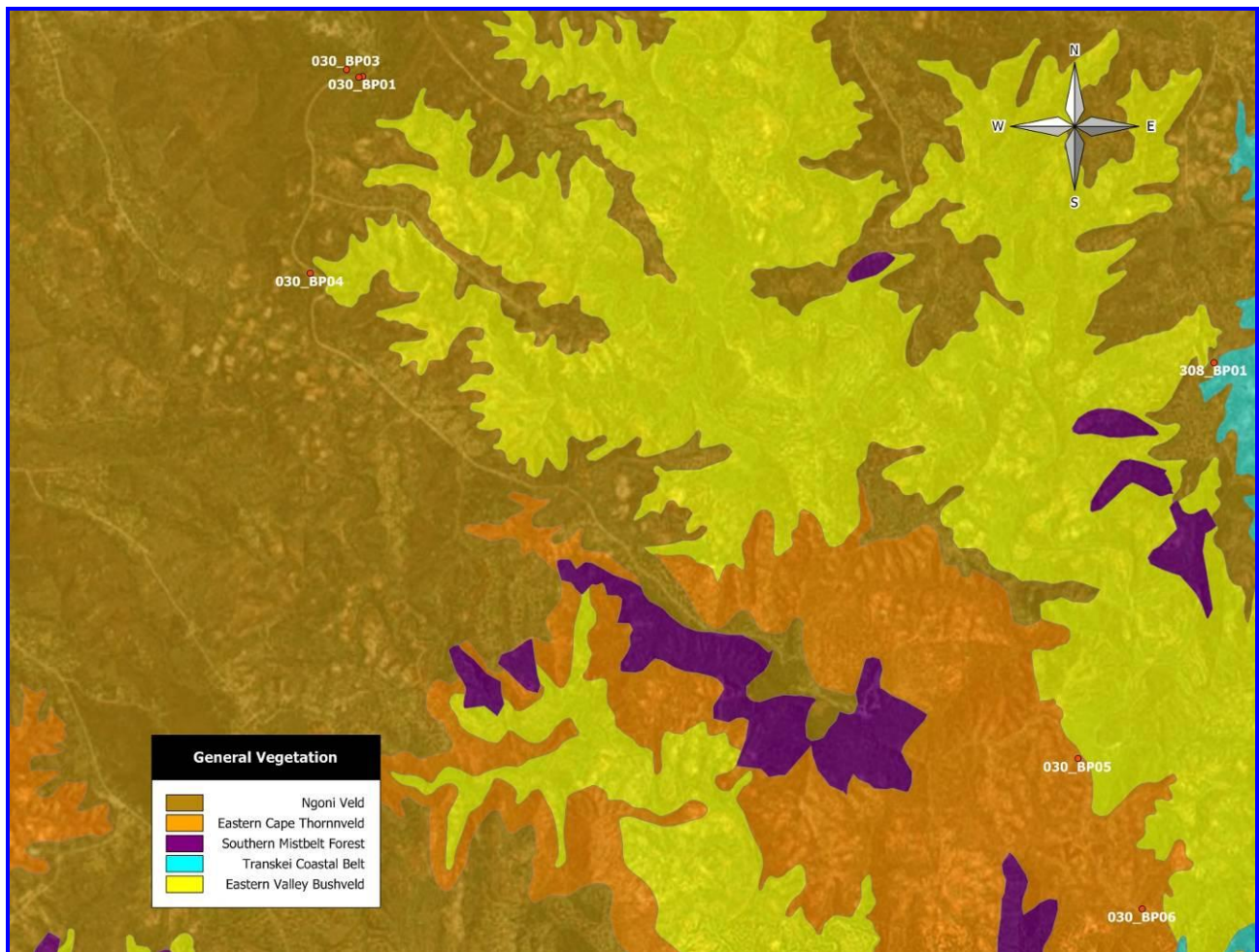


Figure 23: General vegetation.

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

The **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.

The **Ngongoni Veld** is found in the KwaZulu Natal and Eastern Cape Provinces, from Melmoth in the north to near Libode in the former Transkei (including Eshowe, New Hanover, Camperdown, Eston, Richmond, Dumisa, Harding, Lusikisiki and the Libode area) at an altitude of between 400 - 900 m.

The vegetation unit is characterised by dense, tall grassland overwhelmingly dominated by unpalatable, wiry Ngongoni grass (*Aristida junciformis*), with this monodominance associated with low species diversity. Wooded areas (thornveld) are found in valleys at lower altitudes, where this vegetation unit grades into KwaZulu Natal Hinterland Thornveld and Bisho Thornveld. Termitaria support bush clumps with *Acacia* species, *Cussonia spicata*, *Ziziphus mucronata*, *Coddia rudis*, *Ehretia rigida* etc.

The vegetation unit has been described as being “Vulnerable” with only less than 1% of the unit being statutorily conserved in the Ophathe and Vernon Crookes Nature Reserves. Some 39% has been transformed for cultivation, plantations and urban development.

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 24**):

- BLMC 1: Natural landscapes: maintain in as natural a state as possible (manage for no biodiversity loss). (030-BP01, 030-BP02 & 030-BP03 fall within this unit, and as such the mining area has been limited to below 1ha in extent.)
- BLMC 2: Near natural landscapes: where the objective is to maintain the near-natural state with minimal loss in ecosystem integrity and functioning. (030-BP04, 030-BP05 & 030-BP06 fall within this unit, and as such the mining area has been limited to below 1ha in extent.)

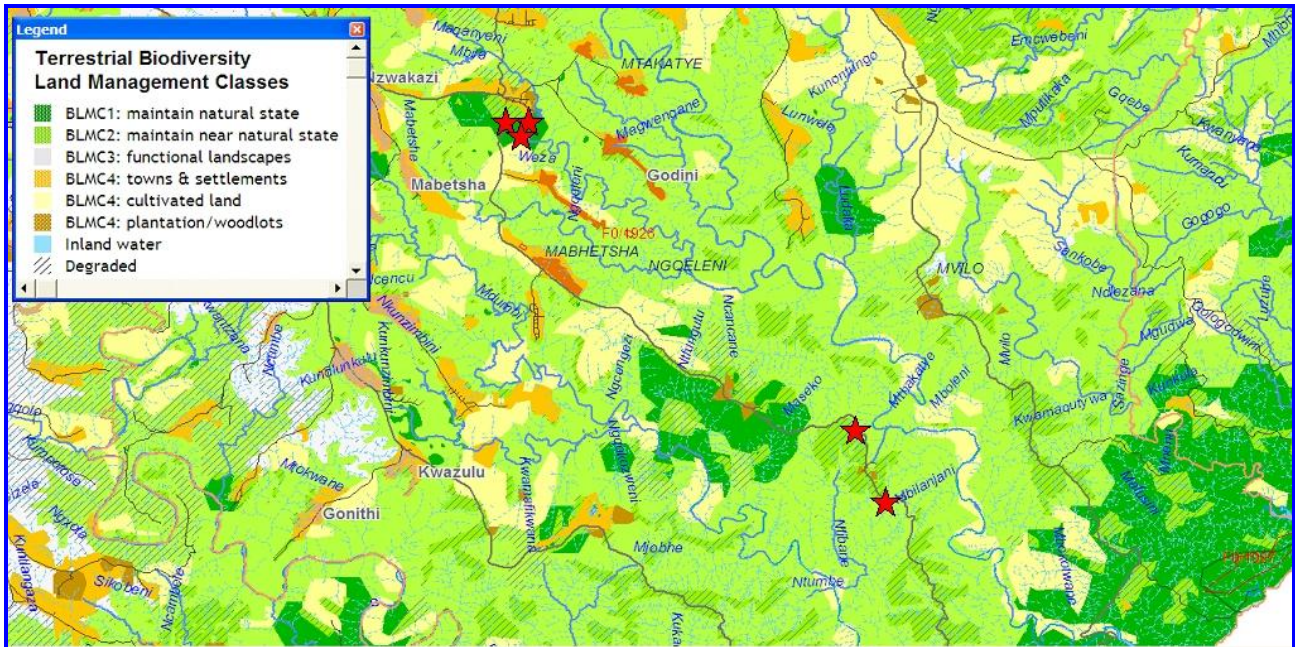


Figure 24: The ECBCP Map and the study area.

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

It was noted however that along south western outskirts of the borrow pit 030-BP06 there were a single Broad leaved coral tree (*Erythrina latissima*) present within close proximity to the borrow pit. *Erythrina latissima* is not protected under the Cape Nature and Environmental Conservation Ordinance of 1974 or the Eastern Cape Environmental Conservation Bill of 2002. The mining plan has none the less been designed in such a way as to minimize/avoid disturbance of this coral tree.

No protected or endangered species were observed within the other borrow pits or immediate surroundings. As such the conservation status of the vegetation present in the area of the proposed borrow pits is relatively low.

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 and around the borrow pit areas. 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 3: Declared Alien Invasive plants present within/around the site.

No.	Botanical Name	Common Name	Family	Category
1	<i>Acacia mearnsii</i>	Black Wattle	Fabaceae	CARA 2
2	<i>Cestrum laevigatum</i>	Inkberry	Solanaceae	CARA 1
3	<i>Lantana camara</i>	Lantana	Verbenaceae	CARA 1
4	<i>Solanum mauritianum</i>	Bugweed	Solanaceae	CARA 1
5	<i>Solanum sisymbriifolium</i>	Dense-thorned bitter apple	Solanaceae	CARA 1
6	<i>Solanum spp</i>		Solanaceae	-

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 mombeatus*) and Puff Adder (*Bitis arietans*); however there are few bites to humans and livestock.

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

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

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 (*Chrysofalax 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 4).

Table 4: 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. 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 *Accipter 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, 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. 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. 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. 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. 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.
- 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 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 O.R. Tambo DM is classified as a Category C2 municipality, indicating a largely rural character (it is estimated that some 93% of the district population resides in rural areas with a consequent dispersed settlement pattern) and low urbanization rate, as well as limited municipal staff and budget capacity.

All, but King Sabata Dalindyebo (KSD), local municipalities are classed as Category B4 (rural, mainly subsistence) reflecting limited institutional capacity and areas characterized by small centres, limited SMME's and market opportunities, dependence on public support and LED activities that are principally at the level of the small project. KSD is classed as a Category B2 (large core town/s with surrounding agricultural areas) municipality reflecting reasonably adequate budgets and staff, urban centre(s) with associated resources where LED activities are emerging into strategies and programmes to take advantage of economic potential, as well as substantial numbers of SMMEs, considerable market opportunities, but limited private sector business development services.

The total population of O.R Tambo district amounted to 1,843,135million in 2007, (growing at an average of 0.5% per annum) which is approximately 26, 6% of the total for the Eastern Cape Province.

Since 2001, the following annual average economic growth rates (in terms of GDP) have been measured in each of O.R.Tambo's local municipalities (2001 to 2007 at constant 2000 prices):

- Mbizana - 2.4%
- Ntabankulu - 1.6%
- Ingquza Hill - 2.2%
- Port St Johns - 3.1%
- Nyandeni - 2.1%
- Mhlontlo - 1.5%
- King Sabata Dalindyebo - 3.7%

The economic sectors that dominate the economy of the district are community services, financial and business services, and wholesale and retail trade. Between 2006 and 2007, the following growth rates were observed in O.R. Tambo per broad economic sector (based on GVA at constant 2000 prices):

- Agriculture - 1.0%
- Mining - 7.8%
- Manufacturing - 0.7%
- Electricity - 1.4%
- Construction - 25.2%
- Trade - 6.8%
- Transport - 5.7%
- Finance - 12.9% and
- Community services - 3.2%

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 and sedimentation of downstream rivers/drainage lines.

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

The borrow pit(s) is/are in close proximity to streams/rivers, or drainage lines leading to streams/rivers as indicated in the table below:

Borrow pit #	River./Stream name	Class	Conservation Status
030-01	Ngqeleni	N/A	N/A
030-02	Ngqeleni	N/A	N/A
030-03	Ngqeleni	N/A	N/A
030-04	Mabhetsa	N/A	N/A
030-05	Mhakatye	Class B: Largely Natural	Vulnerable
030-06	Ntibane	N/A	N/A

Surface water in close proximity 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 rivers/streams.

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.

There is a spring located within 030-BP04 (**Figure 25**). As such the mining plan has been designed in such a way as to exclude the spring from the mining area in order to allow for livestock and community members to access the spring.



Figure 25: Spring in 030-BP04.

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

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified during the Part 1: Utilization of Borrow Pits - O. R. Tambo District Municipality projects' Phase 1 AIA. The proposed development poses no threat to any identified cultural heritage resources: It is recommended that development proceeds as applied for without the developer having to comply with additional heritage compliance requirements.

The Paleontological Impact Assessment concluded the following:

Borrow Pit #	Rock Type	Potential Impact/ Significance	Irreplaceable loss of palaeontological resources?	Mitigation required and measures
030_BP01	<i>Pa</i>	moderate	no	monitoring of fresh exposures and bedrock excavations
030_BP02	<i>Pa</i>	moderate	no	monitoring of fresh exposures and bedrock excavations
030_BP03	<i>Pa</i>	moderate	no	monitoring of

Borrow Pit #	Rock Type	Potential Impact/ Significance	Irreplaceable loss of palaeontological resources?	Mitigation required and measures
				fresh exposures and bedrock excavations
030_BP04	<i>Pa</i>	moderate	no	monitoring of fresh exposures and bedrock excavations
030_BP05	<i>Pe</i>	low	no	no
030_BP06	<i>Pe</i>	low	no	no

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 5: 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 6: 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 Macroinvertebrates	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 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).

18 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.

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 DR18030 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 July 18, 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 July 18, 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 (July 12 - July 15, 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. Nick Matebese, in which the proposed borrow pits are located informing him of the proposed activity on July 19, 2011.
- Notice of the activity and a background information document was posted via registered mail to Mr. Ncube the Municipal Manager for OR Tambo District Municipality on July 19, 2011.
- Notice of the activity and a background information document was posted via registered mail to Mr. Maso, the Municipal Manager for Nyandeni Local Municipality on July 19, 2011.
- A Background Information Document was posted to the Nyandeni Local Municipality for Cllr J.M. Klaas (Ward 21), on July 19, 2011.
- A Background Information Document was posted to the Nyandeni Local Municipality for Cllr V. B. Zondani (Ward 24), on July 19, 2011.

- A Background Information Document was posted to the Nyandeni Local Municipality for Cllr F. Gaxeni Ward 28), on July 19, 2011.
- Other Identified Key Interested and Affected Parties (**Table 7**) were posted either via registered or parcel mail notification of the proposed activity and the Background Information Document for this project on July 19, 2011.

Table 7: Identified Key Interested & Affected Parties.

OR Tambo Borrow Pits - Key I & AP's						
Name		Tel/Fax		Mobile/Email	Postal	Comments
1	Ms Deidre Watkins	Tel: 041 396 3900	Mbl:	-	Department of Minerals Resources Private Bag X6076 Port Elizabeth 6000	Deputy Director : Mine Environment Management
		Fax: 041 396 3945	Eml:	Deidre.Watkins@dmr.gov.za		
2	Jimmy Calder, Phillip Wilkinson	Tel: 043 748 6246	Mbl:	082 900 0840	P O Box 2909, Beacon Bay 5205	WESSA
		Fax:	Eml:	Jimmy [jimjan@iafrica.com] , phillip@wessabk.co.za		
3	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		
4	Ms Lizna Fourie	Tel: 437,010,291	Mbl:		Department of Water Affairs and Forestry PO BOX 7019, EL, 5200	Department of Water Affairs - Eastern Cape
		Fax: 043 722 6152	Eml:	FourieL4@dwa.gov.za		
5	SFISO KHOZA	Tel: (047) 5016400	Mbl:		OR Tambo District Municipality; Private Bag X6043 Mthatha 5099	Director: Engineering
		Fax:	Eml:	-		
6	Ms P.A.X Dunywa	Tel: 047 501 6409	Mbl:	-	OR Tambo District Municipality; Private Bag X6043 Mthatha 5099	Director: Planning & Development
		Fax:	Eml:	andiswad@ortambodm.org.za		
7	Ms Mandisa Matiso	Tel: 047 501 6420	Mbl:	-	OR Tambo District Municipality; Private Bag X6043 Mthatha 5099	Director: Technical Services
		Fax: 047 532 2834	Eml:	mandisam@ortambodm.org.za		
8	Mr. Ncube	Tel: 047 501 7000	Mbl:	-	OR Tambo District	OR Tambo: Municipal Manager

OR Tambo Borrow Pits - Key I & AP's						
Name		Tel/Fax		Mobile/Email	Postal	Comments
		Fax:		Eml:		Municipality; Private Bag X6043 Mthatha 5099
9	Mr. Nick Matebese	Tel:	(047) 532-5959	Mbl:		40 Blake way street, MTHATHA, 5100; Private Bag X 5213, MTHATHA, 5100
		Fax:	(047) 532-5968	Eml:	NMatebese@ruraldevelopment.gov.za	
10	Mr. Q. Paliso	Tel:	[047] 531 1191	Mbl:		Old Radio Transkei Building, Cnr Victoria & York Roads, Mthatha Private Bag X5029 Mthatha, 5100
		Fax:	[047] 531 2887	Eml:		
11	Gwen Sgwabe	Tel:	(043) 6045301	Mbl:		Department of Forestry-Private Bag X7485 King Williams Town 5600
		Fax:		Eml:	gwendolines@daff.gov.za	

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 at this stage.




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 30-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.

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 (030-BP01)	
Mining Plan (030-BP02)	
Mining Plan (030-BP03)	
Mining Plan (030-BP04)	
Mining Plan (030-BP05)	
Mining Plan (030-BP06)	







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.



DR18030 - Borrow Pit Data Sheet - BP1	
DR18030 - Borrow Pit Data Sheet - BP2	
DR18030 - Borrow Pit Data Sheet - BP3	
DR18030 - Borrow Pit Data Sheet - BP4	
DR18030 - Borrow Pit Data Sheet - BP5	
DR18030 - Borrow Pit Data Sheet - BP6	

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 Impact Assessment Lloyd Rossouw	

Hardcopy/Paper Version - See overleaf

24 Appendix D: Legal Notice

Daily Dispatch, Monday, July 18, 2011

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 and Public Works proposes to utilize borrow pits for road upgrade / re-gravelling projects located throughout the OR Tambo District Municipality / Isebe lezendlela ne zemisebenzi kawonke-wonke icala ubuhlobo nentsebenziswana yokuboleka umlindi. Iqweba ukwenyusa isinga lezemisebenzi yezendlela zonke ne OR Tambo District Municipality.

List of Roads/Uluhlu ka indlela:

Road #	Area	Number of borrow pits
DR08290	MQANDULI	2
DR08308	NGQELENI	3
DR08309	NGQELENI	1
DR08313	NGQELENI	3
DR18030	NGQELENI	6
DR08019	FLAGSTAFF	5
DR08025	LUSIKISIKI	4
DR08033	CLARKEBURY	3
DR08124	FLAGSTAFF	1
DR08151	HOLY CROSS MISSION	4
DR08174	MTHATHA	2
DR08191	PORT ST JOHNS	3
DR08212	MTHATHA	3

Proponent/Abanikazi zimemo:
Department of Roads and 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 ukubandakanywa njenomnye onomdla nochaphazelekayo, ncada faka igama lakho, nenkukacha apho unokuqhagamisheleka khone, nento ekutsalayo nekuchaphazelayo koluphuhliso, uyigqithise kumniki- Macebiso zingadlulanga lintsuku ezi mashumi mathathu (30 days) sibhengeziwe esi saziso.

Date of advertisement: July 18, 2011

Figure 26: Legal Notice - Daily Dispatch.


25 Appendix E: Signboards





Figure 27: Images of the Signboards erected for DR18030.

26 Appendix F: Correspondence - Key I&AP's



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& Safety, Health & Environmental Management Systems**

June 28, 2011

Ms. Deirdre Watkins
Department of Mineral Resources
Corner of Mount & Diaz Roads
Mount Croix
Port Elizabeth
6001

Dear Ms Watkins,

RE: The proposed utilisation of borrow pits for the resurfacing/regravelling/maintenance of district roads located in the OR Tambo 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 identified borrow pits in the OR Tambo District in the Eastern Cape, for the maintenance/regravelling/resurfacing of the identified district roads.

Twenty - nine District Roads requiring routine maintenance/resurfacing/regravelling/patch gravelling have been identified within the OR Tambo District. See Table Below and the attached excel spreadsheet table.

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 –nine road sections, borrow pits are still to be identified along a number of these road sections. Please see the attached table for the positions of the identified borrow pits on 13 road sections where all the borrow pits have been identified (highlighted in green) and on 11 eleven road sections where only a few of the required borrow pits have been identified. When the positions of the borrow pits become available along the other 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-nine 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

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CK 95.10210/23



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.

OR TAMBO DISTRICT MUNICIPALITY					Start Co-ordinates		End Co-ordinates	
No.	Road Number	Kilometers	LMA	Comments / Priority	E	S	E	S
1	DR06120	52.69	Bitana	1	29° 50' 27"	30° 52' 0"	29° 40' 53"	31° 9' 16"
2	DR06033	31.82	KSD	2	28° 33' 40"	31° 50' 4"	28° 22' 21"	31° 38' 30"
3	DR06212	18.88	KSD	2	28° 47' 4"	31° 33' 27"	28° 45' 23"	31° 25' 23"
4	DR06273	29.1	KSD	4	28° 27' 51"	31° 44' 1"	28° 16' 2"	31° 47' 6"
5	DR06275	19.28	KSD	4	28° 28' 41"	31° 53' 6"	28° 24' 52"	31° 47' 32"
6	DR06281	17.5	KSD	1	28° 40' 17"	31° 44' 24"	28° 30' 58"	31° 45' 12"
7	DR06290	11.54	KSD	2	28° 41' 36"	31° 43' 31"	28° 40' 15"	31° 49' 5"
8	DR18023	06.72	KSD		28° 33' 40"	31° 50' 5"	28° 54' 36"	32° 14' 30"
9	DR06029	63.06	Libode	2	29° 4' 15"	31° 33' 25"	29° 22' 43"	31° 37' 39"
10	DR06157	30.12	Libode	1	29° 23' 20"	31° 19' 4"	29° 20' 57"	31° 26' 38"
11	DR06131	11.15	Mhlonlto		28° 42' 44"	31° 1' 28"	28° 47' 2"	30° 57' 48"
12	DR06019	61.83	Ntabankulu	2	29° 27' 36"	31° 9' 3"	29° 18' 5"	30° 58' 6"
13	DR06113	45.39	Nyandeni		28° 55' 56"	31° 39' 45"	29° 10' 11"	31° 53' 52"
14	DR06173	13.3	Nyandeni / PSJ	3	28° 54' 17"	31° 25' 6"	28° 59' 57"	31° 22' 14"
15	DR06174	24.26	Nyandeni / PSJ	2	28° 51' 40"	31° 28' 60"	28° 3' 48"	31° 26' 29"
16	DR06191	44.64	Nyandeni / PSJ	2	29° 26' 53"	31° 36' 24"	29° 13' 54"	31° 33' 22"
17	DR06308	35.32	Nyandeni / PSJ	1	29° 10' 57"	31° 40' 39"	29° 12' 41"	31° 51' 5"
18	DR06309	4.4	Nyandeni / PSJ	1	29° 15' 35"	31° 49' 8"	29° 18' 6"	31° 49' 32"
19	DR18030	51.53	Nyandeni / PSJ	3	29° 2' 18"	31° 40' 32"	29° 11' 57"	31° 56' 44"
20	DR06151	23.74	PSJ		29° 32' 12"	31° 27' 10"	29° 41' 0"	31° 31' 26"
21	DR06153	47.75	PSJ		29° 32' 5"	31° 20' 15"	29° 14' 32"	31° 22' 0"
22	DR06156	16.74	PSJ		29° 23' 31"	31° 18' 48"	29° 18' 30"	31° 23' 14"
23	DR06158	22.22	PSJ		29° 23' 14"	31° 24' 51"	29° 29' 55"	31° 23' 12"
24	DR06024	44.62	Qaukeni	1	29° 34' 35"	31° 22' 38"	29° 57' 44"	31° 18' 37"
25	DR06025	34.06	Qaukeni	1	29° 34' 0"	31° 21' 31"	29° 38' 59"	31° 8' 28"
26	DR18023	43.83	Qaukeni	2	29° 40' 57"	31° 10' 4"	29° 57' 40"	31° 18' 36"
27	DR06123	25.19	Qaukeni		29° 35' 40"	30° 54' 44"	29° 41' 59"	31° 4' 12"
28	DR06124	12.16	Qaukeni		29° 32' 53"	30° 57' 48"	29° 36' 20"	31° 1' 39"
29	DR06147	14.64	Qaukeni	2				

As the SAMRAD Online System is currently experiencing problems, and we are unable to access this information, please could you assist me in determining if any of these identified borrow pits have already been previously permitted.

In addition, as there are 29 road sections identified and a total of approximately 93 borrow pits, as with the Chris Hani & Amathole Regions, 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
- 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

From: [lee-anne](#)
To: [Deidre Watkins](#)
Subject: Proposed utilisation of borrow pits - OR Tambo Region
Date: 28 June 2011 09:59:13 AM
Attachments: [DMR-06_2011.pdf](#)
[ORT_InitialBP_2011_Table - DMR.xls](#)

Dear Deidre,
Please find attached correspondence regarding the preparation of Environmental Management Plans for the utilisation of various identified borrow pits located in the OR Tambo District – the applicant is the Department of Roads and Public Works. Please acknowledge receipt of the attached correspondence. Should you have any queries, please do not hesitate to contact me.
Kind Regards

Lee-Anne
Lee-Anne
Ms Lee-Anne Proudfoot
Environmental Consultant
Biotechnology & Environmental Specialist Consultancy cc
PO Box 8241, Nahoon, 5210, East London, South Africa
9 Douglas Road, Vincent, 5247, East London, South Africa

From: [MARIAGRAZIA GALIMBERTI](#)
To: lee-anne@besc.co.za
Subject: Re: FW: Proposed Utilisation of Borrow pits - OR Tambo District Municipality
Date: 04 July 2011 06:14:19 PM

Dear Lee- Anne,

apologies for the late reply, but I was at a conference in Swaziland and I didn't get access to my emails, unlike what I was expecting.

Considering the extent of the project and of the area impacted and the formations affected by the borrow pits, I would recommend that a Palaeontological Study is undertaken. I will send an official request once I received the BID.

Please let me know if you have any questions
Kind regards

Mariagrazia

Mariagrazia Galimberti (PhD)
APM Impact Assessor
South African Heritage Resources Agency
111 Harrington Street
PO Box 4637, Cape Town 8000,
South Africa
E-mail: mgalimberti@sahra.org.za
Phone : +27 (0)21 462 4502
Fax : +27 (0)21 462 4509



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

July 12 – July 15, 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 maintenance/re-gravelling projects located throughout the OR Tambo District Municipality. BESC have been appointed to conduct the 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*)
Senior Environmental Consultant
Email: lee-anne@besc.co.za

Page 1 of 4

Malcolme Logie

B.Sc. Hons. (Botany), M.Sc. (Botany), Ph.D. (Biotechnology), (Rhodes)
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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 OR Tambo District Municipality. BESC bona ilungiselwe kakuhle i 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- Mcebiso 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

From: [Deidre Watkins](#)
To: [lee-Anne Proudfoot](#)
Cc: [Siyanda Lurwenga](#)
Subject: RE: Proposed utilisation of borrow pits - OR Tambo Region
Date: 04 July 2011 09:22:19 AM

Dear Lee-Anne,

Yes, I can confirm that we have received the attached correspondence dated 28/06/2011. However, our region is also experiencing access problems to the system. I did forward the email to our assistant director: system development and maintenance – Mr Siyanda Lurwenga who deals with the SAMRAD system and the searching of applications online. However, please keep in mind that the applications for borrow pits are only applicable on our electronic system since 2004. Borrow pits approved prior to this date are not on the system and you will need to contact the Department of Transport and request them to indicate whether they have current authorizations for the mentioned sites. I will again forward the email to Siyanda for further reference and I am sure he will contact you directly. Otherwise, I suggest that you try again to go online and check the sites. Thanks.

Best regards,
Deidre

Hi Siya,

With respect to the attached email, please respond to Ms Proudfoot. In addition, is there any further progress with identifying the BP sites on SAMRAD – is SAMRAD operational for the EC region?

Thanks Siya.
Best regards,
Deidre



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

July 19, 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: Background Information Documents for the utilisation of borrow pits in the OR Tambo District Municipality, Eastern Cape.

As per previous correspondence, the Department of Roads & Public works proposes to utilize borrow pits for road maintenance/re-gravelling projects (29 road sections) located throughout the OR Tambo District Municipality. BESC have been appointed to compile the Environmental Management Plans for these borrow pits.

The permitting of the materials sources required for the project will be undertaken in accordance with the Minerals and Petroleum Resources Development Act (M&PRDA) (No. 28 of 2002). As previously confirmed, since the proponent, Department of Roads and Public Works, has been exempted in terms of the provisions of the M & PRDA Environmental Management Plans will be compiled for submission and approval from the DMR for the utilisation of the identified borrow pits, per the 29 roads sections.

Accompanying this letter for your records is a CD containing the Background Information Document(s) (BID'(s)) for thirteen of the road sections where all the borrow pits to be utilised have been identified, which are to be distributed during the public participation process. Please refer to the attached table for the borrow pits and road sections. As the other borrow pits on the remaining road sections become identified, these will be forwarded to the department.

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

Page 1 of 2

Malcolme Logie

B.Sc. Hons. (Botany), M.Sc. (Botany), Ph.D. (Biotechnology), (Rhodes)
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 CK 95.10210/23



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
DR08290	290_BP01	-31.72770	28.68990	King Sabata Dalinyebo LM	32	Zimbane
DR08290	290_BP03	-31.80920	28.66930	King Sabata Dalinyebo LM	28	Mpunzana
DR08308	308_BP01	-31.72110	29.18260	Nyandeni LM	20	RE/97
DR08308	308_BP02	-31.75120	29.20270	Nyandeni LM	20	Farm 100
DR08308	308_BP05	-31.81460	29.25920	Nyandeni LM	20	RE/99
DR08309	309_BP01	-31.81970	29.26130	Nyandeni LM	20	RE/99
DR08313	313_BP01	-31.73000	28.96440	Nyandeni LM	14	RE/55
DR08313	313_BP02	-31.73170	28.96220	Nyandeni LM	14	RE/55
DR08313	313_BP04	-31.85500	29.11560	Nyandeni LM	26	RE/94
DR18030	030_BP01	-31.67950	29.03700	Nyandeni LM	21	Ngqeleni
DR18030	030_BP02	-31.67970	29.03630	Nyandeni LM	21	Ngqeleni
DR18030	030_BP03	-31.67860	29.03420	Nyandeni LM	21	Ngqeleni
DR18030	030_BP04	-31.70810	29.02800	Nyandeni LM	24	Farm 72
DR18030	030_BP05	-31.77880	29.15930	Nyandeni LM	28	RE/96
DR18030	030_BP06	-31.80060	29.17030	Nyandeni LM	28	RE/96
DR08019	019_BP02	-31.13510	29.43570	Ingguzi Hill LM	5	RE/57
DR08019	019_BP03	-31.13460	29.42970	Ingguzi Hill LM	5	RE/57
DR08019	019_BP04	-31.10330	29.39720	Ntabankulu LM	8	RE/36
DR08019	019_BP05	-31.10620	29.39520	Ntabankulu LM	8	RE/36
DR08019	019_BP07	-31.02580	29.32410	Ntabankulu LM	7	RE/53
DR08025	025_BP01	-31.31590	29.56390	Ingguzi Hill LM	17	RE/119
DR08025	025_BP02	-31.24760	29.59320	Ingguzi Hill LM	18	Farm 19
DR08025	025_BP03	-31.23840	29.59540	Ingguzi Hill LM	18	Farm 19
DR08025	025_BP04	-31.20860	29.59980	Ingguzi Hill LM	12	RE/105
DR08033	033_BP02	-31.74940	28.50430	King Sabata Dalinyebo LM	18	Mqekezweni
DR08033	033_BP03	-31.74880	28.49980	King Sabata Dalinyebo LM	18	Mqekezweni
DR08033	033_BP04	-31.70720	28.41720	King Sabata Dalinyebo LM	17	Xongora
DR08124	124_BP01	-30.96010	29.56100	Ingguzi Hill LM	31	RE/52
DR08151	151_BP01	-31.45180	29.53990	Port St Johns LM	14	Umzimhlava LOC 23
DR08151	151_BP02	-31.46280	29.55800	Port St Johns LM	14	Ntambalala LOC 41
DR08151	151_BP03	-31.49910	29.62740	Port St Johns LM	11	Ntambalala LOC 41
DR08151	151_BP04	-31.52140	29.66270	Port St Johns LM	11	Ntambalala LOC 41
DR08174	174_BP01	-31.47170	28.88450	Nyandeni LM	31	RE/34
DR08174	174_BP02	-31.47070	28.88530	Nyandeni LM	31	RE/34
DR08191	191_BP01	-31.60320	29.43840	Port St Johns LM	9	RE/30
DR08191	191_BP04	-31.54750	29.37190	Port St Johns LM	16	RE/40
DR08191	191_BP06	-31.54110	29.35000	Port St Johns LM	16	RE/36
DR08212	212_BP01	-31.54370	28.77260	King Sabata Dalinyebo LM	13	Umtata
DR08212	212_BP02	-31.50690	28.75830	King Sabata Dalinyebo LM	10	Qolombana LOC 26
DR08212	212_BP03	-31.46950	28.75910	King Sabata Dalinyebo LM	10	Qolombana LOC 26



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

July 19, 2011

Attention: Mr Q. Paliso
Regional Manager: DEDEA – OR Tambo Region
Old Radio Transkei Building,
Cnr Victoria & York Roads,
Private Bag X5029
Mthatha,
5100

RE: Notification of the compilation of Environmental Management Plans for the utilisation of borrow pits in the OR Tambo 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 maintenance/re-gravelling projects (29 road sections) located throughout the OR Tambo 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 thirteen of the road sections identified along which borrow pits are located. As the borrow pits are identified along the remaining sixteen road sections these will be forwarded to the Department. Please refer to attached table for the borrow pits and the thirteen road sections which pertain to the BID's on the accompanying CD.

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

Page 1 of 2

Malcolme Logie

B.Sc. Hons. (Botany), M.Sc. (Botany), Ph.D. (Biotechnology), (Rhodes)
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CK 95.10210/23



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

July 19, 2011

Attention: Mr. N. Matebese
Regional Manager – OR Tambo District
Department of Rural Development & Land Reform
Private Bag X 5213,
MTHATHA,
5100

Tel: (047) 532-5959
Fax: (047) 532-5968

RE: Notification of the compilation of Environmental Management Plans for the utilisation of borrow pits in the OR Tambo 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 maintenance/re-gravelling projects (29 road sections) located throughout the OR Tambo 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 thirteen of the road sections identified along which borrow pits are located. As the borrow pits are identified along the remaining sixteen road sections these will be forwarded to the Department. Please refer to attached table for the borrow pits and the thirteen road sections which pertain to the BID's on the accompanying CD.

Page 1 of 3

Malcolm Logie

B.Sc. Hons. (Botany), M.Sc. (Botany), Ph.D. (Biotechnology), (Rhodes)
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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
 Email: lee-anne@besc.co.za

Mr. Conroy van der Riet
 (Cand. Sci. Nat. - Environmental Scientist)
 Senior Environmental Consultant
 Mobile: 083 993 1243
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Road #	Borrow Pit #	Latitude	Longitude	Municipal Area	Ward	Farm #/Allotment Name
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DR18030	030_BP04	-31.70810	29.02800	Nyandeni LM	24	Farm 72
DR18030	030_BP05	-31.77880	29.15930	Nyandeni LM	28	RE/96
DR18030	030_BP06	-31.80060	29.17030	Nyandeni LM	28	RE/96
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DR08151	151_BP03	-31.49910	29.62740	Port St Johns LM	11	Ntambalala LOC 41
DR08151	151_BP04	-31.52140	29.66270	Port St Johns LM	11	Ntambalala LOC 41

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

July 19, 2011

Attention: Key Interested and Affected Parties

RE: Notification of the compilation of Environmental Management Plans for the utilisation of borrow pits in the OR Tambo 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 maintenance/re-gravelling projects (29 road sections) located throughout the OR Tambo District Municipality. BESC have been appointed to compile the Environmental Management Plans for these borrow pits.

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 the 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
 Email: lee-anne@besc.co.za

Mr. Conroy van der Riet
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Page 1 of 2

Malcolme Logie

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July 19, 2011

Attention: Key Interested and Affected Parties

RE: Notification of the compilation of Environmental Management Plans for the utilisation of borrow pits in the OR Tambo 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 maintenance/re-gravelling projects (29 road sections) located throughout the OR Tambo District Municipality. BESC have been appointed to compile the Environmental Management Plans for 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 thirteen of the road sections identified along which the borrow pits are located. The remaining sixteen road sections will be sent when these are available. Please refer to attached table for the borrow pits and the thirteen road sections which pertain to the BID's on the accompanying CD.

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
Email: lee-anne@besc.co.za

Mr. Conroy van der Riet
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Page 1 of 2

Malcolme Logie

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

July 19, 2011

Attention: SAHRA

RE: Notification of the compilation of Environmental Management Plans for the utilisation of borrow pits in the OR Tambo 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 (29 road sections) located throughout the OR Tambo District Municipality. BESC have been appointed to compile the Environmental Management Plans for 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 thirteen of the road sections identified, along which the borrow pits are located. The remaining sixteen road sections will be sent when these are available. Please refer to attached table for the borrow pits and the thirteen road sections which pertain to the BID's on the accompanying CD.

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)
 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

Page 1 of 2

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

From: [lee-Anne Proudfoot](mailto:lee-anne.proudfoot@ecparks.co.za)
To: ["Dave.Balfour@ecparks.co.za"](mailto:Dave.Balfour@ecparks.co.za); ["Robert.Stegmann@deaet.ecape.gov.za"](mailto:Robert.Stegmann@deaet.ecape.gov.za)
Subject: Notification of the compilation of Environmental Management Plans for the utilisation of borrow pits in the OR Tambo District Municipality, Eastern Cape - DR08212
Date: 22 July 2011 11:56:00 AM
Attachments: [2011-R537- BID - Borrow Pits - DR08212- DRPW - FINAL.pdf](#)

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 maintenance/re-gravelling projects (29 road sections) located throughout the OR Tambo District Municipality. BESC have been appointed to compile the Environmental Management Plans for these borrow pits.

You have been identified as a Key Interested & Affected Parties (I&AP's). Please find attached the Background Information Document (BID) for the utilisation of borrow pits located adjacent to the DR08212. This road section and a few of the proposed borrow pits along this road section are located in the vicinity of the Luchaba Wildlife Reserve, as such this serves to notify the Eastern Cape Parks Board of the intent to utilise these borrow pits.

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

Lee-Anne

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

From: [Bev Geach](mailto:Bev.Geach@besc.co.za)
To: lee-anne@besc.co.za
Cc: [Dean Peinke](mailto:Dean.Peinke@besc.co.za); [Mzwabantu Kostauli](mailto:Mzwabantu.Kostauli@besc.co.za); [Dave Balfour](mailto:Dave.Balfour@ecparks.co.za); Robert.Stegmann@deaet.ecape.gov.za
Subject: RE: Notification of the compilation of Environmental Management Plans for the utilisation of borrow pits in the OR Tambo District Municipality, Eastern Cape - DR08212
Date: 25 July 2011 11:55:34 AM

Dear Lee-Anne

Thank you for the notification and opportunity to comment. ECPTA do not think that these proposed borrow pits will have any significant impact on Luchaba and therefore do not wish to raise any concerns.

Regards

Bev

 Bev Geach
 Senior Conservation Planner
 EASTERN CAPE PARKS AND TOURISM AGENCY
 Cell: 082 304 4220

From: lee-Anne.Proudfoot
To: ["Dave.Balfour@ecparks.co.za"](mailto:Dave.Balfour@ecparks.co.za); ["Robert.Stegmann@deaet.ecape.gov.za"](mailto:Robert.Stegmann@deaet.ecape.gov.za)
Subject: Notification of the compilation of Environmental Management Plans for the utilisation of borrow pits in the OR Tambo District Municipality, Eastern Cape - DR08308 & DR08309
Date: 22 July 2011 11:50:00 AM
Attachments: [2011-R539- BID - Borrow Pits - DR08309- DRPW - FINAL.pdf](#)
[2011-R538- BID - Borrow Pits - DR08308- DRPW - FINAL.pdf](#)

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 maintenance/re-gravelling projects (29 road sections) located throughout the OR Tambo District Municipality. BESC have been appointed to compile the Environmental Management Plans for these borrow pits.

You have been identified as a Key Interested & Affected Parties (I&AP's). Please find attached the Background Information Document (BID) for the utilisation of borrow pits located adjacent to the DR08308 & DR08309. These road sections and a few of the proposed borrow pits along these road sections are located in the vicinity of the Hluleka Wildlife Reserve & Marine Sanctuary, as such this serves to notify the Eastern Cape Parks Board of the intent to utilise these borrow pits.

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

Lee-Anne

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

From: [Robert Stegmann](mailto:Robert.Stegmann)
To: lee-Anne.Proudfoot; ["Dave.Balfour@ecparks.co.za"](mailto:Dave.Balfour@ecparks.co.za)
Cc: [Jaap Pienaar](mailto:Jaap.Pienaar); [Sizakele Gabula](mailto:Sizakele.Gabula)
Subject: RE: [WARNING : MESSAGE ENCRYPTED] Notification of the compilation of Environmental Management Plans for the utilisation of borrow pits in the OR Tambo District Municipality, Eastern Cape - DR08212
Date: 27 July 2011 09:34:37 AM

Hi Lee-Anne,

Thank-you for the informing me about the proposed use of the borrowpits. The Regional Manager Mr. Gabula, would be pest poised to respond to the report. (He has ben copied in this email.)

Regards,

Rob



BIOTECHNOLOGY & ENVIRONMENTAL SPECIALIST CONSULTANCY CC

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

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

July 22, 2011

Attention: Key Interested and Affected Parties

RE: Notification of the compilation of Environmental Management Plans for the utilisation of borrow pits in the OR Tambo 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 (29 road sections) located throughout the OR Tambo District Municipality. BESC have been appointed to compile the Environmental Management Plans for these borrow pits.

You have been identified as a Key Interested & Affected Parties (I&AP's). Please find accompanying this notice a CD containing the Background Information Document (BID) for the utilisation of borrow pits located in the vicinity (i.e. adjacent to/ opposite/close proximity to) of identified Indigenous Forest (as per the Department of Forestry's Indigenous Forest GIS Shapefile). As such this serves to notify the Department of Forestry of the intent to utilise this borrow pit located in the vicinity of identified indigenous forest patches.

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
Email: lee-anne@besc.co.za

Mr. Conroy van der Riet
(Cand. Sci. Nat. - Environmental Scientist)
Senior Environmental Consultant
Mobile: 083 993 1243
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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

From: Lee-Anne Proudfoot <lee-anne@besc.co.za>
Sent: 26 September 2011 04:05 PM
To: 'MARIAGRAZIA GALIMBERTI'
Cc: 'tlungile@ec.sahra.org.za'
Subject: PIA - Part1: O.R. Tambo BP1, EC
Attachments: 2011 09 BESC Oliver Tambo Borrow Pits 54 PIA.pdf

Dear Mariagrazia,

Please find attached for review by SAHRA the Phase 1 PIA – part 1 (plus some additional borrow pits which form part 2) for the utilisation of borrow pits in the OR Tambo District Municipality. The Phase 1 AIA was submitted by Karen van Ryneveld for this project on 21 September 2011 (please see correspondence below).

Please acknowledge receipt of the attached document. Should you have any queries, please do not hesitate to contact me.

Regards

Lee-Anne

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



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: **9/2/050/0001**
Date Received: **26 September 2011**.....
Date of Comment: **04 November 2011**.....
Sent to Peer Review:
Date to Peer Review:
SAHRA Contact Person: **Dr Mariagrazia Gallimberti**

REVIEW COMMENT ON ARCHAEOLOGICAL AND PALAEOLOGICAL IMPACT ASSESSMENTS

BY THE ARCHAEOLOGY, PALAEOLOGY AND METEORITES UNIT OF THE SOUTH AFRICAN 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: AIA: K van Ryneveld and PIA: L Rossouw**
- C. ARCHAEOLOGY CONTRACT GROUP: Archaeomaps**
- D. CONTACT DETAILS: Postnet Suite 239, Private Bag X3, Beacon Bay 5205, E-mail: kvanryneveld@gmail.com / PO Box 38806, Langenhoven Park, 9330**
- E. DATE OF REPORTS: September 2011**
- F. TITLES OF REPORTS: AIA: Phase 1 Archaeological Impact Assessment: Part 1: Utilization of Borrow Pits – O.R. Tambo District Municipality, Eastern Cape, South Africa.**
PIA: Phase 1 Palaeontological Impact Assessment of 54 Borrow Pits in the Oliver Tambo Municipal District, EC Province
Please circle as relevant: Heritage component of **EIA** / EMP / HIA / CMP/ Other (Specify).....
- G. REPORT COMMISSIONED BY: BESC Environmental Consultants**
- H. CONTACT DETAILS: Lee-Ann Proudfoot, PO Box 8241, Nahoon 5210, E-mail: lee-ann@besc.co.za**
- I. COMMENTS:**
Please see comment on next page

REVIEW COMMENT ON ARCHAEOLOGICAL AND PALAEOONTOLOGICAL IMPACT ASSESSMENTS

K van Ryneveld

Dated: September 2011, received: September 2011

Phase 1 Archaeological Impact Assessment: Part 1: Utilization of Borrow Pits – O.R. Tambo District Municipality, Eastern Cape, South Africa

L Rossouw

Dated: September 2011, received: September 2011

Palaeontological Impact Assessment of 54 Borrow Pits in the Oliver Tambo Municipal District, EC Province

The proposed development entails obtaining material from borrow pits in order to upgrade and resurface 29 roads across the O.R. Tambo District Municipality.

The Archaeological Impact Assessment (AIA) discusses 40 borrow pits along 13 roads:

Road DR08033 – 3 borrow pits
 Road DR08212 – 3 borrow pits
 Road DR08290 – 2 borrow pits
 Road DR08019 – 5 borrow pits
 Road DR08313 – 3 borrow pits
 Road DR08174 – 2 borrow pits
 Road DR08191 – 3 borrow pits
 Road DR08308 – 3 borrow pits
 Road DR08309 – 1 borrow pits
 Road DR08030 – 6 borrow pits
 Road DR08151 – 4 borrow pits
 Road DR08025 – 4 borrow pits
 Road DR08124 – 1 borrow pits

The AIA reports that no archaeological or cultural heritage resources were identified, and the author recommends that the development may proceed as applied for without the developer having to comply with additional heritage compliance requirements.

The Palaeontological Impact Assessment (PIA) addresses 54 borrow pits and notes that the sedimentary geology largely constitutes Carboniferous Dwyka, Permian Ecca and Triassic Beaufort Group Strata. Fourteen borrow pits are exclusively doleritic and therefore not palaeontologically significant. Borrow pit 024 BP01 is located on Natal Group sediments and therefore not palaeontologically significant. The author recommends that no mitigation is required for the borrow pits located within dolerite, Natal, Dwyka and Ecca Group strata. The geology of the remaining borrow pits of known fossil-bearing strata of Carboniferous, Permian and Triassic age and the author recommends palaeontological monitoring of fresh exposures and bedrock excavations into the strata of the Adelaide and Tarkastad Subgroups for the following sixteen borrow pits:


309_BP01
 030_BP01
 030_BP02

- 030_BP03
- 030_BP04
- 18033_BP02
- 18033_BP08
- 029_BP01
- 033_BP02
- 033_BP03
- 120_BP01
- 153_BP02
- 156_BP02
- 174_BP01
- 273_BP02
- 275_BP02

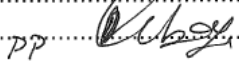
The author also recommends that access by a palaeontologist should be facilitated during development and that newly uncovered objects of palaeontological significance found during the course of excavation activities may require a Phase 2 rescue operation at the cost of the developer.

The SAHRA Archaeology, Palaeontology and Meteorites Unit supports the recommendations of the authors. If the recommendations made in the specialist report and in this comment are adhered to, the SAHRA Archaeology, Palaeontology and Meteorite Unit has no objection to the development. If any new evidence of archaeological sites or artefacts, palaeontological fossils, graves or other heritage resources are found during development, construction or mining, SAHRA and a professional archaeologist must be alerted immediately.

Please note that any issues regarding Built Environment are processed by the Eastern Cape Provincial Heritage Resources Authority (attention of Mr Zote, mlzote@ecphra.org.za).

SIGNATURE OF ARCHAEOLOGIST PROCESSING REPORT: 

EMAIL: asalomon@sahra.org.za

SIGNATURE OF SAHRA HEAD ARCHAEOLOGIST: 

EMAIL: cscheermeyer@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



Figure 28: 030-BP01



Figure 29: 030-BP02.



Figure 30: 030-BP03.



Figure 31: 030-BP04.



Figure 32: 030-BP05.



Figure 33: 030-BP06.

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: agricultural & industrial facilities, residential & resort developments, golf estates, renewable energy technologies, storm water management, water supply, desalination and sewage.

Environmental Site Assessments

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

Environmental Management Plans

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

Environmental Auditing

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

Geographical Information Systems (GIS)

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

Visual Impact Assessments (VIA)

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

Aquatic Impact Assessments (AIA)

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

Project Management

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

Professional Affiliations & Registrations

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

Fields of Competence

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

Education

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

Key Projects

African Dune Investments (Pty) Ltd

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

ABSA Development Company/Bigen Africa

Lee-Anne 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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