ENVIRONMENTAL MANAGEMENT PLAN

The Proposed Utilisation of Borrow Pits
Road: DR08599
(Chris Hani District Municipality)

Department of Roads and Public Works
Province of the Eastern Cape

Report Number: 2011-R601

February 02, 2012

Biotechnology & Environmental Specialist Consultancy cc

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Prepared exclusively for

Department of Roads and Public Works
Province of the Eastern Cape

Province of the
EASTERN CAPE
Roads & Public Works

by

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1 Proposal Release Notice

Proposal Status	*Date*	*Authorised*
Internal Draft	November 09, 2011	Mr Conroy van der Riet
Client Draft	November 14, 2011	Ms Lee-Anne Proudfoot
Public Draft	December 13, 2011	Mr Conroy van der Riet
Final Report	February 02, 2012	Ms Lee-Anne Proudfoot

Ms Lee-Anne Proudfoot

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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 – Control Civil Services
5. Information on Cultural Heritage/Archaeological resources – ArchaeoMaps
6. Information on Palaeontological Resources – Metsi Metseng Geological & Environmental Services

4 Special Conditions

None

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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:

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- International Association of Impact Assessors – South Africa

Mr Conroy van der Riet is registered with the:

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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).

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

6.1.4 Mineral and Petroleum Resources Development Amendment Act

The Mineral and Petroleum Resources Development Act, 2009 (Act No 49 of 2009) was gazetted on 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:

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- 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

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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:

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- 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,

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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

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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

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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

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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 form the landowner must be obtained to remove or destroy any plants listed as ‘protected’ in the Ordinance.

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6.1.13 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.

6.1.14 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 Environment 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.

6.1.15 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.

6.1.16 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

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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)

6.1.17 Mine Health and Safety Act

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

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

6.2 Plans, Policies & Guiding Principles

6.2.1 Provincial Spatial Development Plan

The Eastern Cape has approved a Provincial Spatial Development Plan. The plan supports the view that the focus of development should be on developing nodes and areas where economic opportunities can be stimulated, particularly in the central and eastern areas of the province. The plan identifies key spatial development issues, main development nodes and zones where development should be encouraged. It aims to encourage consolidated settlement through the improved provision of infrastructure and facilities in targeted areas reinforcing the strategic advantages offered by coastal tourism nodes. For the coast in general the plan discourages linear development and places emphasis on the establishment of nodal developments to build on existing

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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 Chris Hani District Municipality - Integrated Development Plan 2009/2010

The Chris Hani District Municipality has reviewed its Integrated Development Plan for 2009/2010. Chris District Municipality is located in the central area of the Eastern Cape and it comprises eight "B" category local municipalities (Inxuba Yethemba, Lukhanji, Intsika Yethu, Emalahleni, Sakhisizwe, Engcobo, Tsolwana, and Inkwanca) located within its boundary.

The district wide strategies contained in this Integrated Development Plan were developed jointly with the local "B" municipalities and other stakeholders. This has ensured integration between this Integrated Development Plan for the Chris Hani District Municipality and the Integrated Development Plan's of the local "B" municipalities. As part of this approach, five strategic clusters (Infrastructure and Services, Social Economic Development, Institutional Transformation, Democracy and Governance, and Financial Management) were identified. Strategies, programmes and projects were developed within each cluster and then integrated through a budget alignment process as part of the integration phase of the Integrated Development Plan.

The key priorities emerging from this IDP are:

- Local Economic Development - Agriculture, Forestry, Tourism, Manufacturing, Construction and Trade;
- Service Delivery and Infrastructure - Water and Sanitation, Roads, Housing, Municipal Public Works, Health (Primary + Public), Municipal Health, Environmental Management, Waste Management , Disaster Management, Fire fighting, Community Facilities, Safety and Security, Education, Social and Community needs development, Town and Regional Planning, HIV and AIDS;
- Financial Viability - Clean Audit Statements, Budget + Expenditure, Reporting, Supply Chain Management, Risk Management Revenue + Billing, ICT;

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- Institutional Development and Transformation - Powers and Functions, Organizational Development, WSP, EEP, HIV/Aids Plan, Special Programmes;
- Good Governance - Public participation, Municipal Planning (IDP, PMS, SDF etc), IGR , Anti-Corruption, Customer Care Relations + Communication, Internal audit, Archiving, Meeting minutes, ICT, HIV and AIDS, Contract Management, CDW's.

In terms of the service delivery profile for the district municipality, the following was stated and identified for the current road network situation: the road network in the rural areas is underdeveloped and generally in a poor condition with many low level bridges needing replacement. Many villages are still inaccessible by road in wet conditions. This is due to limited funds and capacity which contributes to the lack of maintenance. The District Municipality is currently not responsible for any roads and works on an agency basis. The main tarred roads are in need of maintenance (apart from the N6) and in some cases, resurfacing such as the R61. The Departments of PW, R&T, SANRAL need to be lobbied to increase their support, creation and maintenance of the Provincial + National network.

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

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- 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 flowing 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

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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: Regulations in terms of Chapter 5 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.

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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. The developer is responsible for appointing an 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

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be responsible for providing feedback on potential environmental problems associated with the development. In addition, the ECO is responsible for:

- Liaison with relevant authorities;
- Liaison with contractors regarding environmental management; and
- Undertaking routine monitoring and appointing a competent person/institution to be responsible for specialist monitoring, if necessary
- The ECO has the right to enter the site and undertake monitoring, auditing and assessment at any time, with the agreement of the Contractor, which agreement shall not be unreasonably withheld.

The ECO shall be responsible for liaising with the DMR. The ECO shall submit quarterly environmental audit reports to the authorities. These audit reports shall contain information on the contractor and developer's levels of compliance with the EMP. The audit report shall also include a description of the general state of the site, with specific reference to sensitive areas and any matters of non-compliance. The ECO is to suggest corrective action measures to eliminate the occurrence of the non-compliance incidents. In order to keep a record of any non-compliance, an Environmental Incident Record (Appendix B) shall be kept.

8.5 Environmental Liaison Officer (ELO)

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

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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 utilization of the borrow pits for the routine maintenance/re-gravelling of the DR08599.

It is proposed that road construction materials be sourced from existing borrow pits located in the vicinity of the DR08599. As mentioned previously, the utilization of the material sources required for the project will be undertaken in accordance with the Minerals and Petroleum Resources Development Act (M&PRDA) (No. 28 of 2002). Since the 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 two (2) borrow pits located throughout the area (**Figure 1**).

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Table 1: Summary Table of Borrow Pits.

Information	Borrow Pits	
	08599-BP01	08599-BP02
Ownership of Land	Communal	Communal
Type of Material	Dolerite/Shale	Dolerite
New/Existing	Existing	Existing
Co-ordinates (Latitude)	31°38'21.40" S	31°40'19.80" S
Co-ordinates (Longitude)	27°24'32.60" E	27°22'48.00" E
Nearest Village	No village nearby (>1km)	Greyspan
Distance to access road	690m	5m
Distance to nearest houses	>1km	440m
Presence of Servitude	None	Overhead power line
Proposed End Use	Closed & Rehabilitated	Closed & Rehabilitated

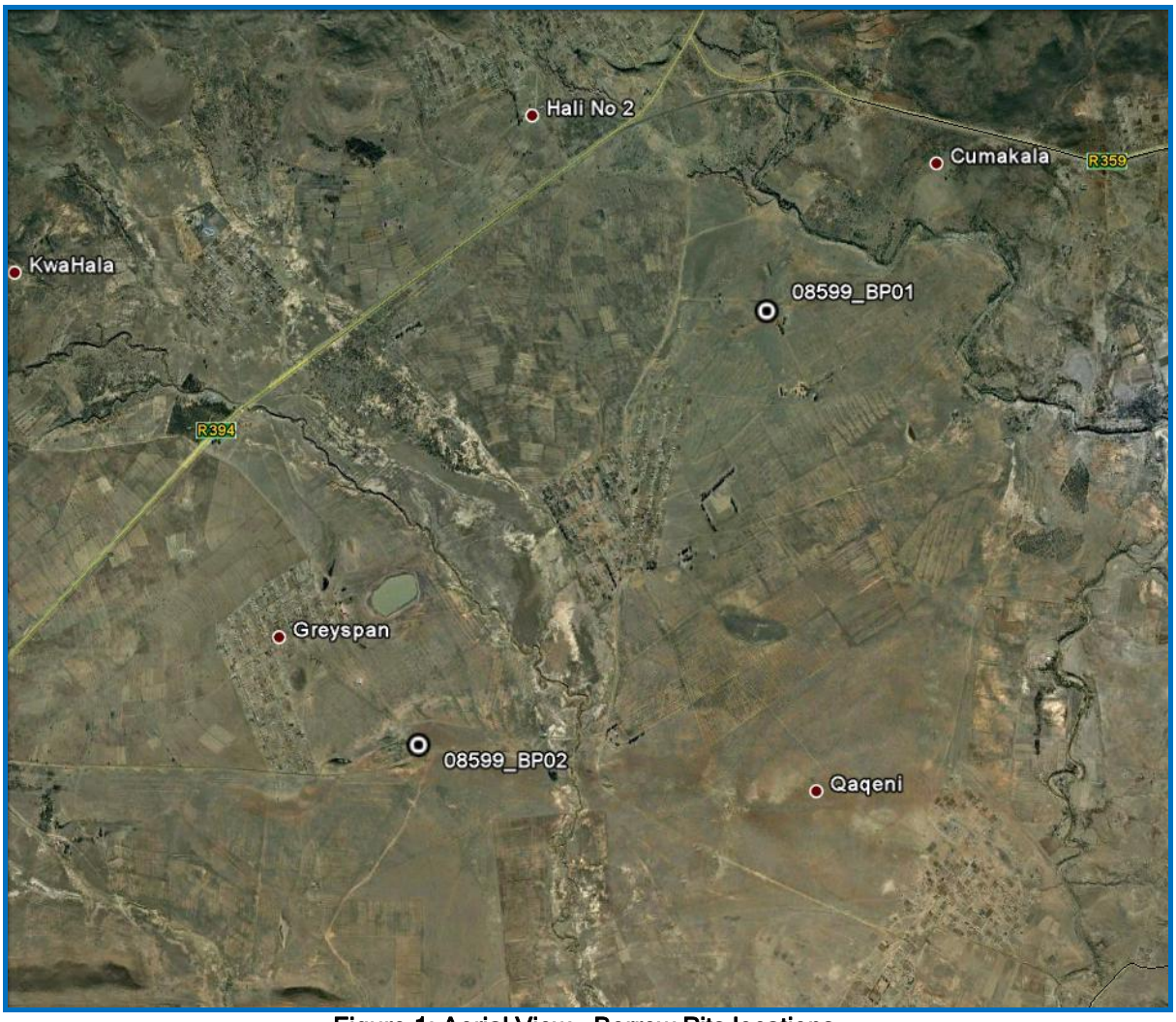

Figure 1: Aerial View - Borrow Pits locations.

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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

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- 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
08599_BP01	INDWE SETTLEMENT	Department of Rural Development and Land Reform
08599_BP02	BENGU	Department of Rural Development and Land Reform

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10 Need and Desirability

The existing gravel roads in the Chris Hani 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 DR08599 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 DR08599. The identification of these sources follows a materials identification/investigation undertaken by Control Civil Services. A copy of this report can be found under **Appendix C**. The material from the borrow pits were concluded to be suitable for use and that they would yield high quantities of material for the maintenance of the road. As part of the measures to be taken for the borrow pits, rehabilitation is required on closure of the mining, this rehabilitation would be 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 two (2) borrow pits for the provision of material for the upgrade/re-gravelling of DR08599. All of the borrow pits have been previously mined. The borrow pits will be used exclusively for the upgrade/re-gravelling of DR08599 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 materials present, volume of available material, distances to water courses, land capability, vegetation sensitivity, surrounding erosion, visibility, slopes, etc.

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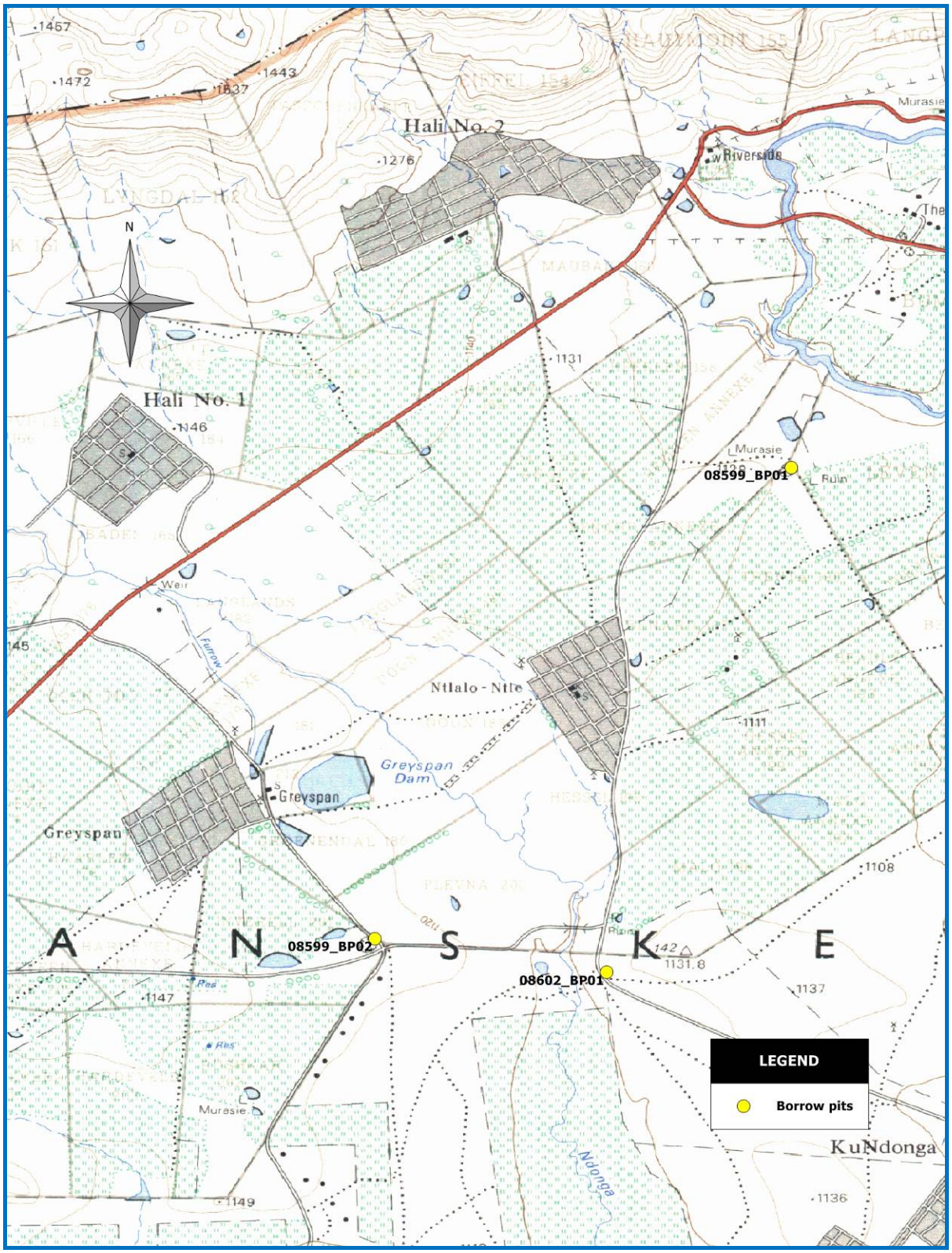

Figure 2: Topographical location of all the borrow pits.

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11.1 Borrow Pit 08599_BP01

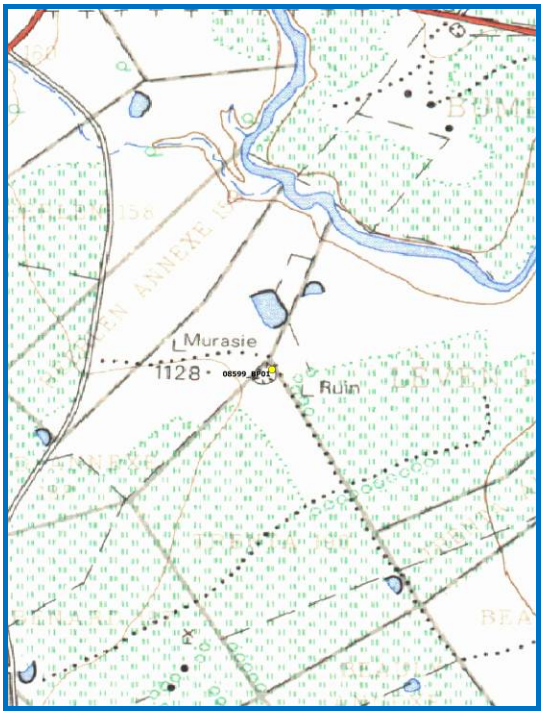

Figure 3: Topographical Location - 08599-BP01.

Figure 4: Aerial view - 08599-BP01.

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Figure 5: Photo - 08599-BP01.

General Description

08599-BP01 is an existing borrow pit which has been used extensively in the past. It is located on the side of a west facing hill. The site is accessed by an unpaved/gravel road which has its intersection on the DR08599. The nearest houses are located +/- 900m from the borrow pit. It is the intension that the borrow pit will be mined from the existing borrow pit face in a south-easterly direction and within the footprint of the existing borrow pit as indicated on the mining plan (**Appendix B**). It will not be necessary to relocate any households.

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

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

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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 dolerite & shale. It is proposed that the extent of the area to be mined will be approximately 1.377ha.

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.

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11.2 Borrow Pit 08599_BP02

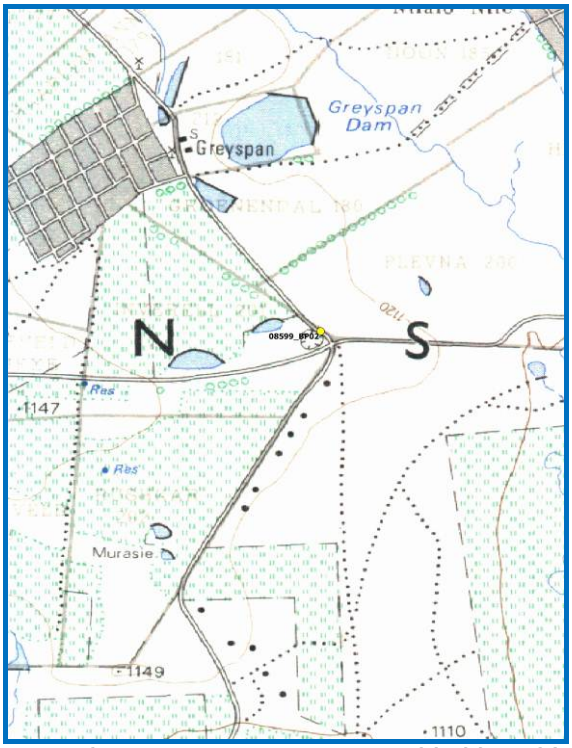

Figure 6: Topographical Location - 08599-BP02.

Figure 7: Aerial view - 08599-BP02.

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Figure 8: Photo - 08599-BP02.

General Description

08599-BP02 is an existing borrow pit which has been used extensively in the past. It is located on a flat area that gently slopes in a north easterly direction. There are two wetland areas near the western and northern boundary of the borrow pit. The borrow pit is accessed directly from DR08599. The nearest houses are located +/- 400m from the borrow pit. This borrow pit is excessively large already and limited by the two roads on the southern and eastern boundary, and by two wetland areas on the western and northern boundary. As such any mining should only be done within the existing footprint as indicated on the mining plan (**Appendix B**). It will not be necessary to relocate any households.

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

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

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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 dolerite. It is proposed that the extent of the area to be mined will be approximately 9.831ha.

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

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12 Description of the Environment

12.1 Landform & Geology

12.1.1 Geology & Soils

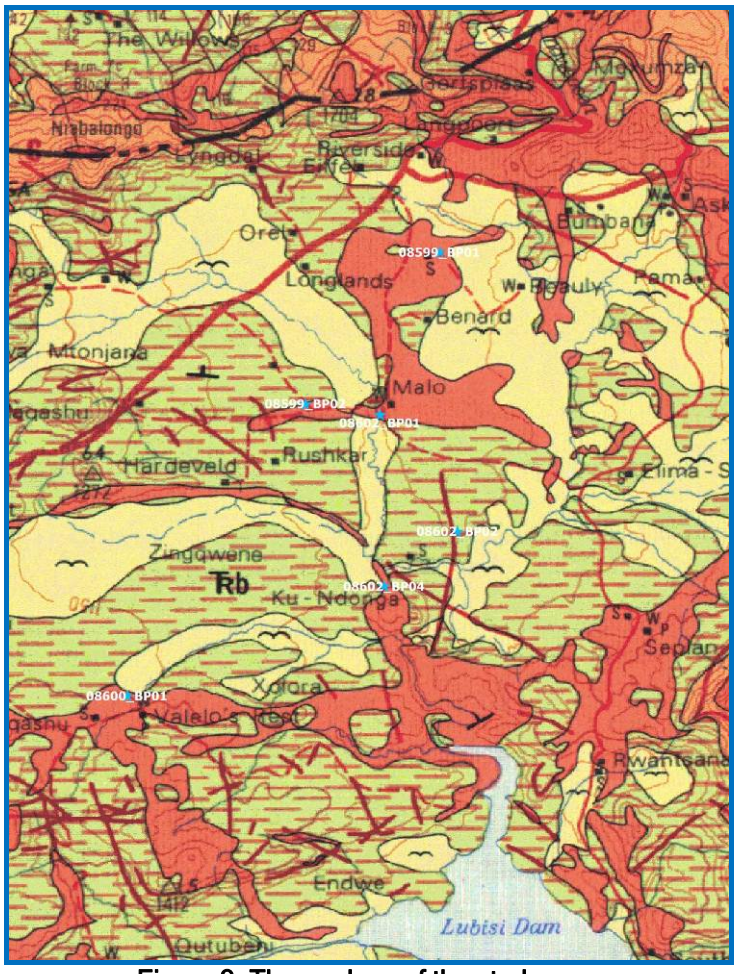

Figure 9: The geology of the study area

The geology of the study site is underlain by Burgersdorp Formation, which belongs to the Tarkastad Subgroup, and forms part of the Beaufort Group belonging to the Karoo sequence. (**Figure 9**).

The Burgersdorp formation consists of alternating fine- grained lithofeldspathic sandstone and greyish – red mudstone lithosomes, which constitute the relatively mudstone-rich upper part of the Tarkastad Subgroup. Sandstone on average forms 20 to 30% of this formation; 26% sandstone being measured in a 100 m thick section at Nonesi's Nek north-east of Queenstown. It becomes

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more abundant, however, towards the base and the top of the formation. The Burgersdorp Formation in the Queenstown area is probably in the region of 900 m thick.

The sandstone and mudstone lithosomes of the formation generally form fining-upward cycles ranging from a few metres to a few tens of metres in thickness, the average being in the order of 10 to 20 m. These cycles commence with sandstone which rests with a sharp contact on a scoured surface and grades upwards into the overlying mudstone lithosome An intraformational mud-pebble conglomerate is often present at the base of the sandstone units. Individual sandstone lithosomes range up to about 10 m in thickness, averaging at 2 – 3 m. The sandstones vary from light brownish grey through light olive gray and greenish grey to light grey in colour. Flat bedding (accompanied by parting lineation), trough cross bedding and micro cross lamination (towards the top of the units) are the most abundant primary structures within the sandstones. The average Burgersdorp formation sandstone is moderately sorted, fine grained and lithic.

The Burgersdorp formation mudstone lithosomes range from a few tens of metres in thickness. The mudstone is generally greyish red to dusky red, less commonly medium greenish grey or medium bluish grey. Apart from the occasional presence of sand – filled mudcracks and clastic dykes, the mudstones are essentially massive.

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

Borrow Pit #	Material Source
08599_BP01	Dolerite /Shale
08599_BP02	Dolerite

12.1.1.1 Erodibility Index

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

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

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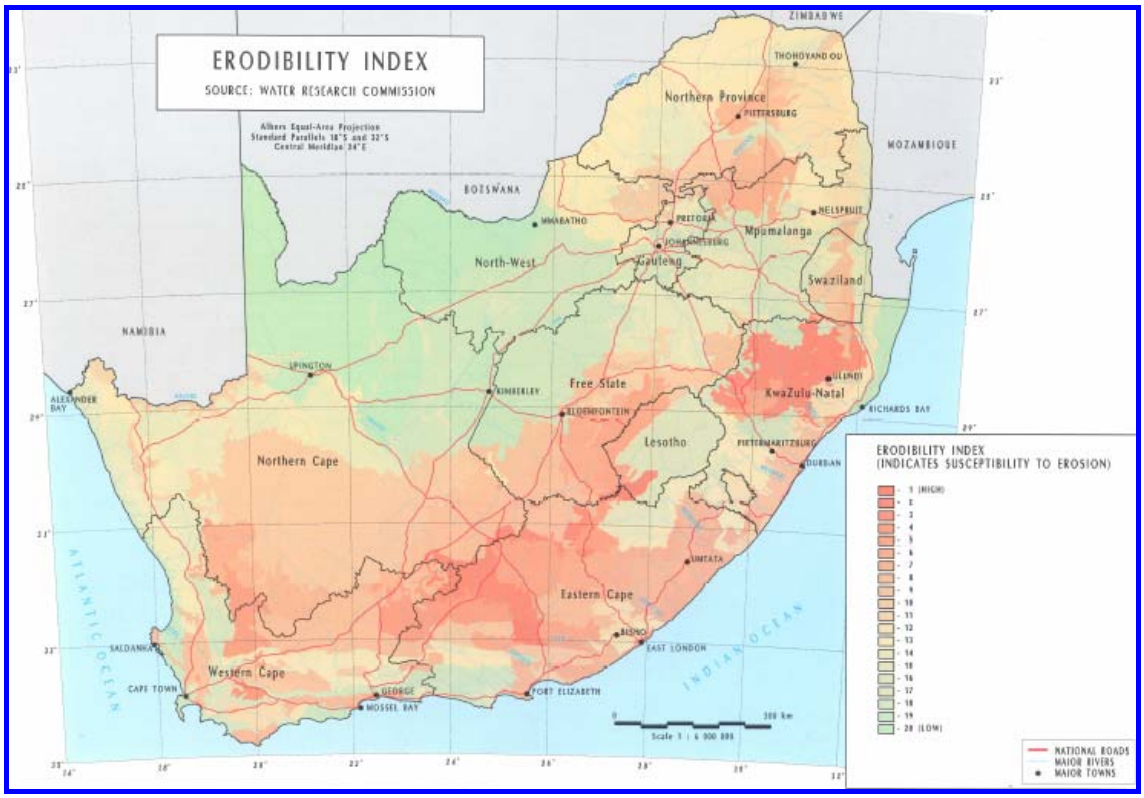

Figure 10: Erodibility Index

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 ranges from Karoo plains in the west to the mountainous regions of the east. For the most part the Chris Hani area is characterized by irregular undulating lowlands with hills, the topography gradating towards the south through the rolling slopes down from the Drakensberg Mountains in the North. The southwestern areas are mostly covered by the Karoo, while the remaining section is composed mostly of the eastern grassland area with extensive drainage basins in the areas of Emalahleni and Intsika Yethu. Rainfall patterns reflect the landscape declining from the east to the west. The topography of the area is incised with river valleys. Numerous rivers and streams, most of which are blind for a larger portion of the year, incise though the rolling hills.

The Mzimvubu to Keiskamma Water Management Area consists of three large drainage basins and the catchments of a number of smaller rivers that lie between the major drainage basins and the Indian Ocean. The major drainage basins are the Great Kei (Drainage Region S), the Mbashe

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(part of Drainage Region T), and the Mzimvubu (part of Drainage Region T). The study area falls within the Drainage Region S, which extends from the northern and north-western edges of the WMA to the coast. The main tributaries of the Great Kei River are the Black Kei River (S31, S32), the White Kei River (S10A to S10J), with its tributary, the Indwe River (S20A to S20D), the Tsomo River (S50A to S50H), and the Thomas (S40A to S40E), Kubusi (S60A to S60E) and Zilinxa (S70C to S70E) Rivers.

The study area falls within the Upper Kei sub-area (**Figure 11**) which comprises the upper portion of the Great Kei catchment down to the confluence of the Black and White Kei Rivers. It consists of the S10, S20, S31 and S32 quaternary catchments. The main rivers are:

- The White Kei River (S10) (Borders the study area in the south)
- The Indwe River (S20)
- The Klaas Smits and Heuningklip Rivers (S31)
- The Black Kei and Klipplaat Rivers (S32)

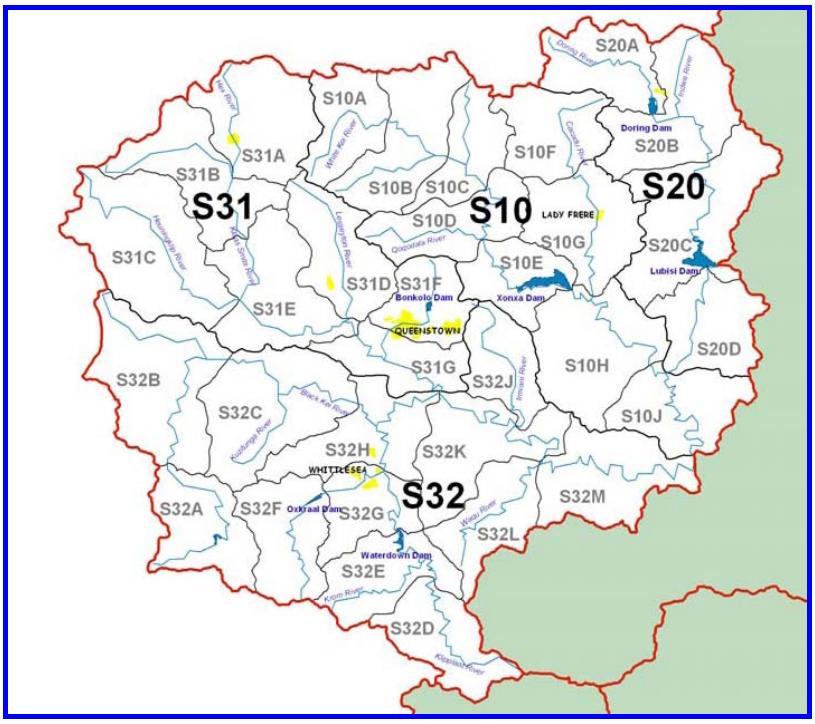

Figure 11: The Upper Kei Sub-Region.

12.2 Hydrogeology

The 1:500 000 Queenstown Hydrogeological map describes the study area as being typified by the following lithologies:

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- Alluvium (clay, silt, sand and gravel) associated with the White Kei and Indwe Rivers and several tributaries.
- Predominantly arenaceous rocks (sandstone, feldspathic sandstone, arkose sandstone becoming quartziiic in places).
- Mafic intrusive rocks (dolerite)

The dolerite-related aquifers typifying the study area are more productive than in other areas of the Chris Hani District Municipal area. The presence of abundant dykes and sheets indicate that significant regional structural disturbances must have taken place during intrusion. What make this area stand out as being different from the other areas though is the presence of ring-shaped dolerite intrusions as well as the abundance of irregular intrusions displaying sharp variations in thickness and dip along their length.

Another factor is the abundance of dolerite intrusions, which provide plentiful potential drilling sites. Drilling access in some areas can be problematic due to the topography. The relatively low incidence of dry boreholes in the study area indicates a generally higher degree of fracturing of the rock matrix in this area. This could possibly be related to a higher degree of tectonism affecting this part of the Chris Hani area. This could well be the case if the abundance of dolerite dykes is taken as a reflection of the intensity of tectonism affecting the study area. NW trending dolerite dykes are the dominant trend. Ring-shaped dolerite intrusions and irregular sheets are found throughout the study area indicating that deformation related to their emplacement may have resulted in intense fracturing in host lithologies.

12.3 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.

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

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12.4 Climate

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

Overall temperatures in the district fluctuate from cold and freezing in winter towards extreme heat in summer. The climate varies from arid to very cold high veld and falls mainly into 2 climatic zones - Arid and semi-arid moderate midlands, and Arid and semi-arid cold high lying land. The climate for the area is closely related to elevation and proximity to the coast. Temperature variations are more pronounced inland where frost (and sometimes snow) is regularly experienced during the winter months, while temperatures could exceed 40°C in summer.

During the summer months, the district experiences maximum temperatures often exceeding 40ºC in the lower lying areas in the western (arid) section of the area. Minimum temperatures in the winter months in the high lying areas are often well below zero and frost is a common occurrence throughout the area. Maximum temperatures are experienced in January and minimum temperatures usually occur in July.

The rainfall varies dramatically over the area depending mostly on altitude and distance from the coast. In the western arid areas, the average annual precipitation is between 200mm and 300mm whereas in the eastern high lying areas of Cofimvaba it is 700-800 mm. The greater part of the area is, however, arid to semi-arid and receives less than 400mm per annum. It is a summer rainfall area with 70% - 80% of the precipitation occurring during the summer months in the form of thunderstorms. These storms are often of high intensity and are sometimes accompanied by hail. Only 20 - 30% of the rainfall occurs during the winter month, which usually results in snowfalls on the Chris Hani District Municipality plateau and the high lying mountainous areas of the Compassberg and Winterberg. The further west, the poorer the rainfall distribution, with severe droughts occurring fairly frequently. The rainfall in the eastern area (Cofimvaba and Ngcobo) is more evenly spread, except for the early summer months when “dry” spells can be expected. There are local high rainfall areas in the headwaters of the Mtata River and the upper parts of the Mbashe key area.

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Evaporation in the District is much higher than the average annual rainfall. The area thus experiences a negative water balance. The evaporation in the arid western area is 2 146 mm per annum, whereas it is approximately 1 700 mm per annum in the Lady Frere and Cofimvaba Districts.

The relative humidity in the area 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).

During the summer months, the prevalent wind direction in the area is north-westerly (berg winds) whereas south-easterly to south-westerly winds prevail during the winter months.

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12.5 Flora

12.5.1 General vegetation

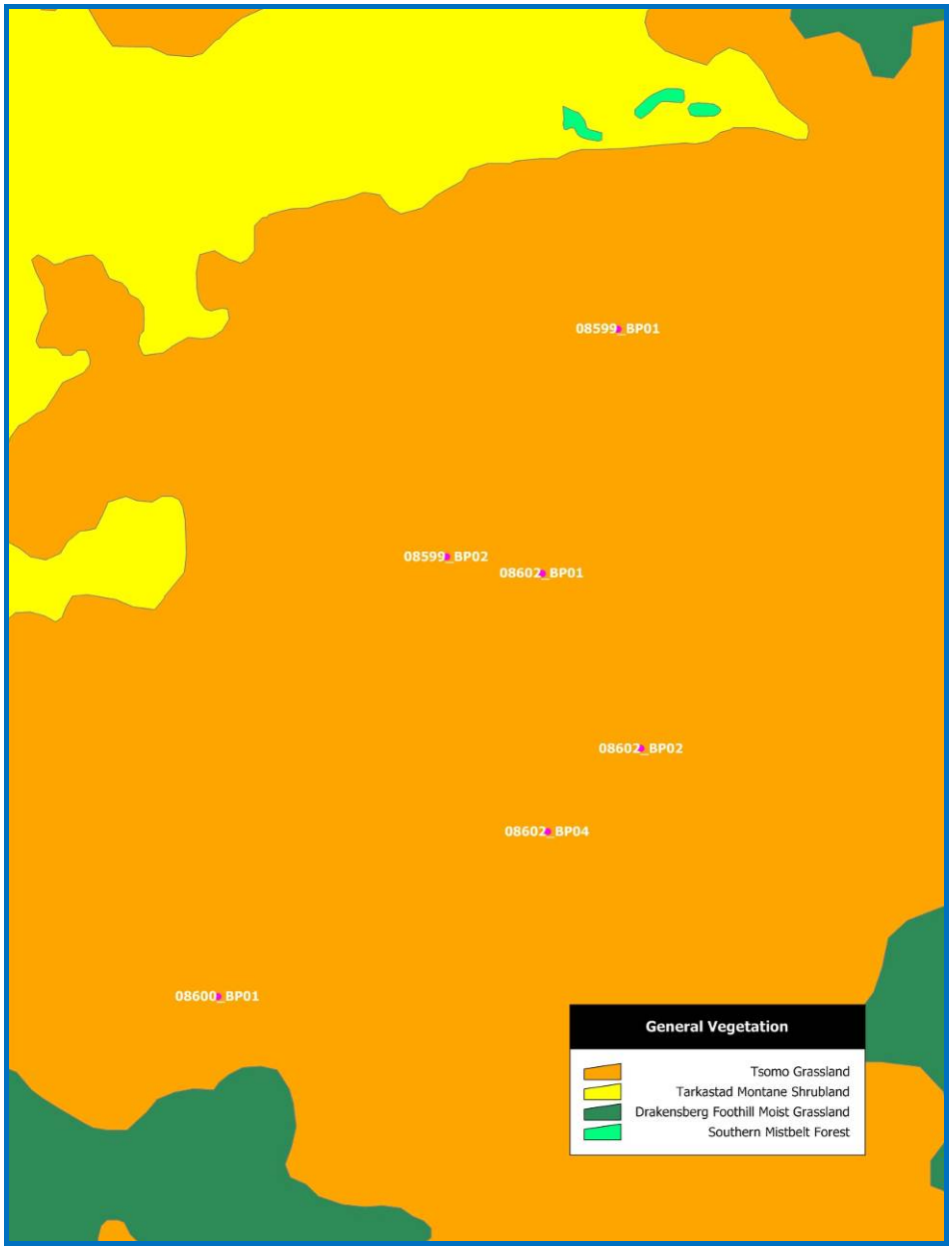

Figure 12: General vegetation.

The borrow pits fall within Tsomo Grassland according to Mucina & Rutherford (2006).

The Tsomo Grassland is found on flat or gently undulating lowland plains intersected by mountains. The vegetation is grassland or open thornveld, often grazed short or replaced by dwarf shrub land dominated by species of *Euryops*. Dominant and common species include representatives of the

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genera *Cymbopogon, Elionurus, Eragrostis, Aristida* and *Themeda*. Asteraceae and Fabaceae are prominent among forbs.

The Tsomo Grassland is considered to be vulnerable is considered to be vulnerable as according to the National Spatial Biodiversity Assessment List (2004) and is not listed as a threatened ecosystem as according to the National List of Ecosystems that are Threatened and in need of protection (2011), with only 1% conserved in statutory conservation areas (target 23%). Some 27% has been transformed mainly for cultivation and by dense concentrations of rural settlements. Erosion is a serious problem and it is high in 33% of this unit, moderate in 32%, and low to very low in 34% of the area.

12.5.2 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 13**):

- BLMC 3: Functional Landscape – where the objective is to manage land to maintain basic ecosystem processes despite expecting significant loss in natural vegetation cover, biodiversity maintained in critical patches and ecosystem corridors.

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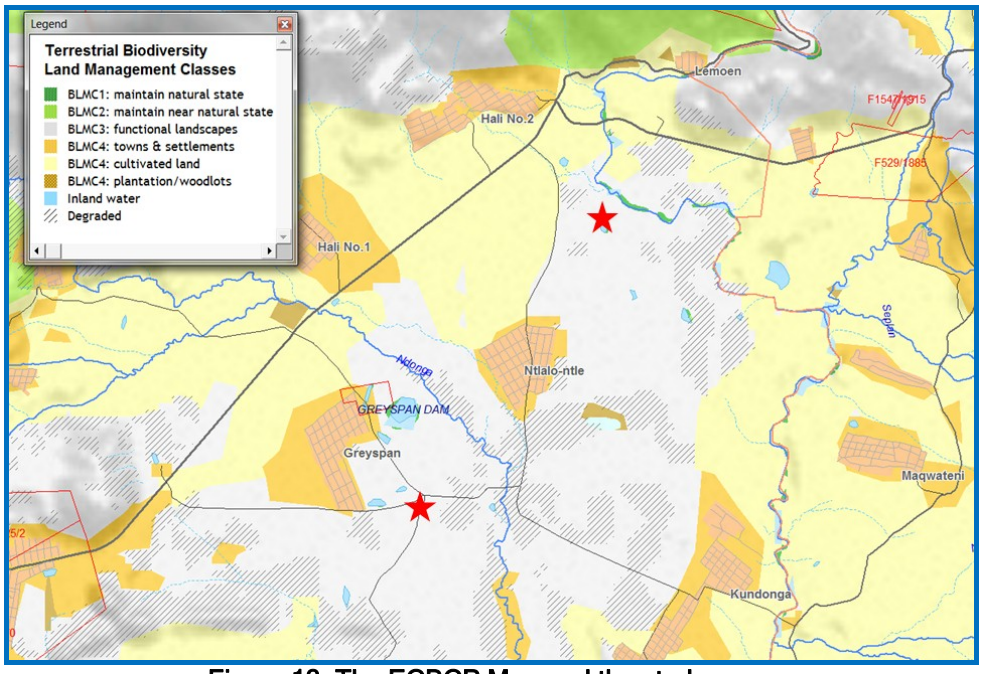

Figure 13: The ECBCP Map and the study area.

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.

12.5.1 Protection status and legislation and Species of Special Concern

No protected or endangered species were observed within the 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.

12.5.2 Alien Invasive Plant species

A single clump of *Eucalyptus diversicolor* was present within close proximity to borrow pit 08599-01. This 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. No listed alien invasive species were noted at borrow pit 08599-02.

Table 2: Declared Alien Invasive plants present within/around the site.

No.	Botanical Name	Common Name	Family	Category
1	*Eucalyptus diversicolor*	Karri	Myrtaceae	CARA 2

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12.6 Fauna

12.6.1 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.

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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.

12.6.2 Mammals

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

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

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

Table 3: Terrestrial mammal Red Data Book (RBD) species.

SPECIES	COMMON NAME	CONSERVATION STATUS
Lycaon pictus	Wild dog	Endangered
Hyaena brunnea	Brown hyena	Rare

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Proteles cristatus	Aardwolf	Rare
Felis nigripes	Black-footed cat	Rare
Felis serval	Serval	Rare
Panthera pardus	Leopard	Rare
Philantomba monticola	Blue duiker	Rare
Mellivora capensis	Honey badger	Vulnerable
Felis lybica	African wild cat	Vulnerable
Orycteropus afer	Aardvark	Vulnerable
Equus zebra	Cape Mountain zebra	Vulnerable
Diceros bicornis	Black rhinoceros	Vulnerable
Ourebia ourebi	Oribi	Vulnerable
Manis temminckii	Pangolin	Vulnerable
Felis nigripes nigripes	Small-spotted cat	Rare

12.6.3 Birds

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

12.6.4 Invertebrates

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

- A number of rare butterflies from the Pondoland region are included in the South African Butterfly Red Data Book (Henning and Henning, 1989), including:
    - Pondoland Charaxes (*Charaxes pondoensis*) - Rare, Port St. Johns, Mkambati NR. Amakoza Rocksitter (*Durbania amakosa albescens*), Rare, Margate.
    - Southern Aslauga (*Aslauga australis*) - Rare, East London, Mbashe River, Doutza Pass, Port St. John's.
    - Bicolored Abantis (*Abantis bicolor*) - Rare, East London, Mbashe River, Port St. John's.

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

12.7 Socio - Economic Environment

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

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It has urban industrial manufacturing centres in Buffalo City and the Nelson Mandela Metropolitan Municipality, a well-developed commercial farming sector and high concentrations of developed socioeconomic infrastructure in the western parts. In contrast to this is the undeveloped rural hinterland in the former Transkei and Ciskei homelands, which consist of weak subsistence agriculture and very limited socio-economic growth. The coastal area known as the "Wild Coast" is very sparsely populated, mainly due to limited infrastructure and inadequate access to the coastal nodes.

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

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

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

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

The second largest of the six Eastern Cape districts, the Chris Hani District stretches across the centre of the Province. It encompasses both large commercial livestock farms and ex-Ciskei and

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Transkei areas. Queenstown lies at the centre of the District and is the main town. Cradock, Middelburg, Elliot and Engcobo are other major towns in the District. Inxuba Yethemba is the biggest Local Municipal area, occupying 48% of the Chris Hani territory, followed by Lukhanji (21%.) The District Municipality areas consist only of one urban area (Queestown-Lukhanji) and large rural areas with their associated townships, as well as very small towns with large farming areas. Furthermore, Chris Hani district is considered a rural district since 95% of the total population is rural and semi-rural.

Recent estimates put the population in the region of 810 000 and covers an area of 36,963.8 square kilometres. The largest populations occur in the Intsika Yethu, Lukhanji, Engcobo and Emalahleni municipalities. The population is relatively youthful (54.4% is under the age of 20) with just more than half of the population being female (53.76%). This suggests a need for educational facilities, skills and training as well as youth specific programmes and projects. It has a high (55%) unemployment rate and lacks established social services and infrastructure in the former homelands. Only 28% of households have portable water on site and 50% have a flush toilet or pit latrine.

Like the Cacadu District, the Chris Hani District relies on the agricultural sector with limited agro-processing industries. The Chris Hani District Municipality contributes 0.42% towards the national gross domestic product. The majority of this comes from agriculture, community services, construction, and trade. The biggest contributor to the district economy in terms of size is community services followed by trade and services which remain one of the key contributors to the GGP and the predominant form of economic activity in most of the eight local municipalities. The CHDM GDP has grown by over one and a half times from 2,6 billion Rands in 2006 to approximately 7,3 billion in 2008, in contrast to the national GDP growth of between 3% and 5%. In spite of this growth, high levels of unemployment and poverty persist.

The District economy is driven by the community services sector, trade (and services) sector and agriculture. The transport sector achieved the highest growth rate of 4.3% between 1996 and 2005, which is highly indicative of the strategic location advantage that the district enjoys in terms of rail and road transport, and as a distribution centre for the former Transkei area. The finance and trade sectors have also grown significantly at 3.8% pa and 3% respectively. Whilst the mining and electricity sectors experienced a negative growth, agriculture and manufacturing outputs have been positive although nominal.

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The Intsika Local Municipality is a Category B Municipality under the jurisdiction of the Chris Hani District Municipality. The municipality comprises of two main towns namely Cofimvaba and Tsomo, while the rural component of the municipality is composed of 213 villages with 23 wards.

The population of Intsika Yethu is estimated to be 194 246 people living in 44 768 households. This population size also implies that 22% of the Chris Hani district population resides in Intsika Yethu. The average household size in the municipality is 4 people per household. 95% Of households live in rural (villages) settlements, 3% in formal urban (main town) while another 2% come from urban informal settlements. When compared to other municipalities in the district, Intsika Yethu remains the largest and most rural municipality within the Chris Hani area.

Over two thirds (76%) of the population is indigent with unemployment estimated over 50%. Monthly household income distribution within the Intsika Yethu municipality shows that an estimated 76% of households can be regarded as poor with gross monthly incomes of less than R1500.

The size of the Intsika Yethu economy grew by 41% from R540 million in 1996 to R766 million in 2005, at current prices. The community services sector remains the largest sector in the local economy at more than 52% followed by trade which accounted for 14,8% and agriculture at 14,6%. Manufacturing is one of the sectors that is currently playing an almost negligible contribution in the local economy with a contribution of only 2.1% in 2005 from a marginal level of 3% in 1996. An interesting trend that has been observed in the municipality albeit, from a low base is the growth of the transport sector both in terms of size and performance from 1.8% in 1996 to 2.5% in 2005.

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.

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13.2 Topography & Drainage

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

13.3 Consumption of Non-renewable Resources

The mining activities may impact on the local and regional natural resources as soil and hard rock will be used during construction activities. 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 pits 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
08599-01	Indwe	Class D: Largely Modified	Vulnerable
08599-02	N/A	Class D: Largely Modified	Vulnerable

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

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

13.5 Groundwater

Groundwater may also become polluted via point source and/or diffuse discharge such as oil, fuel and chemical spills. Petroleum products 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.

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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. 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 construction 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 construction, excavation and hauling vehicles

13.8 Visual Impact

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

13.9 Archaeology, Palaeontology & Heritage Sites

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

Table 4: Summary of Archaeological/Heritage Assessment.

Rd #	BP #	AIA Finding	AIA Recommendation
DR08599	DR08599-BP01	Site 08599_BP01.1 is typified by the characteristic widely spread site features of many Later Iron Age sites across the Eastern Cape. Features in direct proximity to the borrow pit study site are briefly described: Features 1 and 2 (F1 – S31,38'26.1"; E27,24'30.5"; F2 – S31,38'24.5"; E27,24'33.3") comprises, in each case, of the stone foundation remains of a circular stock enclosure with an approximate diameter of 5m and a smaller	Site 08599_BP01.1 is ascribed a SAHRA Low Significance and a Generally Protected C Field Rating. The features comprising the site will primarily be conserved, aside from possible impact on Feature 2 (F2), stone foundation remains of a stock enclosure). It is recommended that use of borrow pit 08599_BP01 proceeds as applied for provided the developer complies with the following requirements: 1. The site should be permanently sign posted (It is recommended that the sign be placed in the vicinity of

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Rd #	BP #	AIA Finding	AIA Recommendation
		rectangular adjoining calf camp to the one side. Feature 3 (F3 - 31,38'20.8"; E27,24'21.1": Site co-ordinate) constitutes a 'complex' of stock enclosure remains situated along the slope of the hill down to the road and extending slightly east, west and south-westwards thereof. Stock enclosures are all rectangular in shape with an adjoining smaller calf camp. The stock enclosure highest up on the slope of the hill comprises of 2 stock camps (in the region of approximately 7x5m) with an adjoining calf camp, while all the other remains, the enclosure just down-slope, and the one slightly to the east thereof both comprise of only one stock enclosure with an adjoining calf camp. Slightly towards the west of F3 is a small enclosure, again demarcated only by rough foundation remains, more or less2x2m in size. A number of circular stone outlines (fire pits / storage stands) all with diameters of approximately 80cm to 1m are present in the general area. Feature 4 (F4 – S31,38'25.0"; E27,24'15.1") demarcates the locality of the enclosure situated furthest south west; remains of an approximate 5x4m rectangular stock enclosure with walls still standing to approximately 30-40cm high. Further to the west of the recorded site features associated stone feature remains taper out towards the road and south towards the village where the distinction between abandoned or old and new stone enclosures becomes muddled.The rectangular shape of stock enclosure features are the best	the most prominent site feature being the F2 'complex' of remains); 2. Should Features 1 and 2 (F1 & F2) fall within the final borrow pit fence the features should be destroyed under a SAHRA Site Destruction Permit.

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Rd #	BP #	AIA Finding	AIA Recommendation
		indication of a site date, implying a date at least coinciding with Colonial settlement. A mixture of circular and rectangular enclosure remains are often found, in cases implying extended temporal use of a site. No residential remains were identified with the stock enclosure ruins, implying that settlement may well have been a slight distance away – most probably in the area of contemporary settlement, which may in itself indicate a relatively recent date.	
DR08599	DR08599-BP02	The general surface area around borrow pit 08599_BP02 yielded a few Stone Age artefacts, but in general with densities too low to ascribed an artefact ratio (artefacts: m) thereto. However, closer to current quarrying impact and identified in slightly scraped surfaces of the gravel access road and at intervals across the existing area of impact lense-like features or 'collections' of artefacts were present.	Site 08599_BP02.1 is ascribed a SAHRA Low Significance and a Generally Protected C Field Rating. It is recommended that a systematic surface sample be taken before development continues at the site (alternatively the site will have to be conserved in its entirety). 1. Systematic surface sample of the MSA lithic features to be taken before development continues. The sample has to be taken under a SAHRA Collections Permit.

The Paleontological Impact Assessment concluded that areas around the borrow pits are dominated by rolling hill topography. The underlying Ceres Subgroup, Ecca Group, Tarkastad Subgroup and Burgersdorp Formation are interbedded mudstones and sandstones. There is a high potential to uncover fossil material in these underlying mudstones during excavations. The borrow pits in the Ceres Subgroup and Ecca Group have a medium palaeontological sensitivity rating. The borrow pits within the Beaufort Group, i.e. the consolidated Tarkastad Subgroup and the well-defined Burgersdorp Formations within the Tarkastad Subgroup have a high palaeontological sensitivity rating. Through adequate monitoring and mitigation measures during excavations of the Ecca and Beaufort Groups the medium to high impact severity can be lowered to beneficial. The exposure and subsequent reporting of fossils (that would otherwise have remained undiscovered) will have a beneficial palaeontological impact..

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Borrow pit specific mitigation recommendation is summarised as follows:

Table 5: Summary of Palaeontological Impact Assessment.

Rd #	BP #	Mitigation Measures
DR08599	DR08599-BP01	All earth-moving activities are to be monitored by a palaeontologist. A monitoring report should be submitted to SAHRA after completion of the earth-moving activity. The resident ECO must be trained by a professional palaeontologist in the recognition of fossils. If fossil material is later discovered it must be appropriately protected and the discovery reported to a palaeontologist for the removal thereof as per SAHRA legislation
DR08599	DR08599-BP02	None -Igneous/metamorphic rocks or quartzitic sandstone underlie these zones, with no potential for fossils.

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. 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.

13.11.1 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.

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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:

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

Significance	Categories	Definition
Very High	1 & 2	These impacts would be considered by society as constituting a major and usually permanent change to the (natural and/or social) environment. o **Example**: The loss of a species would be viewed by informed society as being of VERY HIGH significance.
High	3 & 4	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. o **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	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. o **Example:** The loss of a sparse, open vegetation type of low diversity may be regarded as MODERATELY significant.
Low	8, 9 & 10	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. o **Example:** The temporary change in the water table of a wetland habitat, as these systems are adapted to fluctuating water levels. or, There are no primary or secondary effects at all that are important to scientists or the public. o **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	Any beneficial impact to the environment: A = Very Beneficial o **Example:** Protection of an environmental asset or removal of an existing/latent negative environmental impact; B = Beneficial o **Example:** Improve management of the environment; C = Moderately Beneficial o **Example:** Removal of alien species from the property; D = Slightly Beneficial o **Example:** Minor improvement that has no material significance to the immediate environment.

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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 place 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 confined 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

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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.

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Table 7: 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 construction 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.	Site Specific	5	4	4	Low
Geology & Soils	Soil Loss	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 construction phase.	Site Specific	5	7	5	Low
Topography & Drainage	Cut & Fill	Negative	Construction & Operational	Site Specific	5	3	4	Low	Cut and fill slopes 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	4	Low	All areas of storm water release must be suitable stabilized	Site Specific	8	9	8	Low
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 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	2	2	3	Very High	The proposed quantities mined should not exceed limits specified in the mining plans	Local	5	4	2	Moderate
Non-renewable	Material	Positive	Operational	Municipal	5	4	2	Moderate	No Mitigation Required	N/A				#N/A

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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
Resources	Resources for road upgrade													
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	Site Specific	8	5	8	Low
Surface Water	Sedimentation	Negative	Construction & Operational	Local	5	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 shall be made stable and be revegetated as soon as possible during the construction phase.	Site Specific	8	5	8	Low
Surface Water	Decreased water quality	Negative	Construction & Operational	Local	5	6	5	Low	Stormwater runoff must be captured and managed prior to reaching the rivers.	Site Specific	8	5	8	Low
Surface Water	Decrease in Benthic microalgae	Negative	Construction & Operational	Local	5	6	5	Low	Stormwater runoff must be captured and managed prior to reaching the rivers.	Site Specific	8	5	8	Low
Surface Water	Decrease in Submerged macrophytes	Negative	Construction & Operational	Local	5	6	5	Low	Stormwater runoff must be captured and managed prior to reaching the rivers.	Site Specific	8	5	8	Low
Surface Water	Decrease in Macro benthos	Negative	Construction & Operational	Local	5	6	5	Low	Stormwater runoff must be captured and managed prior to reaching the rivers.	Site Specific	8	5	8	Low
Surface Water	Change in fish community structure	Negative	Construction & Operational	Local	5	6	5	Low	Stormwater runoff must be captured and managed prior to reaching the rivers.	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	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

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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
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	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.	Site Specific	8	8	5	Low
Vegetation and Habitat	Alien Invasive Plant Species	Negative	Construction, Operational & Closure	Local	3	4	3	Moderate	All alien invasive plant species should be removed according to the Conservation of Agricultural Resources Act.	Site Specific	5	7	8	Low
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 lose material that could produce dust when travelling. Limit the areas that need to be cleared of vegetation. Revegetate disturbed areas as soon as possible after clearing. Dampen exposed soil to suppress dust i.e. with water bowser	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
Visual	Change in	Negative	Construction,	Local	4	3	4	Low	Borrow Pits are to be rehabilitated to represent the former	Local	8	5	6	Low

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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
	Sense of Place		Operational & Closure						habitat/surrounding land use character.					
Visual	Decreased Visual Quality	Negative	Construction, Operational & Closure	Local	4	3	4	Low	Protect and maintain the forested 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. Workforce shall be dressed in appropriate neat and safe construction uniforms. Safety lighting should only be used for the safety issues for which they are intended. Security lighting should be avoided where possible or placed so that they only illuminate the area to be protected. Only emergency after-hours work should be done.	Local	8	5	6	Low
Visual	Rehabilitation of existing borrow pits	Positive	Closure	Local	4	4	2	Moderate	No Mitigation Required	N/A				#N/A

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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
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. All recommendation made in the specialist reports must be adhered to.	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. All recommendation made in the specialist reports must be	Local	5	6	7	Low

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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
									adhered to.					
Archaeology, Palaeontology & Heritage Sites	Discovery of new/buried sites	Positive	Construction & Operational	Municipal	2	3	5	Moderate	No Mitigation Required	N/A				#N/A
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	Safety Risk	Negative	Construction & Operational	Local	2	2	3	Very High	All Occupational Health & Safety Standards shall be strictly adhered to. Excavations should be made safe prior to closure.	Site Specific	6	5	5	Low

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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.

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- 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.

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- 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.

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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.

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- 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.
- Areas containing French drains shall be compacted and covered with a final layer of topsoil to a height of 10cm above the surrounding ground surface in order to allow for the settling of the soil.
- The site shall be seeded with an indigenous grass seed mix.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the soil may be analyzed and any deleterious effects on the soil arising

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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).

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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.

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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 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:

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- 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 is 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.

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- 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.

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- 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 from SAHRA must be implemented.
- All recommendations in the Archaeological Impact Assessment report must be implemented.
- All recommendations in the Palaeontological Impact Assessment report must be implemented.
- 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.

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- 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 activates 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.

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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 though 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

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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 Department of Minerals and Energy.

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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 Chris Hani 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 Aarchaeological, 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.

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20 Public Participation

The public participation process for the utilisation of the borrow pits identified on DR08599 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 Daily Dispatch and The Herald newspapers on October 13, 2011 (**Appendix D**). The general public were given 30 days 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 October 12, 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**).

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. Monde Sukula in which the proposed borrow pits are located informing him of the proposed activity on October 12, 2011.
- Notice of the activity and a background information document was posted via registered mail to Mpilo Mbambisa, the Municipal Manager for Chris Hani District Municipality on October 12, 2011.
- Notice of the activity and a background information document was posted via registered mail to Mr. Bacela, the Municipal Manager for Lukhanji Local Municipality on October 12, 2011.
- A Background Information Document was posted to the Lukhanji Local Municipality for Cllr Konglo (Ward 12), on October 12, 2011.
- A Background Information Document was posted to the Lukhanji Local Municipality for Cllr Mvama (Ward 14), on October 12, 2011.

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- Other Identified Key Interested and Affected Parties (**Table 8**) were posted either via registered or parcel mail notification of the proposed activity and the Background Information Document for this project on October 12, 2011 (Appendix F).

Table 8: Identified Key Interested & Affected Parties.

	Name		Tel/Fax		Mobile/Email	Postal	Comments
1	Ms Deidre Watkins	Tel:	041 396 3900	Mbl:		Department of Mineral Resources Private Bag X6076 Port Elizabeth 6000	Deputy Director : Mine Environment Management
		Fax:	041 396 3945	Eml:	Deidre.Watkins@dmr.gov.za		
2	Mncedisi Makosonke	Tel:	045 808 4000 /3/9	Mbl:		PO Box 9636, Queenstown, 5320 Old Royal Hotel, 104 Cathcart rd, Queenstown	Regional Manager: DEDEA - Chris Hani Region
		Fax:	045 838 3984	Eml:	Mncedisi.Makosonke@deaet.ecape.gov.za		
3	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		
4	Ms. Mariagrazia Galimberti	Tel:	(0)21 462 4502	Mbl:		South African Heritage Resources Agency, PO Box 4637, Cape Town 8000	APM Impact Assessor
		Fax:	(0)21 462 4509	Eml:	mgalimberti@sahra.org.za		
5	Lizna Fourie	Tel:	043 701 0228	Mbl:		Department of Water Affairs and Forestry PO BOX 7019, EL, 5200	Department of Water Affairs - Eastern Cape
		Fax:	043 722 6152	Eml:	FourieL4@dwa.gov.za		
6	Mpilo Mbambisa	Tel:	045 808 4600	Mbl:		Chris Hani District Municipality Private Bag x7121 Queenstown, 5320 15 Bells Rd Queenstown 5319	CHDM Municipal Manager
		Fax:	045 838 1582	Eml:	chdmmanager@chrishanidm.gov.za		
7	Makhaya Dungu	Tel:	045 808 4713	Mbl:		Chris Hani District Municipality Private Bag x7121 Queenstown, 5320 42 Cathcart Rd Queenstown 5319	CHDM Director: Engineering
		Fax:	045 838 5959	Eml:	mdungu@chrishanidm.gov.za		
8	Mr C. du Plooy	Tel:	048 881 2557/1204	Mbl:	084 957 99879	Chris Hani District Municipality Private Bag x7121 Queenstown, 5320 42 Cathcart Rd Queenstown 5319	CHDM - Roads Department
		Fax:	086 606 7690	Eml:	cduplooy@chrishanidm.gov.za		
9	Mr F. Nel	Tel:	045 808 4600	Mbl:		Chris Hani District Municipality Private Bag x7121 Queenstown, 5320 15 Bells Rd Queenstown 5319	CHDM Director: Health & Community Services
		Fax:	045 839 3467	Eml:	fnel@chrishanidm.gov.za		

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	Name		Tel/Fax		Mobile/Email	Postal	Comments
10	Mr Monde Sukula	Tel:	(045) 839-2296	Mbl:		Private Bag x7189 QUEENSTOWN 5320. 33 Ebdon Street QUEENSTOWN 5319	District Manager: Department of Rural Development and Land Reform
		Fax:	(045) 838-6066	Eml:			

20.3 Registered Interested and Affected Parties

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

20.4 Public Draft Environmental Management Plan Report

The public draft Environmental Management Plan Report was made available to key and registered (if any) I&AP's for a 30-day commenting period, this period commenced from date of mailing/ hand delivery (excluding the period between 15 December 2011 and 02 January 2012), 03 January 2012, and ended on 01 February 2012. All hard copy correspondence issued to I & AP's during the public draft review period is retained in Appendix F.

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

Electronic Adobe PDF Version Only
DOUBLE CLICK the PAPER CLIPS here to access

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

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22 Appendix B: Mining Plans

Electronic Adobe PDF Version Only
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08599-BP01 – Mining Plan	
08599-BP02 – Mining Plan	

Hardcopy/Paper Version - See overleaf

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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.

DR08599 - Final Report	
DR08599 - Borrow Pit Data Sheet - Borrow pit 1	
DR08599 - Borrow Pit Data Sheet - Borrow pit 2	

Hardcopy/Paper Version - See overleaf

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23.2 Other Specialist Reports

Electronic Adobe PDF Version Only
DOUBLE CLICK the PAPER CLIPS here to access the reports.

Archaeological Impact Assessment - ArchaeoMaps	
Palaeontological Impact Assessment – Metsi Metseng Geological & Environmental Services	

Hardcopy/Paper Version - See overleaf

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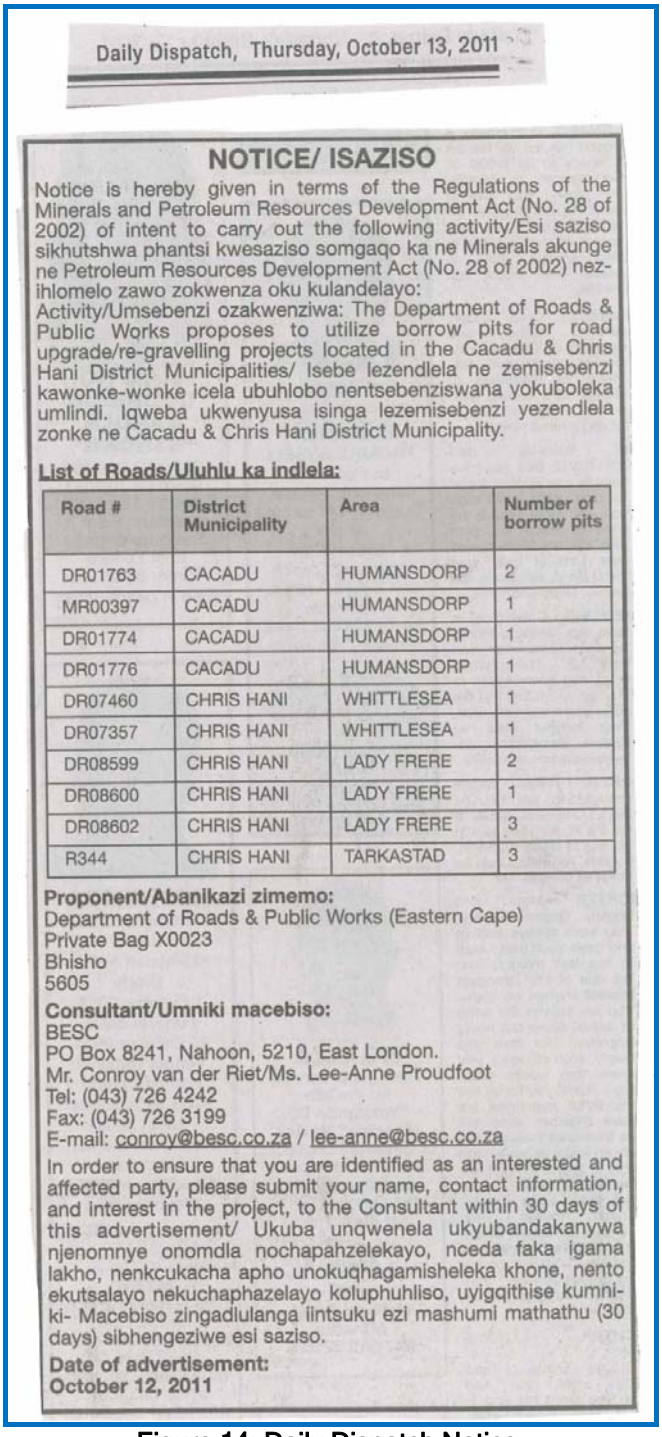
24 Appendix D: Legal Notices



Daily Dispatch, Thursday, October 13, 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) nez-ihlomelo zawo zokwenza oku kulandelayo:
Activity/Umsebenzi ozakwenziwa: The Department of Roads & Public Works proposes to utilize borrow pits for road upgrade/re-gravelling projects located in the Cacadu & Chris Hani District Municipalities/ Isebe lezendlela ne zemisebenzi kawonke-wonke icela ubuhlobo nentsebenziswana yokuboleka umlindi. Iqweba ukwenyusa isinga lezemisebenzi yezendlela zonke ne Cacadu & Chris Hani District Municipality.

List of Roads/Uluhlu ka indlela:

Road #	District Municipality	Area	Number of borrow pits
DR01763	CACADU	HUMANSDORP	2
MR00397	CACADU	HUMANSDORP	1
DR01774	CACADU	HUMANSDORP	1
DR01776	CACADU	HUMANSDORP	1
DR07460	CHRIS HANI	WHITTLESEA	1
DR07357	CHRIS HANI	WHITTLESEA	1
DR08599	CHRIS HANI	LADY FRERE	2
DR08600	CHRIS HANI	LADY FRERE	1
DR08602	CHRIS HANI	LADY FRERE	3
R344	CHRIS HANI	TARKASTAD	3

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

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

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

Date of advertisement:
October 12, 2011

Figure 14: Daily Dispatch Notice.

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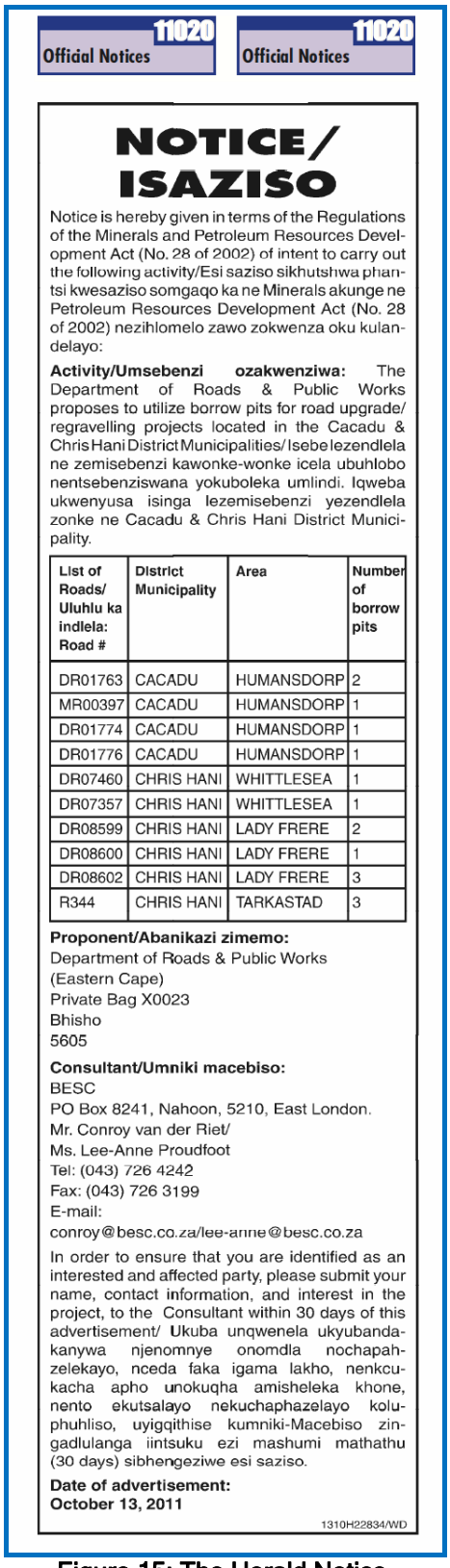

11020 Official Notices 11020 Official Notices

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

List of Roads/ Uluhlu ka indlela: Road #	District Municipality	Area	Number of borrow pits
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DR01776	CACADU	HUMANSDORP	1
DR07460	CHRIS HANI	WHITTLESEA	1
DR07357	CHRIS HANI	WHITTLESEA	1
DR08599	CHRIS HANI	LADY FRERE	2
DR08600	CHRIS HANI	LADY FRERE	1
DR08602	CHRIS HANI	LADY FRERE	3
R344	CHRIS HANI	TARKASTAD	3

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

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

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

Date of advertisement:
October 13, 2011

1310H22834/WD

Figure 15: The Herald Notice.

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25 Appendix E: Signboards

Figure 16: Images of the Signboards erected for DR08599.

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26 Appendix F: Public Participation - Correspondence

26.1 Correspondence issued to and received from Key I & AP's during the Public Participation

From: Lee-Anne Proudfoot <lee-anne@besc.co.za>
Sent: 21 September 2011 12:36 PM
To: 'MARIAGRAZIA GALIMBERTI'
Subject: Proposed Utilisation of Borrow pits - Cacadu District Municipality & other inaccessible roads
Attachments: Alfred Nzo D.M..jpg; Cacadu D.M..jpg; Chris Hani D.M..jpg; OR Tambo D.M..jpg

Importance: High

Dear Mariagrazia,

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 Cacadu District in the Eastern Cape and for a few other identified roads in Chris Hani, Alfred Nzo & OR Tambo District Municipalities, for the maintenance/regravelling/resurfacing/patch gravelling of identified roads.

Sixteen Roads requiring routine maintenance/resurfacing/regravelling/patch gravelling have been identified, five in Cacadu D.M., one in Alfred Nzo D.M., six in Chris Hani D.M. and four in OR Tambo D.M. In total some 30 borrow pits are proposed to be utilised as material sources for the routine maintenance/resurfacing/regravelling/patch gravelling of the 16 identified roads. These borrow pits are located adjacent to the identified road sections.

We have commissioned Ms Karen van Ryneveld of ArchaeoMaps to undertake the Phase 1 AIA for these borrow pits. Please could you confirm whether or not SAHRA will require that a phase 1 Palaeontological Assessment also be undertaken?

When the background information documents are available for each road section identified these will be forwarded to you; however at this stage we would just like to gain confirmation on this matter. I attach for you reference a google images of the various areas and of the borrow pits that have been identified for use.

I anticipate your response

Kind Regards

Lee-Anne

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

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

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From: MARIAGRAZIA GALIMBERTI <MGALIMBERTI@sahra.org.za>
Sent: 22 September 2011 05:09 PM
To: Lee-Anne Proudfoot
Subject: Re: Proposed Utilisation of Borrow pits - Cacadu District Municipality & other inaccessible roads

Dear Lee-Anne,

could you please send to me the .kzm files for these borrow pits? If I have them, I can overlay them on our maps and see what is in our record.

With the information provided so far, you will need a PIA for Alfred Nzo, CHDM and ORTambo. More research has been done in the Cacadu DM, so we might already know whether you'll need additional work or not, but I will be able to confirm all this once I have the GPS coordinates.

Many thanks
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

September 23, 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 Cacadu District Municipality and other inaccessible roads, 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 Cacadu District in the Eastern Cape, in addition to other inaccessible roads identified in the Chris Hani, Alfred Nzo and OR Tambo District Municipality, Eastern Cape, for the maintenance/regravelling/resurfacing of the identified roads.

Sixteen Roads in total requiring routine maintenance/resurfacing/regravelling/patch gravelling have been identified within the above mentioned areas. See Table Below and the attached excel spreadsheet table.

Located along each 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.

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

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

AREA A – CACADU DISTRICT MUNICIPALITY AND INACCESSIBLE ROADS

No.	Road Number	Kilometers	LMA	Comments / Priority	Start Co-ordinates		End Co-ordinates		Total No. of Borrow pits found	No of Existing Borrow Pits Recommended for EMP	No of New Borrow Pits Recommended for EMP
					E	S	E	S			
1	ORTDM-IR01	15.8	Qaukeni		31° 21' 31"	29° 34' 00"	31° 16' 11"	29° 34' 12"	1	1	
2	ORTDM-IR02 (R61)	10	Qaukeni		31° 17' 03"	29° 29' 14"	31° 14' 04"	29° 29' 41"	2	2	
3	ORTDM-IR03 (DR06179)	5.1	Nyandeni		31° 23' 01"	29° 07' 01"	31° 20' 49"	29° 05' 57"	1	1	
4	ORTDM-IR04 (DR08005)	12.2	Ntabankulu		30° 46' 46.3"	29° 33' 21.2"	30° 47' 18.0"	29° 27' 25.0"	4	4	
5	DR07460	10.4	Lukhanji		32° 04' 20.6"	26° 39' 13.8"	32° 05' 52.7"	26° 34' 32.7"	2	1	
6	DR07357	10	Lukhanji		32° 17' 01.0"	26° 40' 37.8"	32° 20' 35.3"	26° 40' 03.7"	2	1	
7	DR08599	15	Emalahleni		31° 37' 29.6"	27° 23' 58.4"	31° 38' 56.1"	27° 18' 57.0"	2	2	
8	DR08600	7	Emalahleni		31° 40' 16.0"	27° 20' 25.8"	31° 44' 03.0"	27° 20' 25.0"	1	1	
9	DR08602	7.7	Emalahleni		31° 40' 16.5"	27° 23' 46.0"	31° 42' 40.0"	27° 23' 36.6"	4	3	
10	R344 - BP01		Tsolwana		32° 17' 38.2"	26° 18' 37.9"			1	1	
11	R344 - BP02		Tsolwana		32° 18' 44.4"	26° 19' 31.4"			1	1	
12	R344 - BP03		Tsolwana		32° 19' 31.7"	26° 19' 55.8"			1	1	
13	Niyenyame Access Road	39	Matatiele		30° 23' 50.2"	29° 03' 15.5"			5	5	
14	DR01763	26.84	Kouga		34° 01' 56"	24° 45' 48"	34° 07' 58"	24° 36' 47"	2	2	
15	MR00397	202.09	Kouga / Baviaans		34° 07' 41.9"	24° 34' 31.9"	34° 07' 41.9"	24° 34' 31.9"	2	1	
16	Brakenduine BP		Kou- Kamma		34° 07' 41.9"	24° 34' 31.9"			1	1	
17	DR01774		Kou- Kamma		34° 04' 19.0"	24° 27' 32.0"			1	1	
18	DR01776		Kou- Kamma		34° 04' 21.0"	24° 20' 39.0"			1	1	
								Totals	34	30	0
								Total No of Borrow pit for		30	

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 16 road sections identified and a total of approximately 30 borrow pits, as with the Chris Hani, Amathole & OR Tambo Regions we have previously discussed with DMR, 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 regravelled.
- 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 Proudfoot <lee-anne@besc.co.za>
Sent: 23 September 2011 12:27 PM
To: 'Deidre Watkins'
Cc: 'Siyanda Lurwenga'
Subject: Proposed utilisation of borrow pits - Cacadu Region & Other inaccessible roads
Attachments: DMR-09_2011.pdf; Cacadu & Inaccessible Roads 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 Cacadu District and along other inaccessible roads – the applicant is the Department of Roads and Public Works. Please acknowledge receipt of the attached correspondence.

Dear Siyanda
As the SAMRAD Online System is experiencing problems and we are unable to access this information, please could you assist me again in determining if any of these identified borrow pits have already been previously permitted, please see the attached excel spread sheet. Thank you.

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

Kind Regards

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

October 04 – October 06, 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 (16 road sections) located in the Cacadu and Chris Hani District Municipalities. BESC have been appointed to compile 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
(Pr.Sci.Nat - Environmental Scientist)
Senior Environmental Consultant
Tel: 043 726 4242
Fax: 043 726 3199
Email:conroy@besc.co.za

Lee-Anne Proudfoot
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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 Cacadu & ne Chris Hani District Municipalities. BESC bona ilungiselwe kakuhle i Environmental Management Plans ukuboleka umlindi. Nokuzimanya kulhlu lwezendlela, nezindlu kunye nemoleko umlindi.

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

Yours sincerely,

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

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

Road #	Borrow pit #	Latitude	Longitude	District Municipality	Local Municipality	Ward	Farm #/ Allotment Name
DR07460	07460_BP02	32° 4'30.90"	26°35'4.00"	Chris Hani	LUKHANJI	14	ZANGOKWE
DR07357	07357_BP01	32°19'34.00"	26°39'17.20"	Chris Hani	LUKHANJI	12	HACKNEY & CIBINI
DR08599	08599_BP01	31°38'21.40"	27°24'32.60"	Chris Hani	EMALAHLENI	3	INDWE SETTLEMENT
DR08599	08599_BP02	31°40'19.80"	27°22'48.00"	Chris Hani	EMALAHLENI	3	BENGU
DR08600	08600_BP01	31°44'7.90"	27°20'28.70"	Chris Hani	EMALAHLENI	17	BENGU
DR08602	08602_BP01	31°40'28.30"	27°23'46.20"	Chris Hani	EMALAHLENI	3	BENGU
DR08602	08602_BP02	31°41'59.30"	27°24'46.60"	Chris Hani	EMALAHLENI	3	BENGU
DR08602	08602_BP04	31°42'42.40"	27°23'49.40"	Chris Hani	EMALAHLENI	17	BENGU
R344 -CHDM-IR01	R344 -CHDM-IR01_BP01	32°18'24.15"	26°18'9.70"	Chris Hani	TSOLWANA	5	FARM 249
R344 - CHDM-IR01	R344 - CHDM-IR01_BP02	32°18'46.90"	26°19'28.00"	Chris Hani	TSOLWANA	5	FARM 1/203
R344 - CHDM-IR01	R344 -CHDM-IR01_BP03	32°19'31.70"	26°19'54.40"	Chris Hani	TSOLWANA	5	FARM RE/240
DR01763	1763_BP01	34° 6'9.57"	24°43'10.00"	Cacadu	KOUGA	12	FARM 21/687
DR01763	1763_BP02	34° 7'50.20"	24°42'48.00"	Cacadu	KOUGA	12	FARM 32/713
MR00397	397_BP01	33°51'56.80"	24°45'1.00"	Cacadu	KOUGA	4	FARM 5/152
DR01774	Brakkenduine BP	34° 7'41.90"	24°34'31.90"	Cacadu	KOUGA	1	FARM 16/722
DR01774	DR01774_BP01	34° 4'18.90"	24°27'31.80"	Cacadu	KOU-KAMMA	5	FARM 23/660
DR01776	DR01776_BP01	34° 4'21.40"	24°20'39.20"	Cacadu	KOU-KAMMA	5	FARM 6/788

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

Name			
Telephone Number		**Mobile Number**	
Facsimile Number		**Email Address**	

Postal Address			**Physical Address**		
Address			Address		
City		**Zip Code**	**City**		**Zip Code**
Country			**Country**		

EIA Project	
Submission	

Signature _____ Name (Print) _____ Date _____ Print Form

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

October 11, 2011

Attention: Key Interested and Affected Parties

RE: Notification of the compilation of Environmental Management Plans for the utilisation of borrow pits in the Chris Hani 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 (6 road sections) located in the Chris Hani 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
(Pr.Sci.Nat. - Environmental Scientist)
Senior Environmental Consultant
Mobile: 083 993 1243
Email:conroy@besc.co.za

Malcolme Logie

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

Road #	Borrow pit #	Latitude	Longitude	District Municipality	Local Municipality	Ward	Farm #/ Allotment Name
DR07460	07460_BP02	32° 4'30.90"	26°35'4.00"	Chris Hani	LUKHANJI	14	ZANGOKWE
DR07357	07357_BP01	32°19'34.00"	26°39'17.20"	Chris Hani	LUKHANJI	12	HACKNEY & CIBINI
DR08599	08599_BP01	31°38'21.40"	27°24'32.60"	Chris Hani	EMALAHLENI	3	INDWE SETTLEMENT
DR08599	08599_BP02	31°40'19.80"	27°22'48.00"	Chris Hani	EMALAHLENI	3	BENGU
DR08600	08600_BP01	31°44'7.90"	27°20'28.70"	Chris Hani	EMALAHLENI	17	BENGU
DR08602	08602_BP01	31°40'28.30"	27°23'46.20"	Chris Hani	EMALAHLENI	3	BENGU
DR08602	08602_BP02	31°41'59.30"	27°24'46.60"	Chris Hani	EMALAHLENI	3	BENGU
DR08602	08602_BP04	31°42'42.40"	27°23'49.40"	Chris Hani	EMALAHLENI	17	BENGU
R344 -CHDM-IR01	R344 -CHDM-IR01_BP01	32°18'24.15"	26°18'9.70"	Chris Hani	TSOLWANA	5	FARM 249
R344 - CHDM-IR01	R344 - CHDM-IR01_BP02	32°18'46.90"	26°19'28.00"	Chris Hani	TSOLWANA	5	FARM 1/203
R344 - CHDM-IR01	R344 -CHDM-IR01_BP03	32°19'31.70"	26°19'54.40"	Chris Hani	TSOLWANA	5	FARM RE/240

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

October 12, 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 Cacadu & Chris Hani District Municipalities, Eastern Cape.

As per previous correspondence, the Department of Roads & Public works proposes to utilize borrow pits for road maintenance/re-gravelling projects (10 road sections) located throughout the Cacadu & Chris Hani District Municipalities. 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 10 roads sections.

Accompanying this letter for your records is a CD containing the Background Information Document(s) (BID'(s)) for the 10 road sections identified, which are to be distributed during the public participation process. Please refer to the attached table for the borrow pits and road sections.

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

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

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	District Municipality	Local Municipality	Ward	Farm #/ Allotment Name
DR07460	07460_BP02	32° 4'30.90"	26°35'4.00"	Chris Hani	LUKHANJI	14	ZANGOKWE
DR07357	07357_BP01	32°19'34.00"	26°39'17.20"	Chris Hani	LUKHANJI	12	HACKNEY & CIBINI
DR08599	08599_BP01	31°38'21.40"	27°24'32.60"	Chris Hani	EMALAHLENI	3	INDWE SETTLEMENT
DR08599	08599_BP02	31°40'19.80"	27°22'48.00"	Chris Hani	EMALAHLENI	3	BENGU
DR08600	08600_BP01	31°44'7.90"	27°20'28.70"	Chris Hani	EMALAHLENI	17	BENGU
DR08602	08602_BP01	31°40'28.30"	27°23'46.20"	Chris Hani	EMALAHLENI	3	BENGU
DR08602	08602_BP02	31°41'59.30"	27°24'46.60"	Chris Hani	EMALAHLENI	3	BENGU
DR08602	08602_BP04	31°42'42.40"	27°23'49.40"	Chris Hani	EMALAHLENI	17	BENGU
R344 -CHDM-IR01	R344 -CHDM-IR01_BP01	32°18'24.15"	26°18'9.70"	Chris Hani	TSOLWANA	5	FARM 249
R344 - CHDM-IR01	R344 - CHDM-IR01_BP02	32°18'46.90"	26°19'28.00"	Chris Hani	TSOLWANA	5	FARM 1/203
R344 - CHDM-IR01	R344 -CHDM-IR01_BP03	32°19'31.70"	26°19'54.40"	Chris Hani	TSOLWANA	5	FARM RE/240
DR01763	1763_BP01	34° 6'9.57"	24°43'10.00"	Cacadu	KOUGA	12	FARM 21/687
DR01763	1763_BP02	34° 7'50.20"	24°42'48.00"	Cacadu	KOUGA	12	FARM 32/713
MR00397	397_BP01	33°51'56.80"	24°45'1.00"	Cacadu	KOUGA	4	FARM 5/152
DR01774	DR01774_BP01	34° 4'18.90"	24°27'31.80"	Cacadu	KOU-KAMMA	5	FARM 23/660
DR01776	DR01776_BP01	34° 4'21.40"	24°20'39.20"	Cacadu	KOU-KAMMA	5	FARM 6/788

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

October 12, 2011

Attention: Key Interested and Affected Parties

RE: Notification of the compilation of Environmental Management Plans for the utilisation of borrow pits in the Cacadu District Municipality and other inaccessible roads in the Chris Hani District Municipalities, 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 (10 road sections) located in the Cacadu & Chris Hani District Municipalities. 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 the ten road sections identified along which the borrow pits are located. Please refer to attached table for the borrow pits and the 10 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
(Pr.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)
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CK 95.10210/23

Road #	Borrow pit #	Latitude	Longitude	District Municipality	Local Municipality	Ward	Farm #/ Allotment Name
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R344 - CHDM-IR01	R344 -CHDM-IR01_BP03	32°19'31.70"	26°19'54.40"	Chris Hani	TSOLWANA	5	FARM RE/240
DR01763	1763_BP01	34° 6'9.57"	24°43'10.00"	Cacadu	KOUGA	12	FARM 21/687
DR01763	1763_BP02	34° 7'50.20"	24°42'48.00"	Cacadu	KOUGA	12	FARM 32/713
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October 12, 2011

Attention: Key Interested and Affected Parties

RE: Notification of the compilation of Environmental Management Plans for the utilisation of borrow pits in the Cacadu District Municipality and other inaccessible roads in the Chris Hani District Municipalities, 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 (10 road sections) located in the Cacadu & Chris Hani District Municipalities. 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 the ten road sections identified along which the borrow pits are located. Please refer to attached table for the borrow pits and the 10 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. A Palaeontological Assessment will also be commissioned as per your request.

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
(Pr.Sci.Nat - Environmental Scientist)
Senior Environmental Consultant
Mobile: 083 993 1243

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& Safety, Health & Environmental Management Systems

October 12, 2011

Attention: Mr Mncedisi Makosonke
Regional Manager: DEDEA – Chris Hani Region
Old Royal Hotel,
104 Cathcart Rd,
Queenstown

RE: Notification of the compilation of Environmental Management Plans for the utilisation of borrow pits in the Chris Hani 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 (6 road sections) located in the Chris Hani District Municipality. BESC have been appointed to compile the Environmental Management Plans for these borrow pits.

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

You have been identified as a Key Interested & Affected Parties (I&AP's). Accompanying this letter is a CD containing the Background Information Document(s) (BID'(s)) pertaining to the six road sections identified along which the borrow pits are located. Please refer to attached table for the borrow pits and the six 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
(Pr.Sci.Nat - Environmental Scientist)

Page 1 of 2

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CK 95.10210/23

Senior Environmental Consultant
Mobile: 083 993 1243
Email:conroy@besc.co.za

Road #	Borrow pit #	Latitude	Longitude	District Municipality	Local Municipality	Ward	Farm #/ Allotment Name
DR07460	07460_BP02	32° 4'30.90"	26°35'4.00"	Chris Hani	LUKHANJI	14	ZANGOKWE
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Leaders in Industrial Ecology, Environmental Impact & Site Assessments
& Safety, Health & Environmental Management Systems

October 12, 2011

Attention: Mr. Monde Sukula
Regional Manager – Chris Hani District
Department of Rural Development & Land Reform
Private Bag x7189
QUEENSTOWN
5320

Tel: (045) 839-2296
Fax: (045) 838-6066

RE: Notification of the compilation of Environmental Management Plans for the utilisation of borrow pits in the Chris Hani 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 (6 road sections) located in the Chris Hani District Municipality. The permitting of the materials sources required for the project will be undertaken in accordance with the Minerals and Petroleum Resources Development Act (M&PRDA) (No. 28 of 2002). The Department of Roads & Public Works have been exempted from provisions in terms of Section 106(1) of the M&PRDA, and thus exploration of any materials sources would be subject to the preparation, submission and approval of an Environmental Management Plan compiled in accordance with Section 39(1) of the M&PRDA and Regulation 52 of the M&PRDA regulations. BESC have been appointed to compile the Environmental Management Plans for these borrow pits.

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

You have been identified as a Key Interested & Affected Parties (I&AP's). Accompanying this letter is a CD containing the Background Information Document(s) (BID'(s)) pertaining to the six road sections identified along which the borrow pits are located. Please refer to attached table for the borrow pits and the six road sections which pertain to the BID's on the accompanying CD.

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Malcolme Logie

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

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From: Karen van Ryneveld <kvanryneveld@gmail.com>
Sent: 12 December 2011 04:24 PM
To: Mariagrazia Galimberti; mlzote@ecphra.org.za; Lee-Anne Proudfoot
Subject: AIA - Cacadu District and Inaccessible Roads Project
Attachments: Cacadu & Inaccessible Roads.kml; AIA-Cacadu District and Inaccessible Roads Project, EC.pdf

Hi Mariagrazia, Mzikayize and Lee-Anne,

Attached please find the Phase 1 AIA for the proposed Cacadu District and Inaccessible Roads Project, Eastern Cape. Hard copies of the report will be posted to the SAHRA APM Unit and BESC.

Regards,
Karen

--
Karen van Ryneveld
ArchaeoMaps

Tel: 043 732 1270
Fax to e-mail: 086 515 6848
Cell: 084 871 1064
Postal address: Postnet Suite 239, Private Bag X3, Beacon Bay, 5205
E-mail: kvanryneveld@gmail.com

From: Lee-Anne Proudfoot <lee-anne@besc.co.za>
Sent: 13 December 2011 08:43 AM
To: 'MARIAGRAZIA GALIMBERTI'
Cc: 'mlzote@ecphra.org.za'
Subject: PIA - Cacadu District and Inaccessible Roads Project
Attachments: 1112 Cacadu and other inaccessible roads- Borrow Pits PIA.pdf

Dear Mariagrazia,

Please find attached for review by SAHRA the Phase 1 PIA for the proposed utilisation of borrow pits in the Cacadu District and Other Inaccessible Roads Project, Eastern Cape. The Phase 1 AIA was submitted by Karen van Ryneveld for this project on 12 December 2011 (please see correspondence below).

Please acknowledge receipt of the Phase 1 PIA and the Phase 1 AIA. Should you have any queries, please do not hesitate to contact me.

Kind Regards

Lee-Anne

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

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

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From: MARIAGRAZIA GALIMBERTI <MGALIMBERTI@sahra.org.za>
Sent: 13 December 2011 09:17 AM
To: Lee-Anne Proudfoot
Subject: Re: PIA - Cacadu District and Inaccessible Roads Project

Dear Lee-Anne,

thank you for the PIA, I've received the AIA and I will comment on them just after Christmas. I'll try to send you a couple of projects before then, but I won't have time for this one I'm afraid.

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
Web : www.sahra.org.za

26.2 Correspondence issued to and received from Key & Registered Interested Affected Parties during the Public Draft Review Commenting Period.

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Leaders in Industrial Ecology, Environmental Impact & Site Assessments
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December 14, 2011

Attention: Key Interested & Affected Parties

Public Draft Environmental Management Plan Reports – Utilization of Borrow Pits, Chris Hani District Municipality

In terms of the Minerals and Petroleum Resources Development Regulations (Government Notice No. 527) under the Minerals and Petroleum Resources Development Act (M&PRDA) (No. 28 of 2002) and the Promotion of Administrative Justice Act (Act 3 of 2000 and as amended) the following is presented to you:

The Department of Roads & Public works proposes to utilize borrow pits for road maintenance/re-gravelling projects located throughout the Chris Hani District Municipality. BESC have been commissioned to prepare Environmental Management Plan Reports in terms of the Minerals and Petroleum Resources Development Regulations (Government Notice No. 527) under the Minerals and Petroleum Resources Development Act (M&PRDA) (No. 28 of 2002) for the proposed utilization of Borrow Pits throughout the Chris District Municipality.

Accompanying this letter is a Compact Disc containing the Public Draft Environmental Management Plan Report(s) pertaining to the proposed borrow pits and roads sections identified in the Chris Hani District Municipality.

These public draft Environmental Management Plan Reports are released for review and comment for a 30-day period from date of mailing (excluding the period between 15 December 2011 & 02 January 2012). Whereas you may want to provide comments and/or suggestions for inclusion into this assessment/ the final EMP reports, please ensure that such is received in writing by the offices of BESC before 17H00, February 01, 2012; either via email (lee-anne@besc.co.za), facsimile (043 726 3199), or post (BESC, P.O. Box 8241, Nahoon, 5210).

Yours sincerely,
Mr. Conroy van der Riet/Ms. Lee-Anne Proudfoot
Tel: (043) 726 4242
Fax: (043) 726 3199
E-mail: lee-anne@besc.co.za

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December 14, 2011

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Accompanying this letter is a Compact Disc containing the Public Draft Environmental Management Plan Report(s) pertaining to the proposed borrow pits and roads sections for your relevant area.

These public draft Environmental Management Plan Reports are released for review and comment for a 30-day period from date of mailing (excluding the period between 15 December 2011 & 02 January 2012). Whereas you may want to provide comments and/or suggestions for inclusion into this assessment/ the final EMP reports, please ensure that such is received in writing by the offices of BESC before 17H00, February 01, 2012; either via email (lee-anne@besc.co.za), facsimile (043 726 3199), or post (BESC, P.O. Box 8241, Nahoon, 5210).

Yours sincerely,
Mr. Conroy van der Riet/Ms. Lee-Anne Proudfoot
Tel: (043) 726 4242
Fax: (043) 726 3199
E-mail: lee-anne@besc.co.za

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Public Draft Environmental Management Plan Reports – Utilization of Borrow Pits, Chris Hani District Municipality

In terms of the Minerals and Petroleum Resources Development Regulations (Government Notice No. 527) under the Minerals and Petroleum Resources Development Act (M&PRDA) (No. 28 of 2002) and the Promotion of Administrative Justice Act (Act 3 of 2000 and as amended) the following is presented to you:

The Department of Roads & Public works proposes to utilize borrow pits for road maintenance/re-gravelling projects located throughout the Chris Hani District Municipality. BESC have been commissioned to prepare Environmental Management Plan Reports in terms of the Minerals and Petroleum Resources Development Regulations (Government Notice No. 527) under the Minerals and Petroleum Resources Development Act (M&PRDA) (No. 28 of 2002) for the proposed utilization of Borrow Pits throughout the Chris District Municipality.

Accompanying this letter is a Compact Disc containing the Public Draft Environmental Management Plan Report(s) pertaining to the proposed borrow pits and roads sections for your relevant area.

These public draft Environmental Management Plan Reports are released for review and comment for a 30-day period from date of mailing (excluding the period between 15 December 2011 & 02 January 2012). Whereas you may want to provide comments and/or suggestions for inclusion into this assessment/ the final EMP reports, please ensure that such is received in writing by the offices of BESC before 17H00, February 01, 2012; either via email (lee-anne@besc.co.za), facsimile (043 726 3199), or post (BESC, P.O. Box 8241, Nahoon, 5210).

Yours sincerely,
Mr. Conroy van der Riet/Ms. Lee-Anne Proudfoot
Tel: (043) 726 4242
Fax: (043) 726 3199
E-mail: lee-anne@besc.co.za

Page 1 of 1

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

BIOTECHNOLOGY & ENVIRONMENTAL
SPECIALIST CONSULTANCY CC

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

December 14, 2011

Attention: Key Interested & Affected Parties

Public Draft Environmental Management Plan Reports – Utilization of Borrow Pits, Cacadu & Chris Hani District Municipalities

In terms of the Minerals and Petroleum Resources Development Regulations (Government Notice No. 527) under the Minerals and Petroleum Resources Development Act (M&PRDA) (No. 28 of 2002) and the Promotion of Administrative Justice Act (Act 3 of 2000 and as amended) the following is presented to you:

The Department of Roads & Public works proposes to utilize borrow pits for road maintenance/re-gravelling projects located throughout the Cacadu & Chris Hani District Municipalities. BESC have been commissioned to prepare Environmental Management Plan Reports in terms of the Minerals and Petroleum Resources Development Regulations (Government Notice No. 527) under the Minerals and Petroleum Resources Development Act (M&PRDA) (No. 28 of 2002) for the proposed utilization of Borrow Pits throughout the Cacadu & Chris Hani District Municipalities.

Accompanying this letter is a Compact Disc containing the Public Draft Environmental Management Plan Report(s) pertaining to the proposed borrow pits and roads sections identified in the Cacadu & Chris Hani District Municipalities.

These public draft Environmental Management Plan Reports are released for review and comment for a 30-day period from date of mailing (excluding the period between 15 December 2011 & 02 January 2012). Whereas you may want to provide comments and/or suggestions for inclusion into this assessment/ the final EMP reports, please ensure that such is received in writing by the offices of BESC before 17H00, February 01, 2012; either via email (lee-anne@besc.co.za), facsimile (043 726 3199), or post (BESC, P.O. Box 8241, Nahoon, 5210).

Yours sincerely,
Mr. Conroy van der Riet/Ms. Lee-Anne Proudfoot
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Page 1 of 1

Malcolme Logie

B.Sc. Hons. (Botany), M.Sc. (Botany), Ph.D. (Biotechnology), (Rhodes)
CEAP-SA; MSAIE & ES; MIAIA; *Pr.Sci.Nat.(Environ.Sci.)*
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DOCUMENT/REPORT RECEIPT FORM

TITLE OR DESCRIPTION OF DOCUMENT/REPORT	
Public draft EMPS:Utilisation of Borrow pits: Cacadu D.M. and Inaccessible Roads-Chris Hani D.M.	
REPORT NUMBER	2011-R599 to 2011 - R608
DATE OF REPORT	December 13, 2011

PARTICULARS OF RECEIVING PERSON/AUTHORITY	
Name	Lizna Fourie
Organisation	Dept. of Water Affairs

SIGNATURES		
	Recieved by	Delivered by
Name	E. van Rooyen	L. FOOTFOOT
Signature		
Date	14/12/2011	14/12/2011
Time	9:10	9:10
Place	DEPT OF WATER AFFAIRS	DEPT OF WATER AFFAIRS

NAME	POSTAL ADDRESS	TRACE & TRACK
Jimmy Calder, Phillip Wilkinson - WESSA	WESSA, P O Box 2909, Beacon Bay 5205	ORDINARY PARCEL PE 526 443 217 ZA CUSTOMER COPY
Mncedisi Makosonke- Regional Manager: DEDEA - Chris Hani Region	DEDEA Chris Hani Region- PO Box 9636, Queenstown, 5320	ORDINARY PARCEL PE 526 443 203 ZA CUSTOMER COPY
Mpilo Mbambisa-CHDM Municipal Manager	Chris Hani District Municipality Private Bag x7121 Queenstown, 5320	ORDINARY PARCEL PE 526 443 194 ZA CUSTOMER COPY
Makhaya Dungu-CHDM Director:Engineering	Chris Hani District Municipality Private Bag x7121 Queenstown, 5320	ORDINARY PARCEL PE 526 443 185 ZA CUSTOMER COPY
Mr. C. du Plooy - CHDM - Roads Department	Chris Hani District Municipality Private Bag x7121 Queenstown, 5320	ORDINARY PARCEL PE 526 443 177 ZA CUSTOMER COPY
Mr F. Nel- CHDM Director:Health & Community Services	Chris Hani District Municipality Private Bag x7121 Queenstown, 5320	ORDINARY PARCEL PE 526 443 146 ZA CUSTOMER COPY
Mr. Monde Sukula- District Manager: Department of Rural Development and Land Reform	Private Bag x7189 QUEENSTOWN 5320.	ORDINARY PARCEL PE 526 443 132 ZA CUSTOMER COPY
Ms. Jenny Gon- WESSA - Eastern Province	PO Box 12444, Centrahill, 6006	ORDINARY PARCEL PE 526 443 129 ZA CUSTOMER COPY
Ms T. Bethe-Cacadu D.M. Director: Engineering	Cacadu District Municipality, PO Box 318 Port Elizabeth 6000	ORDINARY PARCEL PE 526 443 115 ZA CUSTOMER COPY
Mr Mbanga- Cacadu D.M. Director: Planning & Development	Cacadu District Municipality, PO Box 318 Port Elizabeth 6000	ORDINARY PARCEL PE 526 443 101 ZA CUSTOMER COPY
Mr H. Sikweze – Cacadu D.M. - Manager: Environment	Cacadu District Municipality, PO Box 318 Port Elizabeth 6000	ORDINARY PARCEL PE 526 443 089 ZA CUSTOMER COPY
Ms Nohesahe (Acting) – Cacadu D.M. Municipal Manager	Cacadu District Municipality, PO Box 318 Port Elizabeth 6000	ORDINARY PARCEL PE 526 443 092 ZA CUSTOMER COPY
Mr H.S. Prinsloo- Department of Rural Development & Land Reform: Cacadu District Manager	PO Box 27579 GREEN ACRES PORT ELIZABETH 6057	ORDINARY PARCEL PE 526 443 075 ZA CUSTOMER COPY
Andries Struwig-Regional Manager DEDEA - Cacadu Region	DEDEA – Cacadu Region Private Bag X 5001 Greenacres, 6057	ORDINARY PARCEL PE 526 443 058 ZA CUSTOMER COPY

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VINCENT 5217 2011-12-06

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Gwen Sgwabe- Department of Forestry – Regional Officer	Department of Forestry- Private Bag X7485, King Williams Town, 5600	ORDINARY PARCEL PE 526 443 044 ZA CUSTOMER COPY
Mr Sidney Fadi - Municipal Manager - Kouga Local Municipality	Kouga Local Municipality, PO Box 21, JEFFERY'S BAY, 6330	ORDINARY PARCEL PE 526 443 035 ZA CUSTOMER COPY
Mr Sabelo Nkuhlu- Municipal Manager - Kou-Kamma Local Municipality	Kou Kamma Local Municipality, Private Bag X011, KAREEDOUW, 6400	ORDINARY PARCEL PE 526 443 041 ZA CUSTOMER COPY
Cllr F. Campher- Kouga Local Municipality - Ward 4 Councillor	Kouga Local Municipality, PO Box 21, JEFFERY'S BAY, 6330	ORDINARY PARCEL PE 526 443 027 ZA CUSTOMER COPY
Cllr B Rheeder- Kouga Local Municipality- Ward 12 Councillor	Kouga Local Municipality, PO Box 21, JEFFERY'S BAY, 6330	ORDINARY PARCEL PE 526 443 013 ZA CUSTOMER COPY
Cllr Mntambo- Kou-Kamma Local Municipality- Ward 5 Councillor	Kou Kamma Local Municipality, Private Bag X011, KAREEDOUW, 6400	ORDINARY PARCEL PE 526 443 000 ZA CUSTOMER COPY
Mr Nkosinathi James Kwepile- Municipal Manager -Emalahleni Local Municipality	PO Box 23, LADY FRERE, 5410	ORDINARY PARCEL PE 526 442 993 ZA CUSTOMER COPY
Mr Professor Bacela- Municipal Manager - Lukanji Local Municipality	Private Bag X7111, QUEENSTOWN, 5320	ORDINARY PARCEL PE 526 442 990 ZA CUSTOMER COPY
Mr Similo Dayi- Municipal Manager - Tsolwana Local Municipality	PO Box 21, TARKASTAD, 5370	ORDINARY PARCEL PE 526 442 976 ZA CUSTOMER COPY
Cllr Bobotyana- Ward 3 Councillor - Emalahleni Local Municipality	PO Box 23, LADY FRERE, 5410	ORDINARY PARCEL PE 526 442 959 ZA CUSTOMER COPY
Cllr Mxathule- Ward 17 Councillor - Emalahleni Local Municipality	PO Box 23, LADY FRERE, 5410	ORDINARY PARCEL PE 526 442 962 ZA CUSTOMER COPY
Cllr Konglo- Ward 12 Councillor - Lukanji Local Municipality	Private Bag X7111, QUEENSTOWN, 5320	ORDINARY PARCEL PE 526 442 945 ZA CUSTOMER COPY
Cllr Mvama- Ward 14 Councillor - Lukanji Local Municipality	Private Bag X7111, QUEENSTOWN, 5320	ORDINARY PARCEL PE 526 442 931 ZA CUSTOMER COPY
Cllr Van Heerden- Ward 5 Councillor - Tsolwana Local Municipality	PO Box 21, TARKASTAD, 5370	ORDINARY PARCEL PE 526 442 928 ZA CUSTOMER COPY
Mr W.H. Scott	PO BOX 80, Tarkastad 5370	ORDINARY PARCEL PE 526 442 914 ZA CUSTOMER COPY
JD Ablort -Morgan	PO Box 137, Tarkastad, 5370	ORDINARY PARCEL PE 526 442 905 ZA CUSTOMER COPY

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Mr Mchugh	PO Box 281, St Francis Bay, 6312	ORDINARY PARCEL PE 526 442 891 ZA CUSTOMER COPY
Mr RP Gerber	Box 118, Humansdorp, 6300	ORDINARY PARCEL PE 526 442 888 ZA CUSTOMER COPY
TSITSIKAMMA DEVELOPMENT TRUST	PO BOX 3, Tsitsikamma, 6302	ORDINARY PARCEL PE 526 442 874 ZA CUSTOMER COPY
Sarel Van Hysten Wasserman	PO BOX 127, Kareedouw, 6400	ORDINARY PARCEL PE 526 442 865 ZA CUSTOMER COPY
Kobus Reichert - Gamtkwa KhoiSan Council	P.O Box 196 Hankey 6350	ORDINARY PARCEL PE 526 442 843 ZA CUSTOMER COPY
TRUDI MALAN	PO BOX 102 ST FRANCIS BAY 6312	ORDINARY PARCEL PE 526 442 857 ZA CUSTOMER COPY

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

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27 Appendix G: Site Photographs

Figure 17: 08599-BP01

Figure 18: 08599-BP02

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

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28 Appendix H: Competency of Environmental Professional

Dr. Malcolme Logie

Principal and Managing Director

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

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

Malcolme's project experience largely falls into the following broad areas:
Safety, Health & Environmental Management Systems
Malcolme's experience includes management system design and implementation and also certification audits across a wide range of industrial and mining sectors in South Africa, Mocambique, Angola, Zambia and Romania.
Environmental Site Assessments
Malcolme has been the project leader on many Phase I and II ESA's that have been undertaken in accordance with the ASTM standards, at several industrial facilities in South Africa.
Environmental Auditing
Malcolme's auditing experience includes ISO 14001, OHSAS 18001 and ISO 9001 certification level audits; legal compliance, and environmental performance audits across a wide range of industrial and mining sectors in South Africa, Mocambique, Namibia, Angola, Ghana, Zambia, Egypt, The Czech Republic and Romania.
Environmental Impact Assessments
Malcolme has managed a broad range of environmental impact assessments ranging from: industrial facilities, telecommunication networks, electrification networks, transportation infrastructure, waste sites and water supply.

Professional Affiliations & Registrations

- Registered as a Professional Natural Scientist (Environmental Scientist) with the South African Council of Natural Scientific Professions (SACNASP).
- Professional Member of the South African Institute of Ecologists and Environmental Scientists
- 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

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

Rhodes University Investec Schools of Business

Malcolme sits on the Advisory Board for the Rhodes University Investec Schools of Business which provides advice and directs the strategic planning and continual development of the business school.

Fields of Competence

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

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- 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 Rusternburg.

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

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

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

Lee-Anne's project experience includes:

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

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

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

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

Geographical Information Systems (GIS)
Lee-Anne has experience in using ArcView, Idrisi and Manifold software in assessing & producing maps, site plans, aerial photographs, etc.

Visual Impact Assessments (VIA)
Lee-Anne has experience in conducting VIA's and compiling VIA reports.

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

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

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

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

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

Key Projects

African Dune Investments (Pty) Ltd
Lee-Anne is currently undertaking the environmental impact assessment and managing the environmental authorization process for the proposed Woodlands Golf Estate.

ABSA Development Company/Bigen Africa
Lee-Anne was the project manager for the environmental management component of the Albany Regional Water Services Project and conducted the environmental impact assessment

African Dune Investments (Pty) Ltd
Lee-Anne managed the scoping assessment for a proposed Wind Turbine Farm.

Amatola Green Power (Pty) Ltd
Lee-Anne managed and conducted the environmental impact assessment for the proposed extraction of landfill gas from three BCM Landfill Sites for the purposes of electricity generation.

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

KRAFT Foods SA

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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.

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Mr. Conroy van der Riet
(Pr. Sci. Nat. - Environmental Scientist)
Senior Environmental Consultant

Conroy van der Riet has more than 5 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, including the mining sector.
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/contaminated 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 projects ranging from landfill sites to waste water treatment works.
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/Programmes
- 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

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

Employment Record
- Biotechnology & Environmental Specialist Consultancy cc: 2006 – Present:

Key Projects

Transnet National Ports Authority
Conroy managed the soil contamination assessment (inclusive of soil sampling & rehabilitation measures) for the Port of East London. Conroy also managed the Listed Invasive & Protected Plant Species survey for the Port of East London.
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 n 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.
East London Industrial Development Zone
Conroy assisted in auditing the Environmental Management System of the EL IDZ and is managing the revision of the Environmental Management Framework of the EL IDZ.
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 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 managed the mining permit applications of the borrow pits for the proposed road improvement, and appointed as Environmental Control Officer for the implementation of the entire project.
Department of Roads & Public Works
Conroy managed in excess of 100 mining permit applications for borrow pits utilized in road maintenance/re-gravelling projects throughout the entire Eastern Cape Province (urban & rural).
Bigen Africa (Pty) Ltd, Absa DevCo & Ndlambe Local Municipality
Conroy managed the environmental authorization process for the proposed Port Alfred Waste Water Treatment Works upgrade project. Conroy was also appointed to act as the Environmental Control Officer for the implementation of Thornhill Housing project.
Uhambiso Consult
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 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 managed the environmental authorization process for four major regional Water Supply Backlog projects in the Cluster 2 area of the Chris Hani District Municipality, Eastern Cape.
Alvitex 103 (Pty) Ltd
Conroy managed the environmental authorization process for a proposed golfing estate development as well as a separate residential development.
African Dune Investments
Conroy assisted in the environmental authorization for a proposed golf estate development.
Thynk Property Partners (Pty) Ltd
Conroy managed the environmental authorization process for the proposed retail & residential development.
Eskom

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Conroy managed 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 and acted as Environmental Control Officer 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 process 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.

Tshani Deep Sea Angling Association

Conroy managed the environmental authorization and re-licensing of the Mdumbi ski-boat launching site, Eastern Cape.

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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