

# ENVIRONMENTAL MANAGEMENT PLAN

## The Proposed Utilisation of Borrow Pits Road: R344 (Chris Hani District Municipality)

### Department of Roads and Public Works Province of the Eastern Cape



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## 1 Report Release Notice

<i>Report Status</i>	<i>Date</i>	<i>Authorised</i>
1. Internal Draft	November 14, 2011	Ms Lee-Anne Proudfoot
2. Client Draft	November 14, 2011	Mr Conroy van der Riet
3. <b>Public Report</b>	<b>December 13, 2011</b>	<b>Ms Lee-Anne Proudfoot</b>
4. <b>Final Report</b>	<b>February 02, 2012</b>	<b>Ms Lee-Anne Proudfoot</b>

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

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

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

## 2 Limitations

BESC has prepared this report for the sole use of **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 **DEPARTMENT OF ROADS & PUBLIC WORKS** and **BESC**. No other warranty, expressed or implied, is made as to the professional advice included in this report.

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

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

## 3 Limiting Conditions

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

1. Numerous site visits and assessments
2. Public participation
3. Information on biophysical environment - BESC
4. Information on Borrow pits - Controlab
5. Archaeological & Heritage Assessment - ArchaeoMaps
6. Palaeontological Assessment - Metsi Metseng Geological & Environmental Services

## 4 Special conditions

None

## 5 Natural Science Professions Act

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

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

Senior Environmental Consultants:

Ms Lee-Anne Proudfoot, is registered with the:

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

Mr Conroy van der Riet is registered with the:

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

## 6 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;

for the proposed utilisation of borrow pits for the proposed routine maintenance/re-gravelling of the R344.

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.

## 7 Legal Requirements

### 7.1 National Acts and Regulations

#### 7.1.1 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.

#### 7.1.2 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.

#### 7.1.3 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 23<sup>rd</sup> 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).

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

#### **7.1.4 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.

#### **7.1.5 National Environmental Management Act**

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

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

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

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

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

#### **7.1.6 National Environmental Management Amendment Act**

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

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

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

### 7.1.7 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.

### 7.1.8 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.

### 7.1.9 National Forests Act

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

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



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

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

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

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

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

#### **7.1.10 Conservation of Agricultural Resources**

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

##### **Category 1 plants, or declared weeds**

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

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

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

### **Plant invaders of Category 2**

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

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

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

### **Plant invaders of Category 3**

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

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

### **Control methods**

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

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

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

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

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

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

### 7.1.11 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 effect 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.

### 7.1.12 Provincial Nature Conservation Ordinance

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

### 7.1.13 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.

#### **7.1.14 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 Environmental Management: Air Quality Act (Act 39 of 2004) is to regulate air quality in order to protect the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development while promoting justifiable economic and social development; to provide for national norms and standards regulating air quality monitoring, management and control by all spheres of government; for specific air quality measures; and for matters incidental thereto.

#### **7.1.15 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.

#### **7.1.16 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 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)

#### **7.1.17 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.

## 7.2 Plans, Policies & Guiding Principles

### 7.2.1 Provincial Spatial Development Plan

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

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

### 7.2.2 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;
- 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.

### **7.2.3 Tsolwana Local Municipality - Integrated Development Plan**

The FINAL IDP Review 2009/2010 for the Tsolwana Municipality has been produced. It has been produced in partial fulfilment of the requirements of the LG Municipal Systems Act. Tsolwana is a category B municipality situated within the Chris Hani District of the Eastern Cape Province. It is made up of the combination of:

- Former Tarkastad TLC and TRC
- Former Hofmeyr TLC and TRC
- Former Ntabethemba TRC

Tsolwana Municipality has two main urban centres, namely Tarkastad and Hofmeyr and about 11 rural villages scattered within the former Ntabethemba area, including Thornhill, Mitford, Rocklands, Tendergate, etc.

In terms of service delivery the IDP highlighted that for roads and stormwater the municipality is responsible for the construction, maintenance and upgrading of local access roads and stormwater infrastructure. Other roads are a responsibility of the District, Province and National department of Transport.

Observations of the visual road index reflect a decaying state of road and storm water infrastructure across the municipal landscape. This is largely due to lagging behind in maintenance which is often attributed to lack of funding, planning and HR capacity constraints.

#### 7.2.4 DWAF - Best Practice Guidelines

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

- BPG's dealing with aspects of DWAF's water management hierarchy, namely,
  - H1: Integrated Mine Water Management
  - H2: Pollution Prevention and Minimization of Impacts
  - H3: Water Reuse and Reclamation
  - H4: Water Treatment
- BPG's dealing with General water management strategies, techniques & tools, namely,
  - G1: Storm Water Management
  - G2: Water and Silt Balances
  - G3: Water Monitoring Systems
  - G4: Impact Prediction
  - G5: Water Management Aspects for Mine Closure
- BPG's dealing with specific mining activities or aspects, namely,
  - A1: Small-Scale Mining
  - A2: Water Management for Mine Residue Deposits
  - A3: Water Management in Hydrometallurgical Plants
  - A4: Pollution Control Dams
  - A5: Water Management for Surface Mines
  - A6: Water Management for Underground Mines

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

The BPG's form the following main functions:

- Utilization by the mining sector as input for compiling water use license applications (and other legally required documents such as EIA's, EMP's, closure plans, etc) and for drafting license conditions.
- Serve as a uniform basis for negotiations through the licensing process prescribed by the National Water Act.

- Used specifically by DWAF personnel as a basis for negotiation with the mining industry, and likewise by the mining industry as a guideline as to what the DWAFG considers as best practice in resource protection and waste management.
- Inform Interested & Affected Parties on good practice at mines.

### 7.2.5 Department of Environmental Affairs Guidelines

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

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

## 8 Introduction

The **Department of Roads and Public Works** is responsible for the maintenance of the gravel roads network in the Eastern Cape Province through routine maintenance or re-gravelling contracts. The Department of Roads and Public Works has appointed a consortium of Engineering Consultants (RAMS Management Consultants) to manage the Road Asset Management System (RAMS) which includes the borrow pit management system. Controlab cc is the Professional Services for the conducting of Geotechnical Borrow pits. **BESC** have been appointed as independent environmental consultants by **Controlab cc** on behalf of **Department of Roads and Public Works** to undertake the necessary investigations and applications in order to obtain authorisation from the relevant authorities for the proposed works. To this end, an Environmental Management Plan as defined and required by the Minerals and Petroleum Resources Development Act (M&PRDA) (No. 28 of 2002), has been prepared for the proposed utilisation of the borrow pits for the routine maintenance/re-gravelling of the R344.

It is proposed that road construction materials be sourced from existing borrow pits located in the vicinity of the R344. As mentioned previously, the utilisation of the material sources required for the project will be undertaken in accordance with the Minerals and Petroleum Resources Development Act (M&PRDA) (No. 28 of 2002). Since the applicant, Department of Roads and Public Works, is an Organ of State, exemption has been obtained previously from the application process in terms of the Act. In terms of this exemption only an Environmental Management Plan for the utilisation of the borrow pits is required to be compiled in accordance with Section 39(2) and Regulation 52 of the M&PRDA

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

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

## 8.1 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.

## 8.2 Integrated Environmental Management

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

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

### 8.3 Project Details

#### Applicant:

The Department of Roads & Public Works

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5605

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#### Environmental Consultant

Biotechnology and Environmental Specialist Consultancy cc

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Email: lee-anne@besc.co.za

Contact Person: Ms Lee-Anne Proudfoot

#### Landowner

The Borrow pits fall on Farm 249, Farm 1/203, and Farm RE/240. The Farms are privately owned.

Rd_Nr_	No_	Farm	Landowner
R344	R344_CHDM_IR01_BP01	249	H.W. SCOTT
R344	R344_CHDM_IR01_BP02	1/203	J.D. ABLORT-MORGAN
R344	R344_CHDM_IR01_BP03	RE/240	J.D. ABLORT-MORGAN

## 9 Project Description

### 9.1 Study Area

The R344 is situated within three local municipalities being the Nxuba, Tsolwana and Inkwanca Municipalities located in the Chris Hani District Municipality. All of the borrow pits surveyed fall within the central municipality of Tsolwana. The R344 is a gravel road starting at the town of Adelaide going north to Tarkastad within the Province of the Eastern Cape. The R344 runs in a south to north direction. The closest town to the borrow pits is the town of Tarkastad, (Figure 1). The start and end co-ordinates are as follows:

- Start co-ordinate - S32° 41' 50" E26°1.7' 32"
- End co-ordinate - S31° 33' 06" E26° 32' 27"

Three (3) Borrow pits were identified in the investigation for material sources along the R344. The location of the borrow pits are as follows:

Road #	Borrow Pit #	Longitude	Latitude
R344-CHDM-IR01	R344-CHDM-IR01_BP01	26°18'9.70"	32°18'24.15"
R344-CHDM-IR01	R344-CHDM-IR01_BP02	26°19'28.00"	32°18'46.90"
R344-CHDM-IR01	R344-CHDM-IR01_BP03	26°19'54.40"	32°19'31.70"

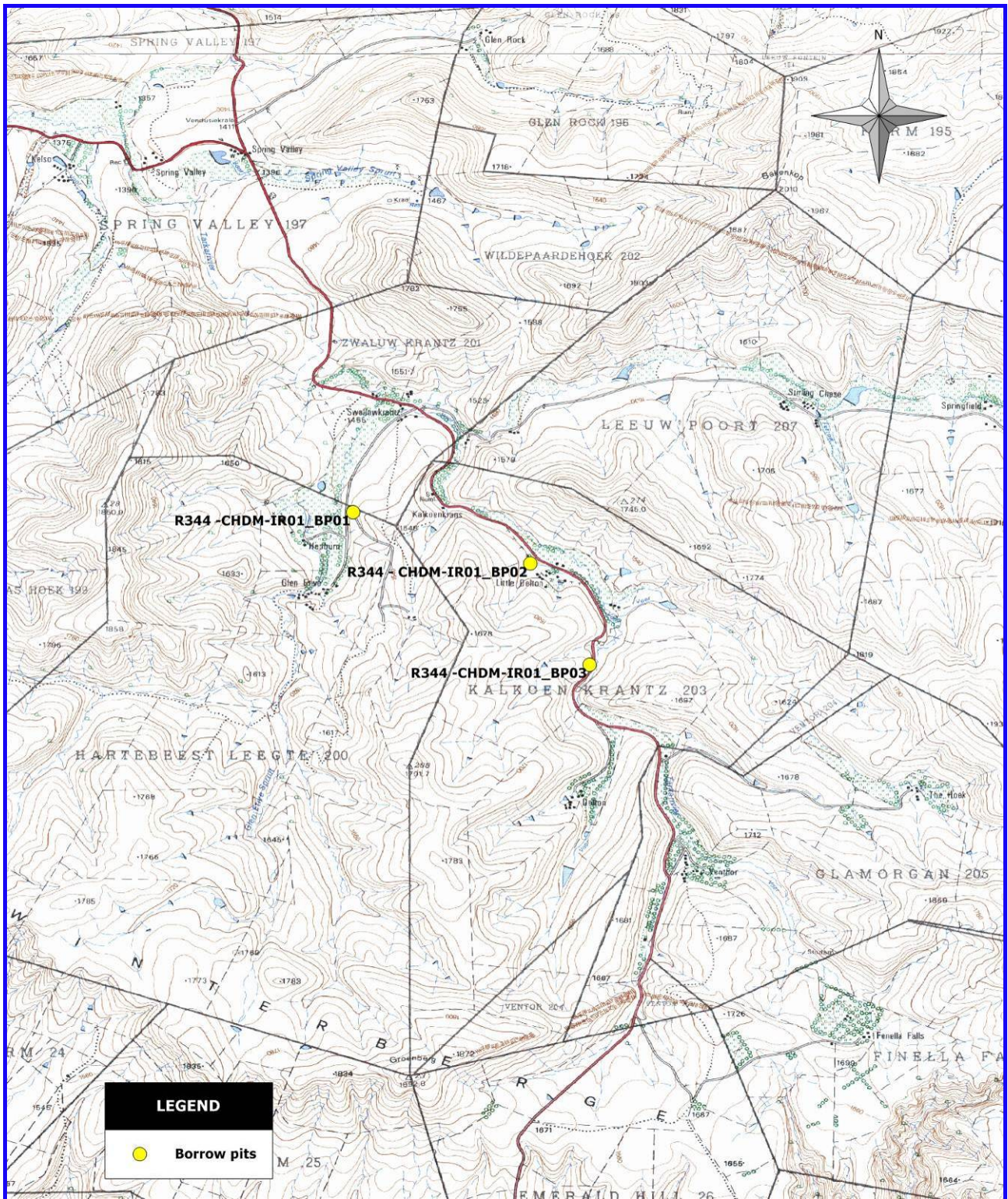


Figure 1: Locality of the R344 and the proposed borrow pits (1:50 000 map).



## 9.2 Current Land Use

All of the borrow pits are existing and were previously used for road construction/upgrading activities.

## 9.3 Surrounding Land Use

The surrounding land use includes Privately Owned Agricultural Land.

## 9.4 Proposal

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. As such the Department has embarked on an investigation to identify borrow pits situated along or in close proximity to the district roads identified in the Chris Hani District Municipality which require routine maintenance in order to source materials for the proposed re-gravelling/maintenance of these roads.

It is proposed here to utilise three (3) borrow pits identified along the R344, for the routine maintenance/re-gravelling of this district road. The nearest formal town is Tarkastad. The borrow pits are all located adjacent to or in close proximity to the R344

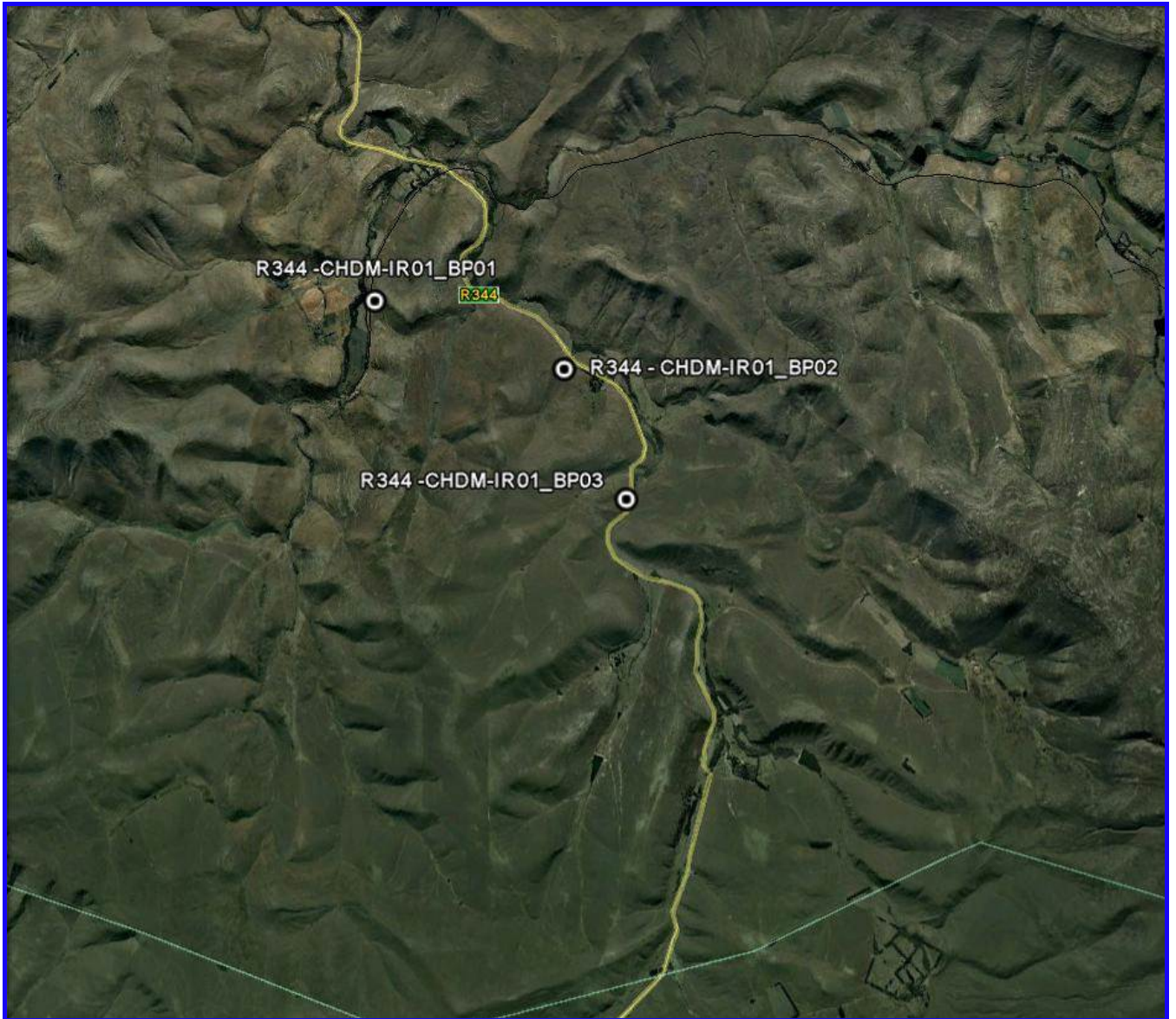


Figure 2: Aerial Image - Road R344 & associated BP's.

Table 1: Borrow pit Summary Table

Information		Borrow pits		
		R344_CHDM_IR01_BP01	R344_CHDM_IR01_BP02	R344_CHDM_IR01_BP03
Ownership		Private Land	Private Land	Private Land
Type of Material		Decomposed Dolerite	Decomposed Dolerite	Decomposed Dolerite and Shale
Existing or new		Existing	Existing	Existing
Co-ordinates	South	32°18'24.15"	32°18'46.90"	32°19'31.70"
	East	26°18'9.70"	26°19'28.00"	26°19'54.40"
Distance to R344		+/- 1700 m	+/- 300 m	+/- 10 m
Access		Yes	Yes	Yes
River Catchment		Tarka River	Tarka River	Tarka River
Distance to Nearest Houses		> 1000 m	+/- 300 m	> 1000 m
Presence of servitudes		Eskom Power Line running across the bottom of the Borrow pit area. Telkom Line adjacent to the Borrow pit.	Telkom Line running across the Borrow pit	Telkom Line adjacent to the borrow pit
Proposed End Use		Closed and Rehabilitated	Closed and Rehabilitated	Closed and Rehabilitated

### 9.5 Borrow pit R344\_CHDM\_IR01\_BP01

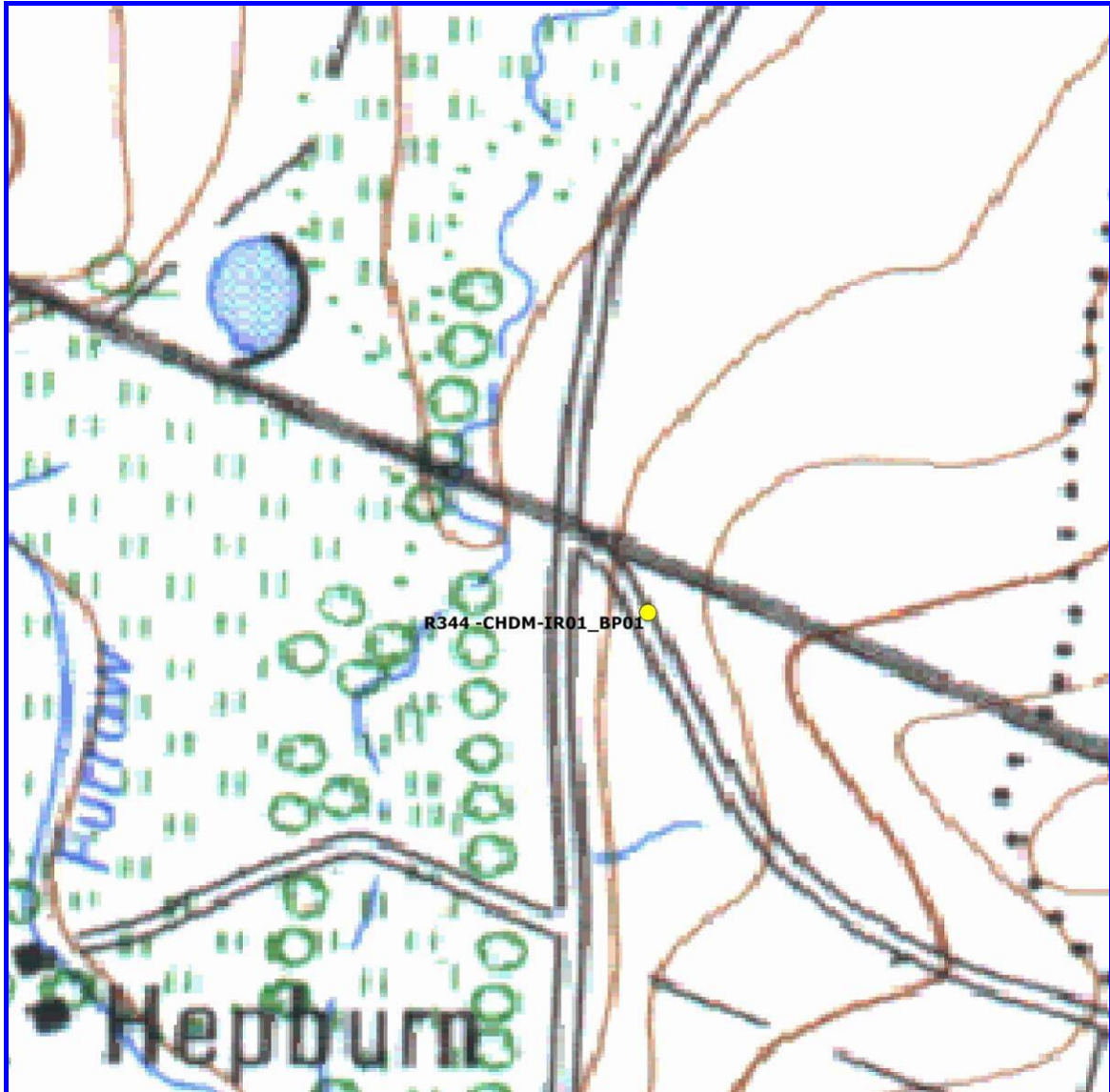


Figure 3: Topographical Location of 344\_CHDM\_IR01\_BP01 - 1:50 000 map



Figure 4: Borrow pit R344\_CHDM\_IR01\_BP01

### **General Description**

R344\_CHDM\_IR01\_BP01 is an existing borrow pit which has been used in the past. It is located on the side of a south west-facing hill slope. The site is accessed from a gravel road on the Swallow Krantz Farm. This gravel road has its intersection with the R344. The borrow pit is located further than 1000 m from the nearest households. It is located on private land. It is the intension that the borrow pit will be mined from the existing borrow pit and extended in a south easterly direction away from the road as indicated on the mining plan in SECTION 20. It will not be necessary to relocate any households; however noise control and dust control measures will need to be implemented. Consideration must be given to the overhead Power and Telephone Lines running across and adjacent to the borrow pit area.

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. At the request of the landowner - Mr. W.H. Scott - Borrow pit R344-CHDM-IR01\_BP01 is not to be fenced. The borrow pit is situated sufficiently away to prevent the need for fencing. The area demarcated will allow for a storage area for topsoil.

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

The material will be excavated from the face and floor of the borrow pit and if possible loaded directly onto haul trucks. The material to be mined will be decomposed dolerite. It is proposed that the extent of the area to be mined (existing and new) will be approximately 1.414 ha.

### **Proposed Rehabilitation Measures:**

Stormwater control is viewed as a critical component of the borrow pit development. It is suggested that a cutoff-berm be located above the borrow pit face, protecting the active mining area and topsoil and overburden stockpiles from erosion. This storm water will then be channeled 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

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ripped. The entire area will be fertilized and seeded 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.

9.6 Borrow pit R344\_CHDM\_IR01\_BP02

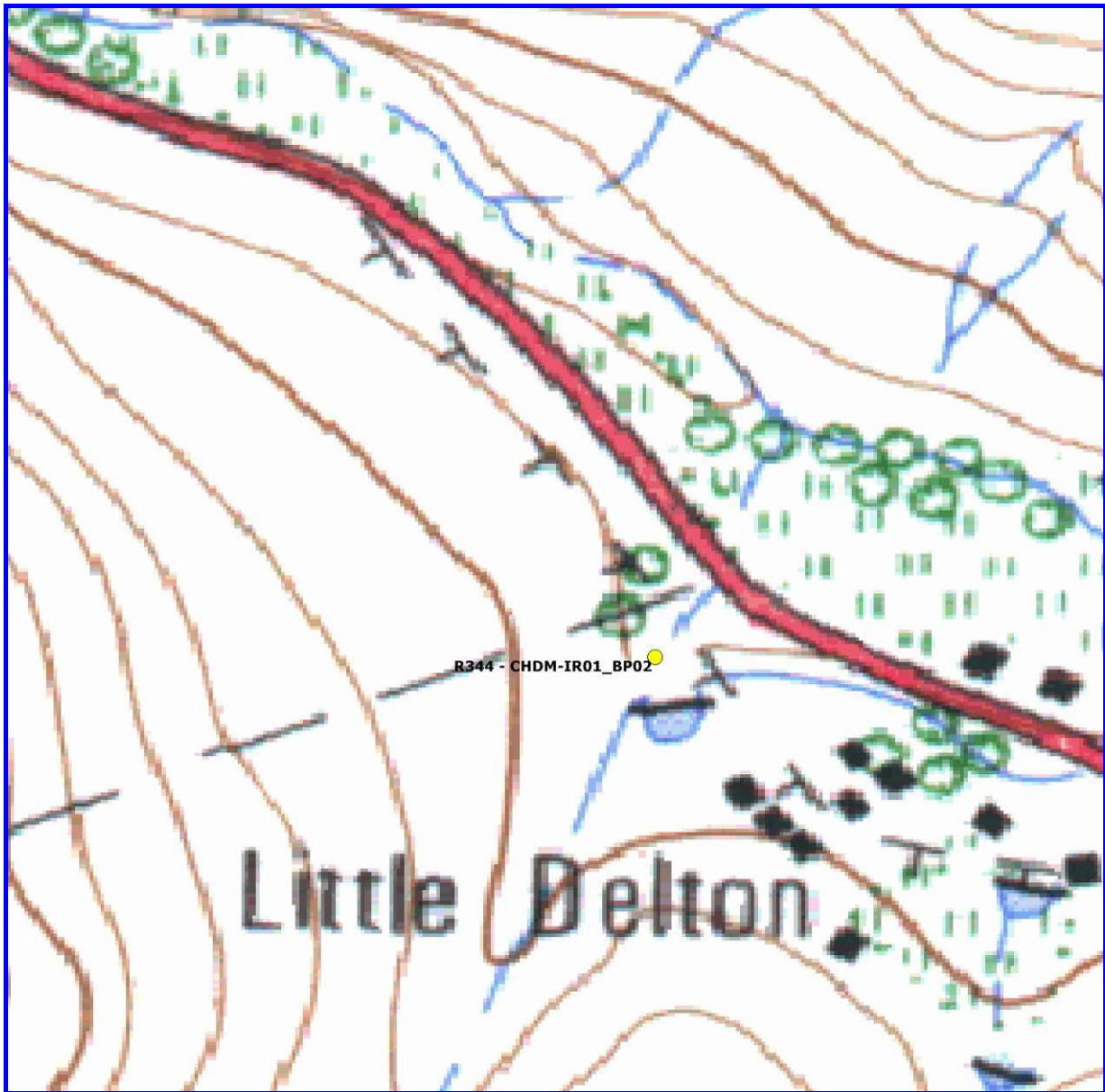


Figure 5: Topographical Location of R344\_CHDM\_IR01\_BP02- 1:50 000 map





Figure 6: Borrow pit R344\_CHDM\_IR01\_BP02

### **General Description**

R344\_CHDM\_IR01\_BP02 is an existing borrow pit which has been used in the past. It is located at the bottom of a north facing hill slope. The site is accessed by a jeep track which has its intersection on the R344 and is located within +/- 300 m of the nearest households. The site is located on private land which has been fenced, access to the borrow pit is through the existing gate. It is the intension that the borrow pit will be mined from the existing borrow pit footprint and extended in a southerly and south easterly direction into the existing face as indicated on the mining plan in SECTION 20. It will not be necessary to relocate any households; however noise control and dust control measures will need to be implemented. The borrow pit has been fenced, as such all mining activities must take place within this area or the moving of fences negotiated with the Landowner. Consideration must be given to the overhead Telephone line in the area of the borrow pit. The access gate to the Farm is to be kept closed at all times.

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. Water located within the borrow pit must be pumped out and discharged on to the grassy flats into the adjacent grasslands prior to the mining activities commencing.

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

The material will be excavated from the face of the borrow pit and if possible loaded directly onto haul trucks. The material to be mined will be decomposed dolerite. It is proposed that the extent of the area to be mined (existing and new) will be approximately 1.436 ha.

### **Proposed Rehabilitation Measures:**

Stormwater control is viewed as a critical component of the borrow pit development. It is suggested that a cutoff-berm be located above the borrow pit face, protecting the active mining area and topsoil and overburden stockpiles from erosion. This storm water will then be channeled 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 seeded 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.

9.7 Borrow pit R344\_CHDM\_IR01\_BP03

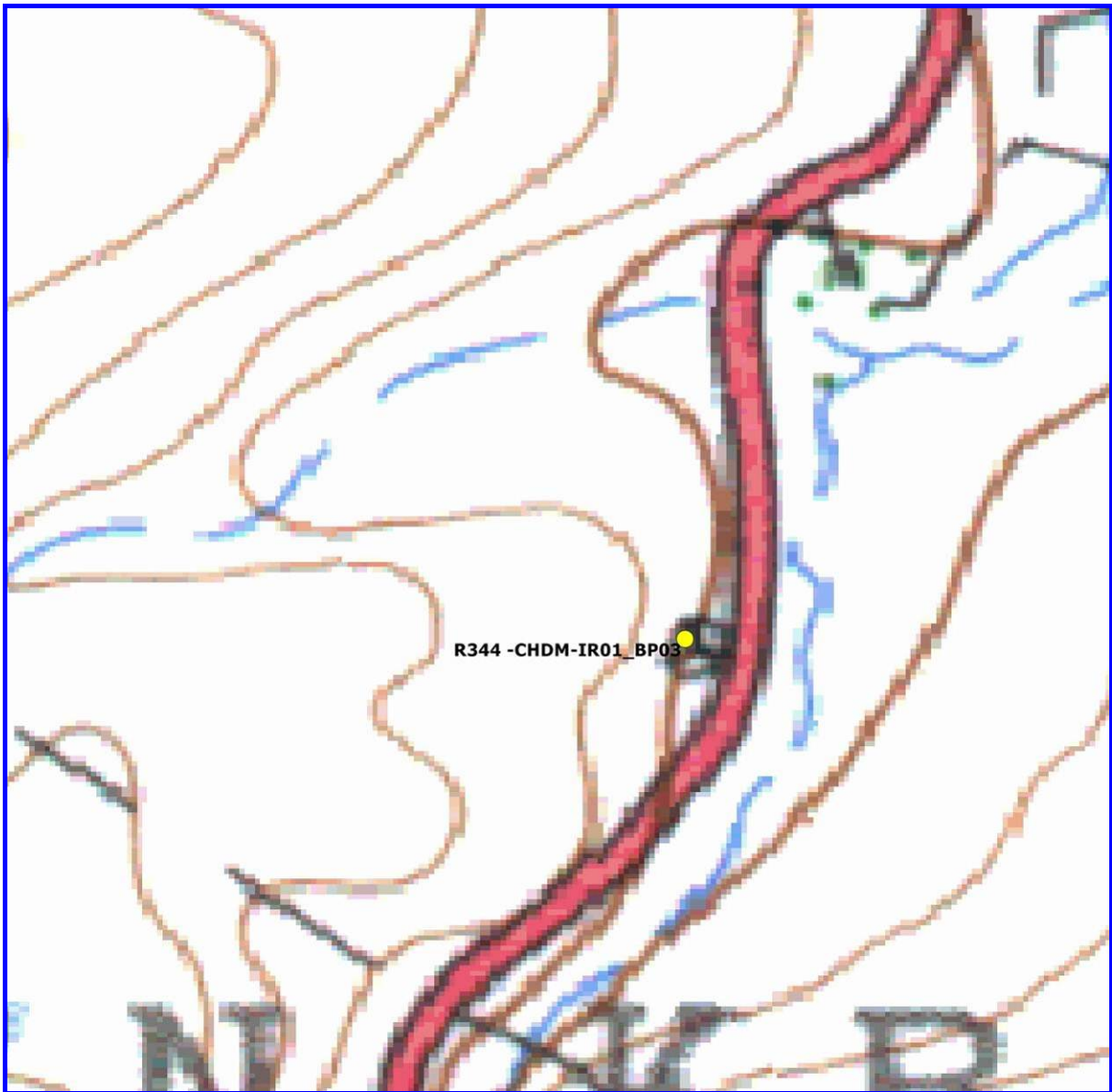


Figure 7: Topographical Location of R344\_CHDM\_IR01\_BP03 - 1:50 000 map



Figure 8: Borrow pit R344\_CHDM\_IR01\_BP01

### **General Description**

R344\_CHDM\_IR01\_BP03 is an existing borrow pit which has been used in the past. It is located on the side of an east facing hill slope. There are large dolerite boulders located in the borrow pit. It is accessed directly from the R344 and is located further than 1000 m from the nearest houses. It is the intention that the borrow pit will be mined from the existing borrow pit and extended in a westerly direction as indicated on the mining plan in SECTION 20. It will not be necessary to relocate any households; however noise control and dust control measures will need to be implemented. The borrow pit has been fenced, as such all mining activities must take place within this area or the moving of fences to accommodate further extension of the borrow pit negotiated with the Landowner. Consideration must be given to the overhead Telephone line adjacent to the borrow pit.

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

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

The material will be excavated from the face and floor of the borrow pit and if possible loaded directly onto haul trucks. Blasting may be required for the right hand side working. The material to be mined will be decomposed dolerite and shale. It is proposed that the extent of the area to be mined (existing and new) will be approximately 0.584 ha.

### **Proposed Rehabilitation Measures:**

Stormwater control is viewed as a critical component of the borrow pit development. It is suggested that a cutoff-berm be located above the borrow pit face, protecting the active mining area and topsoil and overburden stockpiles from erosion. This storm water will then be channeled 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 seeded 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.

## 9.8 Need and Desirability

The existing gravel roads in the Chris Hani District Municipality are in serious need of maintenance and re-gravelling. The proposed maintenance/re-gravelling of the R344 will be a benefit to the users of the road by providing proper infrastructure, improving overall road safety and reducing the risk of erosion that is occurring at present. The proposed borrow pits will provide material for the maintenance/re-gravelling of the R344. The identification of these sources follows a materials identification/investigation undertaken by Controlab. 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. A copy of this report is included in section 21.1. The material from the borrow pits were concluded to be suitable for use and that they would yield fair to high quantities of material for the maintenance of the road. As part of the measures to be taken for the borrow pits, rehabilitation is required on closure of the mining, this rehabilitation would be a benefit as this should improve the overall aesthetics of the borrow pits which are currently a visual scar on the landscape, having had no rehabilitation undertaken on them in the past.



## 10 Environmental Setting

### 10.1 Landform & Geology

#### 10.1.1 General Description:

The sedimentary rocks of Permian to Triassic age and all belong to the Beaufort Group, a subdivision of the Karoo Supergroup. They are extensively intruded by Dolerite of Jurassic Age, while scattered surficial deposits of quaternary age (Colluvium, Alluvium, Coastal Sediments) blanket older strata in places

#### 10.1.2 Structural Geology:

The southern edge of the area is close to the northern limit of the Cape Fold Belt and dips up to 30° are encountered. The dip angles decrease progressively northwards, and most of the area mapped is characterised by gentle (1° to 3°) northward dips. A few minor localised folds occur in the south.

### 10.2 Archaeology, Palaeontology & Heritage Sites

The study area falls within the Tarkastad Sub -Group (encompassing the Burgersdorp and Katberg formations) which is Triassic (237 million years) in age and the dolerite is Jurassic in age. Within the Katberg Formation of the Tarkastad Sub Group vertebrate remains are known to be present, and several skulls of the *Procolophon* and *Lystrosaurus* (belonging to the *Lystrosaurus - Thrinaxodon* Assemblage Zone) have been discovered. Within the Burgersdorp Formation of the Tarkastad Sub Group reptile fossils are fairly common in the mudstones. With the exception of the lower beds (which belong to the *Lystrosaurus - Thrinaxodon* Assemblage Zone) the fauna of this formation belongs to the *Kannemeyeria - Diademodon* Assemblage Zone. Both these genera as well as specimens of the carnivorous *Cynognathus* and the small herbivorous *Bauria cynops* were recovered from these beds. Fragmentary remains of the large crocodile - like *Erythrosuchus* were also found.

### 10.3 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 characterised 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 (Figure 9). The topography in the area of the borrow pits tends to be described as low mountains (Figure 9).

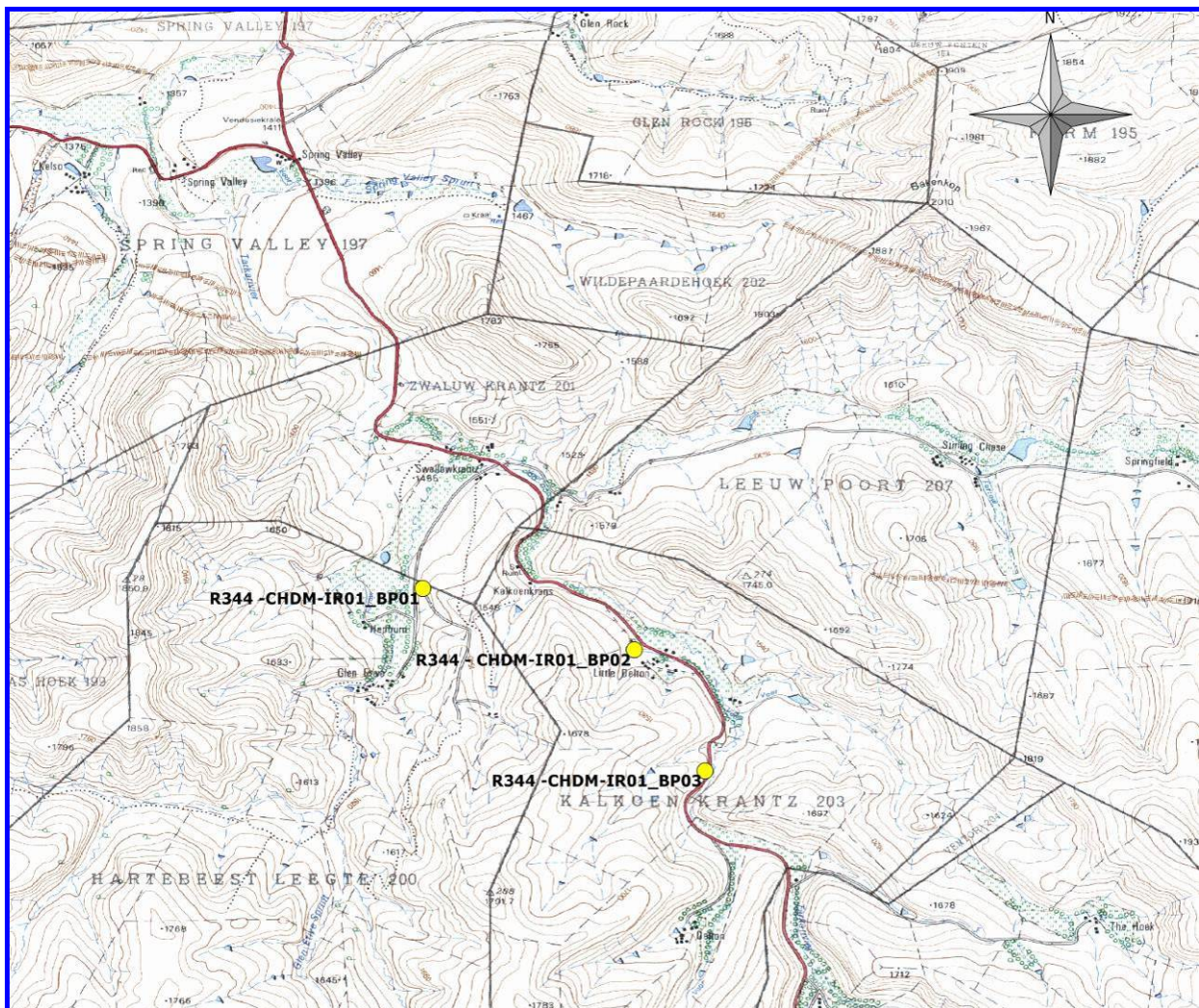


Figure 9: Topography of the area.

The study area falls within the Fish to Tsitsikamma Water Management Area. The Fish to Tsitsikamma water management area is situated in the south-eastern part of South Africa, mainly within the Eastern Cape Province. It derives its name from its two largest rivers, the Great Fish and the Sundays Rivers. Main rivers are the Great Fish, Sundays, Bushmans, Kowie and Kariega rivers.

The south-western part is characterised by several mountain ranges parallel to the coast, and localised massives to the inland. Climate over the water management area is strongly influenced by its location along the coast together with the topography. Typical arid Karroo climate prevails over most of the inland, with rainfall in the range of 600 mm to 100 mm per year. Small areas along the coast experience rainfall in excess of 1 000 mm per year. Several national parks and conservation areas are found in the water management area.

#### 10.4 Groundwater

In the Albany Coastal Range groundwater of poor quality is associated with outcrops of the Bokkeveld Group and the Dwyka-basal Ecca formations. Areas of low slope in the Ecca Group and lower Beaufort Group (Adelaide Sub-group) between the coastal ranges and the Middle Veld escarpment also have a higher salinity. In the south, the best quality groundwater is associated with the limited areas of the Witpoort aquifer in the Albany Coastal Range. In the north, good quality groundwater is generally associated with the Katberg sandstone aquifer in the Winterberg Range between Seymour and Cradock, and along the Great Fish and Sundays headwater divides near Nieu Bethesda, Middelburg and Steynsburg.

#### 10.5 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 40°C 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.

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.

## 10.6 Fauna

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

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

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

There are 102 amphibian species recorded in South Africa and about 47% of these occur in the Eastern Cape. One of these is an Artholeptid (frog), one is a Pipid (aquatic frog), three are Helephrynids (frogs which live in mountain streams and are endemic to South Africa), nine are Bufonids (true frogs) three are Bevicepids (stout bodied frogs), twenty-one are Ranids (frog family) and nine are Hyperolids (reed frogs). The amphibians of the province are an important component of the vertebrate diversity of the province. There are six threatened and four endemic frog species in the Eastern Cape Province. One species, *Heleophryne hewitti*, is critically endangered and known for only four rivers in the Elandsberg range.

The Pondoland amphibian fauna is relatively poorly known, as is much of that of the former Transkei. This is unfortunate as the region falls at an important transition zone between a southern temperate

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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.

### 10.6.2 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 2).

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

SPECIES	COMMON NAME	CONSERVATION STATUS
<i>Proteles cristatus</i>	Aardwolf	Least Concern
<i>Felis serval</i>	Serval	Near Threatened
<i>Philantomba monticola</i>	Blue duiker	Vulnerable
<i>Mellivora capensis</i>	Honey badger	Near Threatened
<i>Felis lybica</i>	African wild cat	Least Concern
<i>Orycteropus afer</i>	Aardvark	Least Concern
<i>Ourebia ourebi</i>	Oribi	Endangered
<i>Cercopithecus mitis</i>	Samango Monkey	Endangered
<i>Mystromys albicaudatus</i>	White-tailed Rat	Endangered
<i>Chrysospalax trevelyani</i>	Giant golden mole	Vulnerable
<i>Dendrohyrax arboreus</i>	Tree hyrax	Vulnerable
<i>Poeciligale albinucha</i>	Africa striped weasel	Data Deficient
<i>Otolemur crassicaudatus</i>	Thick-tailed bushbaby	Least Concern
<i>Equus zebra</i>	Cape Mountain zebra	Vulnerable
<i>Diceros bicornis</i>	Black rhinoceros	Vulnerable
<i>Panthera pardus</i>	Leopard	Rare
<i>Manis temminckii</i>	Pangolin	Vulnerable

### 10.6.3 Birds

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

## 10.7 Flora

### 10.7.1 Eastern Cape Biodiversity Conservation Plan

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

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

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

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

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



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

### 10.7.2 General vegetation description

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

The proposed borrow pits fall within the Karoo Escarpment Grassland as according to Mucina & Rutherford (2006) (Figure 10).

The Karoo Escarpment Grassland is found in Eastern, Northern and Western Cape Province: Occurs on the Karoo Escarpment, running in an east-west direction from Molteno to Noupoort in the north, and from Somerset East in a northerly direction towards Nieu-Bethesda. Also found on the north facing slopes of the Winterberg Mountains around Tarkastad. Altitude about 1100 - 2502 m at the summit of the Kompasberg

This vegetation unit is located on mountain summits, low mountains and hills with wiry, tussock grasslands, usually dominated by *Merxmuerellera disticha*. Other common grasses typical of dry grasslands (genera *Eragrostis*, *Tetrachne*, *Karoochloa*, *Helictotrichon*, *Melica*, *Tragus*, *Elionurus* and *Aristida*). An important low shrub component occurs throughout the grassland unit.

It has been classified as being “Least threatened”, although nearly 3% is statutorily conserved in the Mountain Zebra Park and Karoo Nature Parks as well as in the Tsolwana and Karoo Nature Reserves. The conservation target for the vegetation unit is 24%.



Figure 10: General vegetation and the location of the borrow pits.

Table 3: Important Taxa - Karoo Escarpment Grassland

Tall Shrubs		
<i>Cliffortia arborea</i>	<i>Diospyros austro-africana</i>	<i>Rhus lucida</i>
Low Shrubs		
<i>Chrysocoma ciliata</i>	<i>Felicia muricata</i>	<i>Anthospermum rigidum subsp pumilum</i>
<i>Atriplex semibaccata var appendiculata</i>	<i>Elytropappus rhinocerotis</i>	<i>Erica caespitosa</i>
<i>Erica caffrorum</i>	<i>Erica woodii</i>	<i>Eriocephalus eximius</i>
<i>Euryops annae</i>	<i>Euryops anthemoides subsp astrotrichus</i>	<i>Euryops candollei</i>
<i>Euryops floribundus</i>	<i>Euryops oligoglossus subsp oligoglossus</i>	<i>Felicia filifolia subsp filifolia</i>
<i>Helichrysum asperum var albidulum</i>	<i>Helichrysum dregeanum</i>	<i>Helichrysum lucilioides</i>
<i>Helichrysum niveum</i>	<i>Helichrysum rosom</i>	<i>Helichrysum zeyheri</i>
<i>Indigofera sessifolia</i>	<i>Limeum aethiopicum</i>	<i>Nemesia fruticans</i>
<i>Passerina montana</i>	<i>Selago albida</i>	<i>Selago saxatilis</i>
<i>Senecio burchellii</i>	<i>Sutera pinnatifida</i>	<i>Wahlenbergia albens</i>
Succulent Shrubs		
<i>Euphorbia clavariodes var clavariodes</i>	<i>Euphorbia mauritanica</i>	
Graminoids		
<i>Aristida congesta</i>	<i>Aristida diffusa</i>	<i>Cynodon incompletus</i>
<i>Ehrharta calycina</i>	<i>Eragrostis chloromelas</i>	<i>Heteropogon contortus</i>
<i>Merxmuellera disticha</i>	<i>Themeda triandra</i>	<i>Tragus koelerioides</i>
<i>Cymbopogon pospischilii</i>	<i>Cynodon dactylon</i>	<i>Elionurus muticus</i>
<i>Eragrostis curvula</i>	<i>Eragrostis lehmanniana</i>	<i>Eragrostis obtuse</i>
<i>Eustachys paspaloides</i>	<i>Karoochloa purpurea</i>	<i>Melica decumbens</i>
<i>Panicum stapfianum</i>	<i>Tetrachne dregei</i>	
Herbs		
<i>Berkheya pinnatifida</i>	<i>Convolvulus sagittatus</i>	<i>Dianthus caespitosus subsp caespitosus</i>
<i>Diascia capsularis</i>	<i>Dimorphotheca zeyheri</i>	<i>Galium capense subsp capense</i>
<i>Gazania krebsiana subsp krebsiana</i>	<i>Hebenstretia dentata</i>	<i>Helichrysum nudifolium var nudifolium</i>
<i>Helichrysum tysonii</i>	<i>Lasiospermum bipinnatum</i>	<i>Lepidium africanum subsp africanum</i>
<i>Rumex lanceolatus</i>	<i>Senecio asperulus</i>	
Geophytic Herb		
<i>Boophone disticha</i>	<i>Cheilanthes bergiana</i>	<i>Cheilanthes hirta</i>
<i>Eucomis autumnalis subsp autumnalis</i>	<i>Haemanthus humilis subsp humilis</i>	<i>Oxalis depressa</i>
Succulent Herbs		
<i>Tripteris aghillana var integrifolia</i>		

## 10.8 Socio - Economic Environment

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

It has urban industrial manufacturing centers 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 km<sup>2</sup>. 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 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 (Queenstown-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.

Tsolwana covers an area of approximately 6000Km<sup>2</sup> in extent with a density of about 6 People/Km<sup>2</sup>. The extent of the local area of jurisdiction translates to about 16,4% of the district as a whole. Tsolwana has experienced a 3% growth since its last census count in 2001. Applying this growth factor, it is estimated that the population is about 33784 people living in about 8174 households. This figure implies an average household size of 4 persons per household.

Tsolwana is a largely rural municipality with the majority of its households residing in rural settlements. At least about 27% live in urban and peri-urban settlements. Another 16% are farm dwellers. Tsolwana population make-up is similar to that experienced by the country with 48% males and 52% females.

The GDP of Tsolwana has steadily grown from about 72 million for the two towns of Tarkastad and Hofmeyr in 1996 to approximately 191 million by end of 2008. The majority of households in Tsolwana are poor and indigent. Approximately 83.4% of households in terms of Statistics SA 2001 earn a gross income of no more than R1, 600 per month. That leaves the municipality with just about 16.6% of households that they can provide services to and expect to pay.

Unemployment is a major development challenge in Tsolwana. Unemployment in Tsolwana is estimated to be higher than that of the country but lower than that of the district and EC Province respectively. In Tsolwana, the distribution of unemployment is largely concentrated in the Hofmeyr areas when comparing the two urban centers.

## 11 The Affected Environment/ Site Description

### 11.1 Geology and Soils

According to the geology of RSA shapefile and the geological maps (3226 King Williams Town) the area in which the borrow pits are located falls within the Karoo Supergroup, Beaufort Group, Tarkastad Subgroup (Figure 11). The Tarkastad Subgroup constitutes the Katberg and Burgersdorp formations. The geology of the study area encompasses the Katberg Formation and Dolerite intrusions. These formations generally are characterized by thick horizons of yellow-grey to light greenish-grey lithofeldspathic sandstone, with subordinate bluish-grey and reddish-grey mudstones. The Katberg Formation has a total thickness of 920 m (+/- 50 m) northeast of East London, 800 m (+/- 50 m) in the central area north of Fort Beaufort, 600 m (+/- 100 m) towards the eastern area and 500 m (+/- 100 m) in the north western area.

In the central area the sandstone comprises 90-95% total thickness with greyish-red and subordinate greenish-grey mudstone constituting the remainder. North western and eastern most outcrop area comprise of mudstone constituting 30% of the formation. Horizontal lamination ("flat-bedding") and trough cross-bedding characterise the sandstones. Mudstones are generally massive.

There are also wide spread dolerite intrusions throughout the study area.

The investigation undertaken by Controlab (section 21.1) indicated that the borrow pits were either decomposed dolerite or decomposed dolerite and shale.

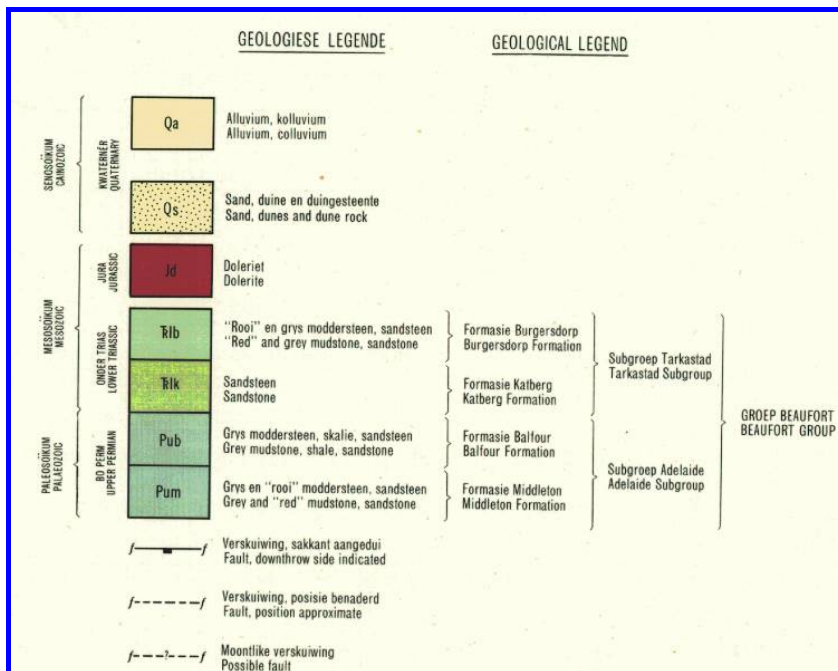
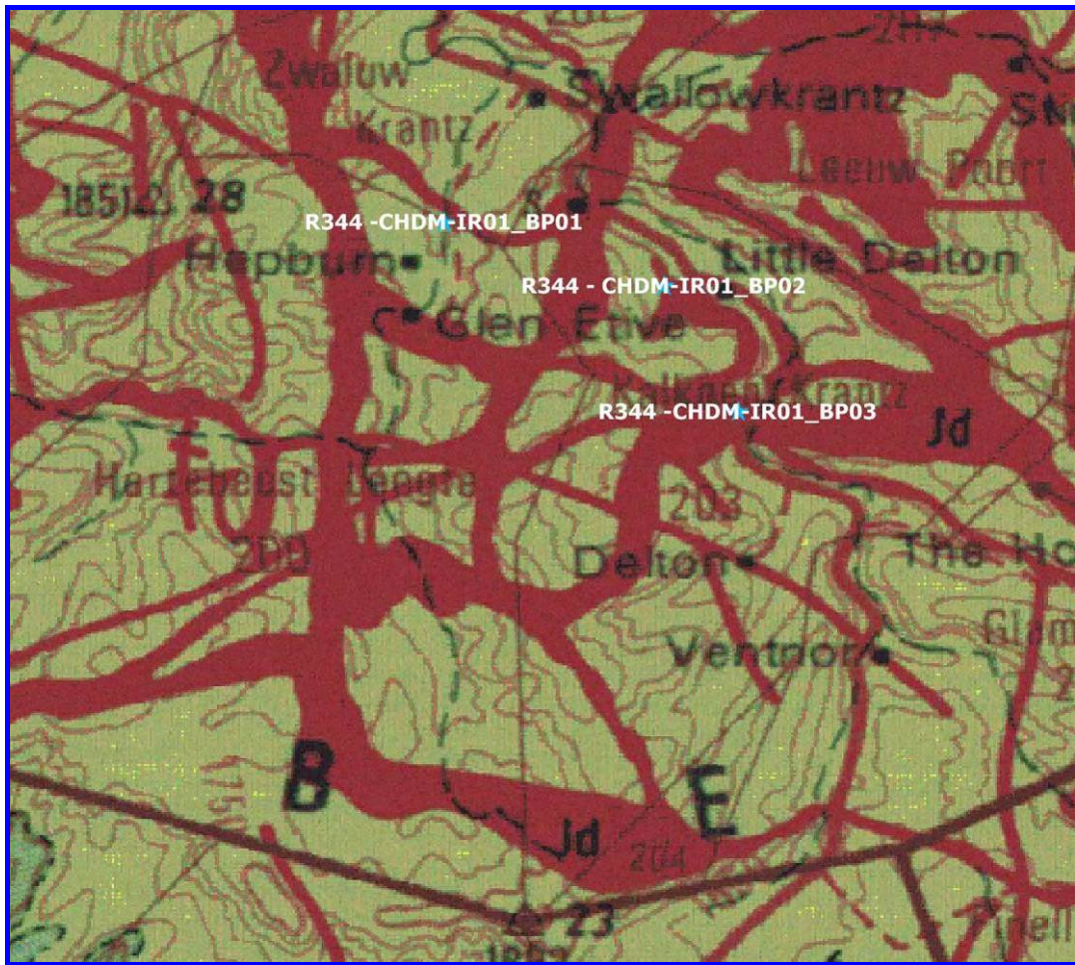


Figure 11: The geology of the area in which the Borrow pits are located (3226 King Williams Town)



### 11.1.1 Erodibility Index

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

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

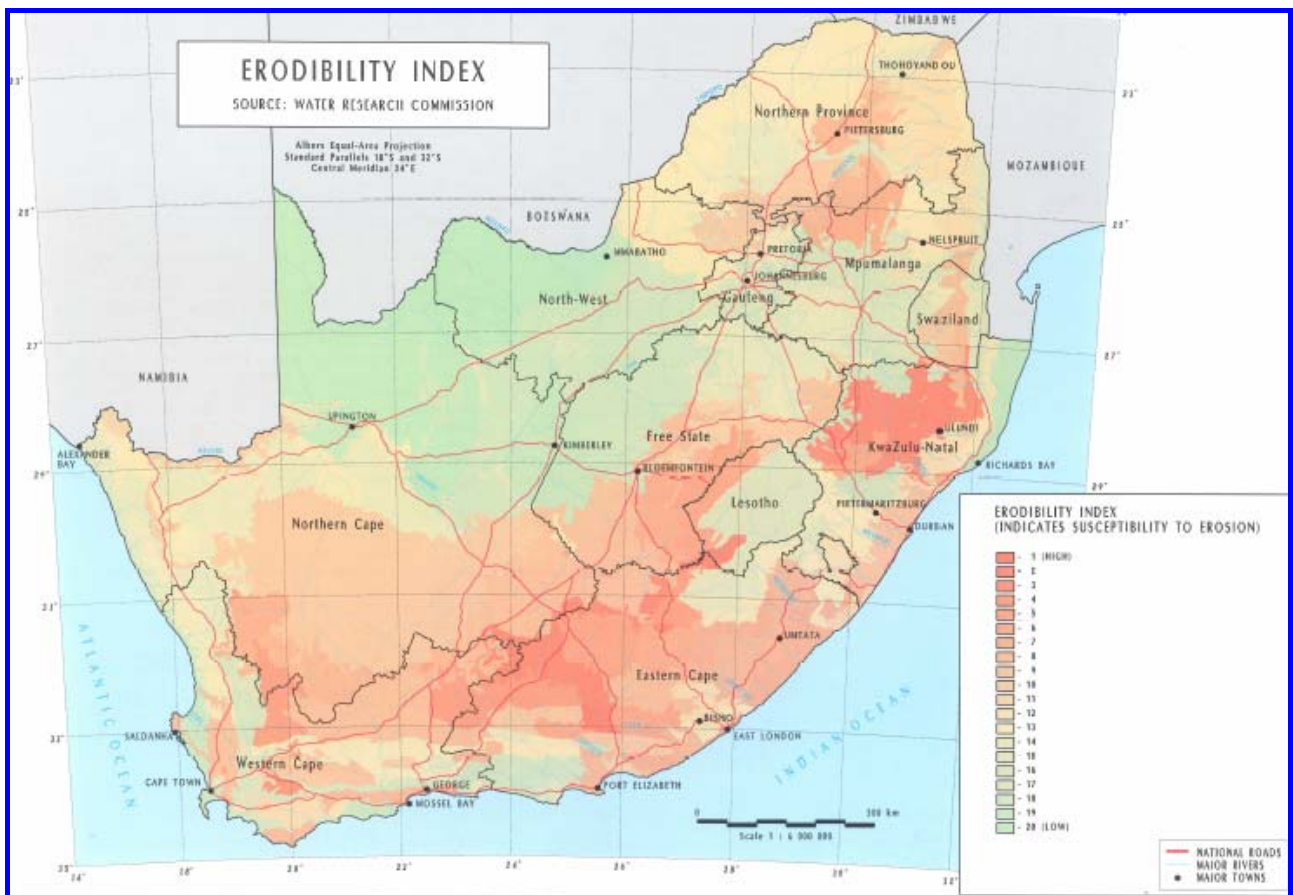


Figure 12: Erodibility Index

According to the Environmental Potential Atlas for South Africa, the study area falls within an Erodibility Index of between 7 and 9, which is at the lower end of the scale (1 being High and 20 being Low), indicating that the area is moderately to highly susceptible to erosion (Figure 12).

## 11.2 Archaeology, Palaeontology and Heritage Sites

No general listing of the sites of palaeontological, archaeological and historical significance within the area is available. The South African Heritage Resources Agency does possess a database of National Monuments within each province, but this is only of limited use since it only lists National Monuments (as declared within the Government Gazette), and the vast majority of these occur within urban areas which are unlikely to be impacted upon by borrow pit projects. One hundred and two sites have been identified in the Chris Hani District Municipal area, categorized according to their nature, namely whether they are human generated structures or natural artifacts.

A Phase 1 Archaeological Impact Assessment was undertaken on the identified borrow pits by ArchaeoMaps Archaeological Consulting (section 21.2). The findings of this assessment concluded:

Rd_Nr_	No_	AIA Finding	AIA Recommendation
R344 CHDM_IR01	R344_CHDM_IR01_BP01	No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during the Phase 1 AIA assessment of borrow pit R344_CHDM_IR01_BP01.	It is recommended that use of borrow pit R344_CHDM_IR01_BP01 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.
R344 CHDM_IR01	R344_CHDM_IR01_BP02	No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during the Phase 1 AIA assessment of borrow pit R344_CHDM_IR01_BP02.	It is recommended that use of borrow pit R344_CHDM_IR01_BP02 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.
R344 CHDM_IR01	R344_CHDM_IR01_BP03	No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during the Phase 1 AIA assessment of borrow pit R344_CHDM_IR01_BP03.	It is recommended that use of borrow pit R344_CHDM_IR01_BP03 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.

A Palaeontological Assessment was undertaken on the identified borrow pits by Metsi Metseng Geological & Environmental Services (section 21.2). The findings of this assessment concluded:

Borrow Pit	Rock type	Potential impact / significance	Mitigation measures required
R344_CHDM_IR01_BP01	<i>Jd</i> (Dolerite)	low	Igneous/metamorphic rocks or quartzitic sandstone underlie these zones, with no potential for fossils.
R344_CHDM_IR01_BP02	<i>Jd</i> (Dolerite)	low	Igneous/metamorphic rocks or quartzitic sandstone underlie these zones, with no potential for fossils.
R344_CHDM_IR01_BP03	<i>Jd</i> (Dolerite)	low	Igneous/metamorphic rocks or quartzitic sandstone underlie these zones, with no potential for fossils.

### 11.3 Climate and Air Quality

Tarkastad normally receives about 335mm of rain per year, with most rainfall occurring mainly during summer. It receives the lowest rainfall (6mm) in July and the highest (60mm) in March. The average midday temperatures for Tarkastad range from 15.1°C in June to 27.5°C in January. The region is the coldest during July when the mercury drops to 0.6°C on average during the night.

The Wienerts climatic N number for the area is between 2 and 5, which should indicate that the rocks would decompose implying that chemical weathering would dominate over mechanical weathering.

The Eastern Cape Province does not appear to be a priority area as far as air quality is concerned, as is evidenced by the number and type of industries in the Province. Monitoring of air quality in the Province is performed on a fragmented basis as no coordinated network exists. No comprehensive assessment of air quality is therefore possible.

There is however currently no major sources of air pollution in this region, aside from the contribution that domestic fires and vehicle emissions make along existing roads. Ploughed fields, unpaved roads and un-vegetated land are all sources of wind-generated dust. The majority of households, particularly those in the rural areas, rely on fossil fuels such as paraffin and wood for domestic energy. Indoor air pollution is therefore a concern in the area, although it has not been quantified.

### 11.4 Topography and Drainage

The study area is characterised by low mountains.

R344\_CHDM\_IR01\_BP01 is located at an elevation of 1471 m above mean sea level (amsl). The site is located on the side of a hill slope with the predominant slope towards the west and south. The drainage of the borrow pit is to the west and south towards the non - perennial drainage lines which intercept the non - perennial Tarka River to the north. The Tarka River has been classified as a CLASS D - largely modified - river system. The nearest non-perennial drainage line is located approximately 130 m away from the borrow pit.

R344\_CHDM\_IR01\_BP02 is located at an elevation of 1491 m above mean sea level (amsl). The site is located on a north facing hill slope. The drainage of the borrow pit is to the north towards the no - perennial drainages which intercept the non - perennial Tarka River to the north. The Tarka River has been classified as a CLASS D - largely modified - river system. The nearest non-perennial drainage line is located approximately 32 m away from the borrow pit.

R344\_CHDM\_IR01\_BP03 is located at an elevation of 1513 m above mean sea level (amsl). The drainage of the borrow pit is predominately to the east towards the non -perennial drainage lines which intercept the non - perennial Tarka River to the north west. The Tarka River has been classified as a CLASS D - largely modified - river system. The nearest non-perennial drainage line is located approximately 40 m away from the borrow pit.

As the borrow pits are existing and have been utilised previously, the topography has been significantly altered by the excavation of material from the hill slopes.

The study area falls in the primary drainage area Q41. Within this primary drainage all three borrow pits fall within the quaternary catchment area of Q41A. The mean annual precipitation of Q41A quaternary is 537.27 mm and a mean annual runoff of 33.3 mm.

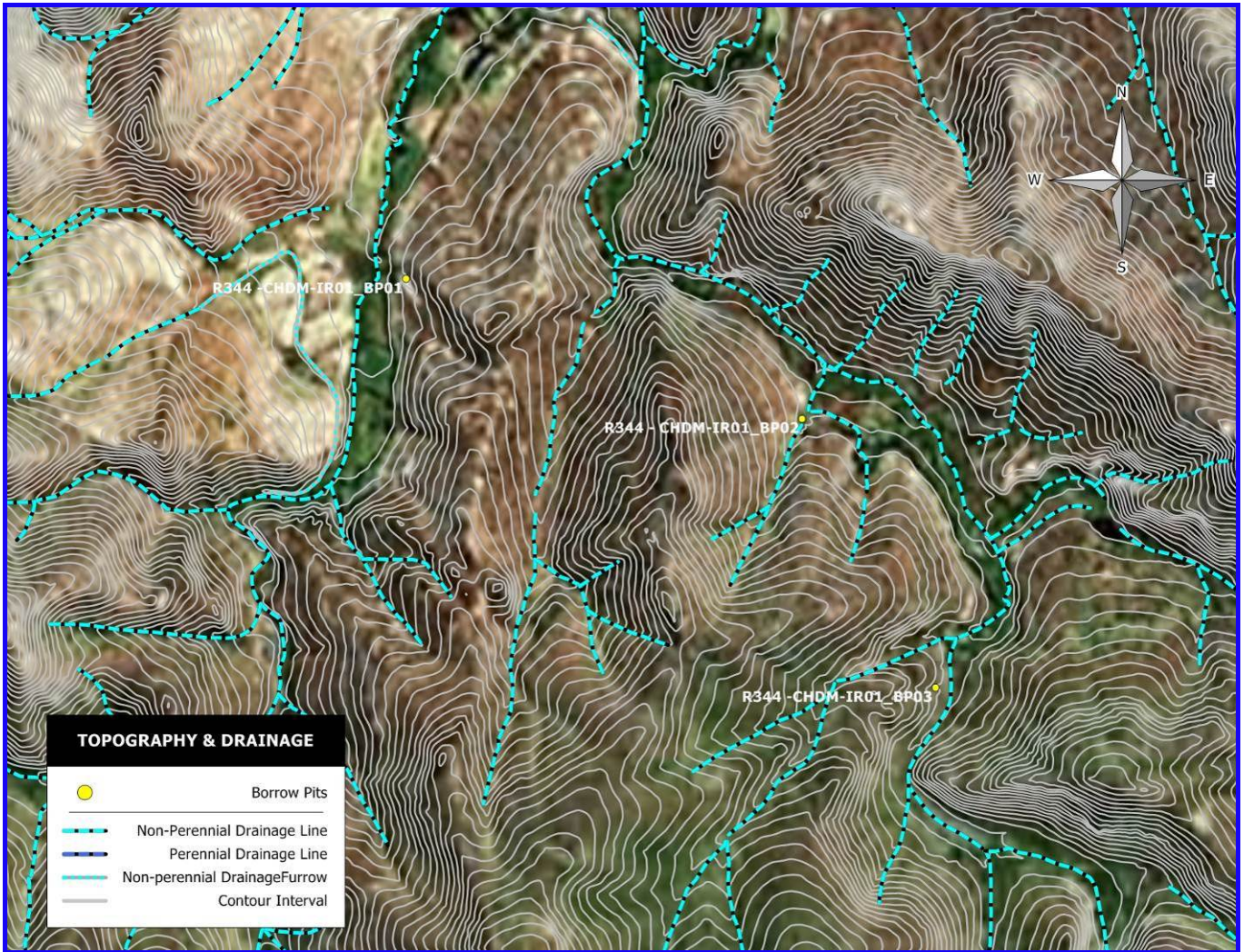


Figure 13: Drainage of the Area in which the proposed borrow pits are located.

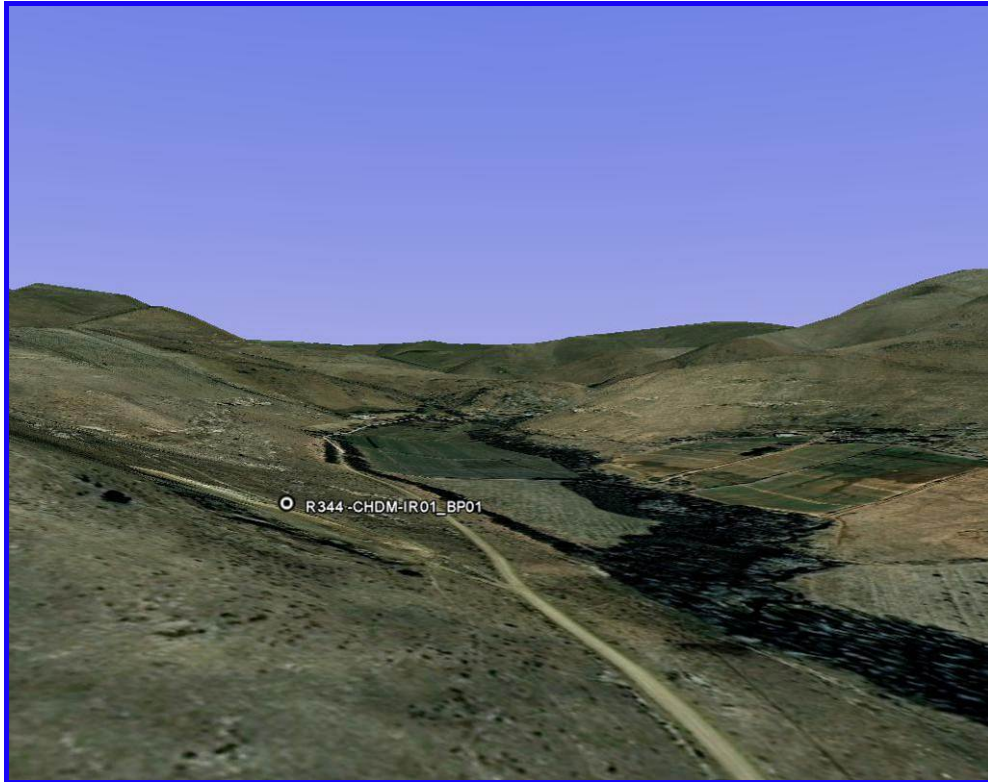




Figure 14: Terrain view indicating the positions of all the borrow pits in the landscape.

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

## 11.5 Fauna

Although a detailed faunal assessment was not undertaken, the natural diversity of animal species and animal numbers within the study has been severely affected by the degradation of habitat, hunting and trapping as well as from displacement by livestock/cultivation. It was noted that game farms are prevalent in the area and that the location of R344-CHDM-IR01\_BP01 was located on a game farm. As such there may be some small to large mammals, reptiles, amphibians in the surrounding areas. The current land use of the borrow pit site has changed the natural environment and thus is not thought to present a unique habitat for rare or endangered fauna and No Red Data List mammals were observed.

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

## 11.6 Flora

### 11.6.1 Eastern Cape Biodiversity Conservation Plan (ECBCP)

According to the ECBCP the area in which the borrow pits are located is identified as being predominantly degraded Biodiversity Land Use Management Class 2 (BLMC 2/CBA 2 - maintain near natural state) (Figure 15).

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

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

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

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



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

The ECBCP may however have significant limitations in that there may be significant differences between the ECBCP description of land use and condition and the actual land use, condition and environmental status. The sites are existing borrow pits utilised in the past and as such the areas have been transformed/disturbed.

It must be noted that while the borrow pits are located in identified CBA 2, no more than 0.98 hectares of indigenous vegetation will be removed from these borrow pits during the mining activities.

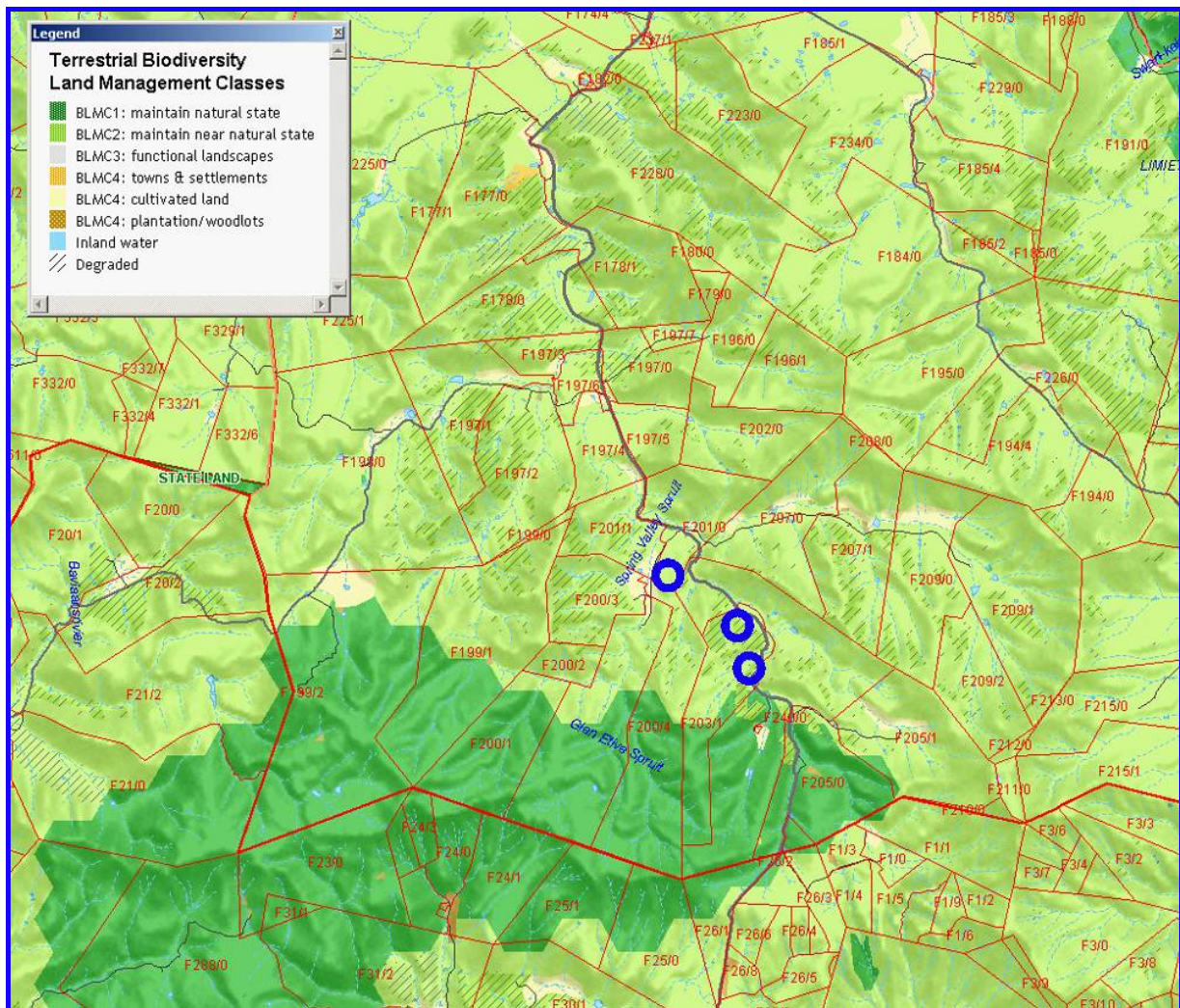


Figure 15: Eastern Cape Biodiversity Conservation plan and the location of the Borrow pits.

## 11.6.2 Vegetation Description

All three borrow pits are existing, as such the area has been disturbed significantly. The Karoo Escarpment Grassland vegetation unit identified for the area in which the proposed borrow pits are located has been transformed as a result of the past mining and agricultural activities. The borrow pits have between 75 -80% indigenous vegetation cover. The utilisation of the borrow pits is not expected to have a significant impact on the vegetation of the area.

The vegetation present in the area of the borrow pits tends to be dominated by a low diversity grassland shrub community.

### 11.6.2.1 Protection status and legislation and Species of Special Concern

#### 11.6.2.1.1 Indigenous flora

While only a preliminary botanical investigation was undertaken, it was observed that the indigenous vegetation in the area of the borrow pits was not protected or endangered species under the various enacted schedules. It was noted however that at R344\_CHDM-IR01\_BP01 that a *Hypoxis spp* was present. Under the Eastern Cape Environmental Conservation Bill of 2002 all species of the *Hypoxidaceae* Family are protected, however this has not as yet been enacted. The conservation status of the vegetation present in the area of the proposed borrow pits is seen as being low.

#### 11.6.2.1.2 Alien Invasive Plant species

Alien invasive plant species were only noted at R344\_CHDM-IR01\_BP01, with a presence of less than 1%. The borrow pits thus have none or a low density of alien species, thus having a low overall impact. These invasive species require removal according to the Conservation of Agricultural Resources Act 43 of 1983 and methods of their removal and treatment should be undertaken according to the Working for Water Guidelines.

Table 5: Alien Invasive plants present within the area of R344\_CHDM-IR01\_BP01.

No.	Botanical Name	Common Name	Family	Category
1	<i>Pinus spp</i>	-	Pinaceae	CARA 2

## 11.7 Visual Aspects

The borrow pits have all been mined in the past and are all located within proximity to access roads. As a result, these sources are visible and currently have a moderate impact on the aesthetics of the area. The area is typically agricultural, however the scenery is pleasant.

## 11.8 Socio - Economic Environment

Land use and settlement patterns of the area are influenced by the previous political division of the area. The settlement pattern is characterised by small and medium urban centres with commercial & small scale farming mainly in the urban periphery of the former RSA. The former homelands have rural towns with villages and communal farms in the outskirts of towns. The Emalahleni, Engcobo, Intsika Yethu, Sakhisizwe and part of Lukhanji (Ezibeleni, Ilinge Townships) forms part of the erstwhile Transkei, whilst Inkwanca, Inxuba Yethemba, Lukhanji and Tsolwana form part of the former RSA. A small portion of Lukhanji (Whittlesea), Tsolwana (Thornhill) and Ntabethemba used to be part of the former Ciskei.

Agriculture is regarded as the backbone of the economy of the District as the largest portion of land is utilised for agricultural purposes, and a need to exploit the available resources in a sustainable manner is regarded as a priority. Hence the node has identified a need for the revitalisation of irrigation schemes through out the district. In this regard, the Agricultural Research Council and the node are undertaking a comprehensive agricultural development plan / strategy for the district. This will form an integral part of the LED strategy that is in course of preparation.

The proposed borrow pits fall within Ward 5 of the Tsolwana Local Municipality. According to Stats SA (Census 2001) the demographics of these wards are as proceeds.

Within ward 5 of the Tsolwana Local Municipality, the population group tends to be predominantly African (99%) and as a result the predominantly spoken language in this ward is consequently Xhosa. Unemployment levels within this ward are very high at approximately 65%, with a large proportion of the ward being economically inactive. The average monthly personal income is predominantly no income or between R0 - 9600.

The proposed project is unlikely to change the socio - economic structure of the ward. However, the labour intensive construction of roads and the utilization of the borrow pits may result in the creation of temporary employment, and will be of particular benefit should the local community be provided with these employment opportunities. The socio-economic benefits of these jobs could also percolate through historically disadvantaged communities. There are thus positive socio-economic impacts in terms of creation of employment opportunities, skills transfer to the local community and providing a higher quality of access to the surrounding residents.

## 11.9 Existing Land-use

The existing land use in the area of the borrow pits consists of agricultural and open space/natural areas.

Landuse practices have resulted in the degradation of the natural environment in places. The majority of the study area is privately owned agricultural land. The utilisation of the borrow pits will not impact on any current land uses and on closure will be rehabilitated and thus should not impede any future landuses.

## 12 Potential Issues & Environmental Impacts

The following have been identified as potential environmental impacts associated with the utilisation of the borrow pits. The significance of the identified impacts is assessed in Table 7.

### 12.1 Geology & Soils

During the construction and operational phase soil loss/topsoil loss may arise as a result of vegetation removal and soil erosion which could impact negatively. The topsoil is a particularly scarce resource in this environment, and must therefore be protected against wind, erosion, compaction, alien invasive plant species and pollution as the topsoil will be needed for rehabilitation purposes.

Activities such as the removal of vegetation and earth moving activities may result in erosion in the area of the proposed borrow pits. During the closure phase, areas disturbed during the operational phase which have not be appropriately rehabilitated, may result in the continued erosion of soils in the area of the proposed borrow pits. Appropriate erosion control must be provided and vegetation cover must be established as quickly as possible following shaping and closure of the sites in order to protect the soil from erosion.

During the construction and operational phases soil pollution as a result of spillages and loss of viability due to compaction may potentially impact negatively. Spillage of hazardous/ chemical substances stored and leakage from construction equipment/machinery as well as the servicing of vehicles on site, washing of vehicles (soaps & greases) etc may result in the contamination of soils. In addition spillage from chemical toilets provided for construction staff will result in soil pollution.

The borrow pits are not normally associated with blasting activities and should therefore not have a significant impact on the geology of the area.

### 12.2 Topography & Drainage

During the operational phase, the topography may be impacted upon by extensive excavation of sections during mining activities, thus potentially changing the landscape. However it must be noted that the landscape/topography is currently impacted by the past excavation/mining activities of these existing borrow pits. Rehabilitation during the closure phase would improve the topography/landscape from its current state.

In addition, the excavation activities during the mining activities could in turn have an effect on the storm water runoff and drainage of the immediate surrounding areas.

### 12.3 Consumption of Non-renewable Resources

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

### 12.4 Surface Water/ Drainage lines

Surface water may become polluted via point source and/or diffuse discharge such as oil, fuel and chemical spills. Improper disposal of solid waste generated may pollute the aquatic environments. In addition, improper transportation and storage of fuels may potentially result in surface water pollution. Storage and maintenance of the construction machinery may potentially result in surface water pollution.

Construction & Operational 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. No mining will take place within 32 m of a water course.

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

### 12.5 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.

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

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

## 12.6 Vegetation Removal (Flora) and Habitat Disturbance

The loss of vegetation cover, loss of protected species, spread of alien invasive vegetation and loss of animal habitat during the construction and operational phases may impact negatively. However all the borrow pits are existing, and therefore have been disturbed significantly. The borrow pits do however show a vegetation cover of not less than 80%.

During the construction and operational phase as a result of vegetation clearing the permanent loss of indigenous vegetation will occur. However all construction and operation activities will be within the area already disturbed and where the vegetation to be removed is predominantly of a low sensitivity, thus the impact on indigenous vegetation will be minimal.

As a result of vegetation clearing for the utilisation of the proposed borrow pits, natural habitat may be lost. However all disturbance will be within the area of the existing borrow pits where the habitat has already been transformed and disturbed and is predominantly of low sensitivity.

During the construction and operational phase species of special concern at the borrow pits may be lost as a result of permanent removal of indigenous vegetation. This impact is seen as minimal. In addition, these species can be rescued for rehabilitation purposes.

As a result of disturbance during the construction and operational phase, there may be increased risk of alien invasion. However during the construction and operational activities clearing of alien invasives from the proposed borrow pit areas will result in a positive impact. The presence of alien invasives is however particularly low, <1% at all borrow pits.

In a regional context the vegetation unit identified is Karoo Escarpment Grassland. The Karoo Escarpment Grassland is identified as a least threatened type of ecosystem. ECBCP identified that all

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three borrow pits are located in a CBA 2 - maintain near natural landscape. It must be noted that the area has been transformed as a result of the past activities/mining activities, thus the impact on the vegetation unit should be minimal.

Most impacts in the above respect are of minor significance and can be managed (i.e. through use of existing pathways and disturbed areas). No impacts of critical significance to the vegetation are present.

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

Mining activities may result in the disruption of habitat and thus disruption to fauna. Noisy construction activities and the increase in human activity on the site are likely to disturb resident faunal species and cause them to leave the area. Animals could also be killed by construction activities if they take cover in their nests in areas where mining activities are taking place and are then destroyed or covered by collapsed material. The construction and operational phase may also result in staff actively hunting, trapping and disrupting fauna. Mining activities will however be limited to the already transformed/disturbed area and therefore impact on fauna should be minimal. The significance of the various issues identified with regards to fauna is anticipated to be low. The surrounding area is disturbed by agricultural activities.

## 12.7 Air Quality

The air quality may be impacted upon by the mining activities due to dust generation and fugitive emissions from operation, excavation & hauling vehicles. Air quality may be reduced as a result dust generation and emissions from construction vehicles and construction equipment, this impact however is short term.

## 12.8 Noise

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

## 12.9 Visual Impact

Borrow pit activities during the construction and operational phase may lead to dust and noise generation and vegetation removal and change in landform which could have a visual impact on the rural character of the area. This however is seen as a short term impact. Visual impact associated with the utilisation of the borrow pits will be more severe to the immediate residents than at distances further

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than 5 km where the visual impact should be minimal as the topography and the vegetation present should create a visual screen. Areas not rehabilitated and revegetated properly may become unsightly.

Visual impacted will be largely mitigated on closure. Rehabilitation of the existing borrow pits will ultimately improve the aesthetics of the area.

### **12.10 Archaeology, Palaeontology & Heritage Sites**

Assessment of the borrow pits yielded no archaeological or heritage resources as defined and protected by the NHRA 1999. A Palaeontological Impact Assessment was conducted on the proposed borrow pits. Assessment of the borrow pits yielded no palaeontological resources.

### **12.11 Land use**

Impact of mining on existing landuse, where current landuse differs from the proposed mining operations, however all the borrow pits are existing, and have therefore been disturbed/transformed. The borrow pits and surrounding areas are currently utilised for agriculture/game farming or open land purposes, however the temporary loss is not considered significant. Landuse will be restored on closure. The borrow pits will be restored and rehabilitated on closure thereby enhancing the landuse capabilities.

### **12.12 Socio-Economic Environment**

The project is unlikely to have any significant effects on the socio-economic structure of the area. However 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, operation and rehabilitation of the borrow pits. Labour should be sourced from the target area so that those affected stand to benefit the most.

The proposed project may impact positively by the creation of temporary employment opportunities to the local community. In addition, the employment of the local community would result in skills development which will impact positively.

### **12.13 Health and Safety**

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

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& Safety Management Plan to be implemented by the contractor. Existing unsafe excavations (with vertical faces) should be "made safe" on closure.

## 13 Environmental Impact Significance Assessment and Mitigation Measures

### 13.1 Environmental Impact Risk Assessment Methodology

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

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

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

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

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

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

Significance	Categories	Definition
Very High	1 & 2	<p>These impacts would be considered by society as constituting a major and usually permanent change to the (natural and/or social) environment.</p> <ul style="list-style-type: none"> <li>○ <b>Example:</b> The loss of a species would be viewed by informed society as being of VERY HIGH significance.</li> </ul>
High	3 & 4	<p>These impacts will usually result in long term effects on the social and/or natural environment. Impacts rated as HIGH will need to be considered by society as constituting an important and usually long term change to the (natural and/or social) environment. Society would probably view these impacts in a serious light.</p> <ul style="list-style-type: none"> <li>○ <b>Example:</b> 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.</li> </ul>
Moderate	5, 6 & 7	<p>These impacts will usually result in medium to long term effects on the social and/or natural environment. Impacts rated as MODERATE will need to be considered by society as constituting a fairly important and usually medium term change to the (natural and/or social) environment.</p> <ul style="list-style-type: none"> <li>○ <b>Example:</b> The loss of a sparse, open vegetation type of low diversity may be regarded as MODERATELY significant.</li> </ul>
Low	8, 9 & 10	<p>These impacts will usually result in medium to short term effects on the social and/or natural environment. Impacts rated as LOW will need to be considered by the public and/or the specialist as constituting a fairly unimportant and usually short term change to the (natural and/or social) environment. These impacts are not substantial and are likely to have little real effect.</p> <ul style="list-style-type: none"> <li>○ <b>Example:</b> The temporary change in the water table of a wetland habitat, as these systems are adapted to fluctuating water levels.</li> </ul> <p>or,</p> <p>There are no primary or secondary effects at all that are important to scientists or the public.</p> <ul style="list-style-type: none"> <li>○ <b>Example:</b> 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.</li> </ul>
Positive	A, B, C, D	<p>Any beneficial impact to the environment:</p> <p>A = Very Beneficial</p> <ul style="list-style-type: none"> <li>○ <b>Example:</b> Protection of an environmental asset or removal of an existing/latent negative environmental impact;</li> </ul> <p>B = Beneficial</p> <ul style="list-style-type: none"> <li>○ <b>Example:</b> Improve management of the environment;</li> </ul> <p>C = Moderately Beneficial</p> <ul style="list-style-type: none"> <li>○ <b>Example:</b> Removal of alien species from the property;</li> </ul> <p>D = Slightly Beneficial</p> <ul style="list-style-type: none"> <li>○ <b>Example:</b> Minor improvement that has no material significance to the immediate environment.</li> </ul>

### 13.2 Sensitivity

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

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

### 13.3 Impacts

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

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

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

**Table 7: Assessment of 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	Minimise the areas of disturbance or vegetation clearance. Revegetate areas that have been disturbed as soon as possible. Cut and fill slopes shall be made stable and be revegetated as soon as possible during the operational phase.	Site Specific	5	4	2	Moderate
Geology & Soils	Soil Pollution	Negative	Construction & Operational	Site Specific	5	4	2	Moderate	Under no circumstances shall hazardous substances be disposed of on site or into the surrounding environment. Accidental pollution incidents shall be reported to the Project Manager/ECO immediately and shall be cleaned up by the Contractor or a nominated clean-up organisation at the expense of the contractor. Vehicles should be well maintained. Chemical toilets are to be emptied on a regular basis and disposed of at the licensed water treatment facility	Site Specific	5	4	4	Low
Geology & Soils	Soil Compaction	Negative	Construction, Operational & Closure	Site Specific	5	4	2	Moderate	Minimise the areas of disturbance or vegetation clearance. Scarify & Revegetate areas that have been compacted as soon as possible.	Site Specific	5	7	5	Low
Geology & Soils	Topsoil Loss	Negative	Construction, Operational & Closure	Local	3	4	3	Moderate	Minimise the areas of disturbance or vegetation clearance. Topsoil to be stockpiled in designated areas and is to be used during rehabilitation. Topsoil only to be stripped from required areas and done in a way to minimize wind erosion. Stockpiles must be protected from erosion and contamination	Site Specific	5	4	3	Low
Topography & Drainage	Cut & Fill/Excavations	Negative	Construction & Operational	Site Specific	5	3	4	Low	Cut and fill slopes/Excavations shall be made stable and be revegetated as soon as possible	Site Specific	7	6	4	Low

ASSESSMENT				PRIOR TO MITIGATION					POST MITIGATION					
Environmental Issue	Environmental Impact	Positive or Negative	Phase	Spatial	Severity	Duration	Probability	Significance Assessment	Mitigation Measures	Spatial	Severity	Duration	Probability	Significance Assessment
Topography & Drainage	Increased Stormwater Runoff	Negative	Construction & Operational	Site Specific	5	8	3	Low	All areas of stormwater release must be suitable stabilized	Site Specific	8	9	5	Low
Topography & Drainage	Increased Soil Erosion	Negative	Construction & Operational	Site Specific	3	4	2	High	Minimise the areas of disturbance or vegetation clearance. Revegetate areas that have been disturbed as soon as possible. Cut and fill slopes/Excavations shall be made stable and be revegetated as soon as possible during the construction phase.	Site Specific	5	7	4	Low
Non-renewable Resources	Consumption of Non-renewable Resource	Negative	Operational	Municipal	3	2	3	High	The proposed quantities mined should not exceed limits specified in the mining plans/permits issued by DMR	Local	5	4	2	Moderate
Non-renewable Resources	Material Resources for roads not imported from far off distances	Positive	Operational	Municipal	5	5	2	Low	No Mitigation Required	N/A				#N/A
Surface Water	Surface water contamination	Negative	Construction & Operational	Local	4	5	5	Low	Areas of spillages and/or contamination shall be cleaned up immediately and disposed of at a licensed landfill site. Release of chemicals directly into the environment is strictly prohibited. Waste is to be removed from the area on a regular basis.	Site Specific	8	5	8	Low
Surface Water	Sedimentation	Negative	Construction & Operational	Local	3	4	3	Moderate	Minimise the areas of disturbance or vegetation clearance. Revegetate areas that have been disturbed as soon as possible. Cut and fill slopes/excavations shall be made stable and be revegetated as soon as possible during the construction phase. A stormwater cut-off berm shall be provided upslope from the mining areas. Gabions shall be provided at stormwater release areas	Site Specific	5	5	8	Low

ASSESSMENT				PRIOR TO MITIGATION					POST MITIGATION					
Environmental Issue	Environmental Impact	Positive or Negative	Phase	Spatial	Severity	Duration	Probability	Significance Assessment	Mitigation Measures	Spatial	Severity	Duration	Probability	Significance Assessment
Surface Water	Decreased water quality	Negative	Construction & Operational	Local	5	6	5	Low	A stormwater cut-off berm shall be provided upslope from the mining areas. Gabions shall be provided at stormwater release areas	Site Specific	8	5	8	Low
Surface Water	Decrease in Benthic microalgae	Negative	Construction & Operational	Local	5	6	5	Low	A stormwater cut-off berm shall be provided upslope from the mining areas. Gabions shall be provided at stormwater release areas	Site Specific	8	5	8	Low
Surface Water	Decrease in Submerged macrophytes	Negative	Construction & Operational	Local	5	6	5	Low	A stormwater cut-off berm shall be provided upslope from the mining areas. Gabions shall be provided at stormwater release areas	Site Specific	8	5	8	Low
Surface Water	Decrease in Macroinvertebrates	Negative	Construction & Operational	Local	5	6	5	Low	A stormwater cut-off berm shall be provided upslope from the mining areas. Gabions shall be provided at stormwater release areas	Site Specific	8	5	8	Low
Surface Water	Change in fish community structure	Negative	Construction & Operational	Local	5	6	5	Low	A stormwater cut-off berm shall be provided upslope from the mining areas. Gabions shall be provided at stormwater release areas	Site Specific	8	5	8	Low
Surface Water	Surface water abstraction	Negative	Operational	Local	3	5	2	Moderate	Applications for a water use license must be made in terms of the National Water Act, (Act 36 of 1998). Conditions contained in the approval(s) must be strictly adhered to. Abstraction rates should not exceed those specified in the water use license	Local	4	5	4	Low
Groundwater	Groundwater contamination	Negative	Construction & Operational	Local	4	3	3	Moderate	Areas of spillages and/or contamination shall be cleaned up immediately and disposed of at a licensed landfill site	Site Specific	5	4	5	Low



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. Abstraction rates should not exceed those specified in the water use license	Local	4	5	4	Low
Vegetation and Habitat	Loss of indigenous vegetation	Negative	Construction & Operational	Local	3	4	3	Moderate	Minimise 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	Minimise the areas of disturbance or vegetation clearance. Revegetate areas that have been disturbed as soon as possible. No hunting/trapping of any animals is strictly forbidden.	Site Specific	8	8	5	Low
Vegetation and Habitat	Alien Invasive Plant Species	Negative	Construction, Operational & 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 loose material that could produce dust when travelling. Limit the areas that need to be cleared of vegetation. Revegetate disturbed areas as soon as possible after clearing.	Site Specific	8	8	7	Low
Air Quality	Fugitive Emissions	Negative	Construction & Operational	Site Specific	8	8	3	Low	Vehicles should be properly maintained and serviced.	Site Specific	8	8	5	Low

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
Noise	Noise Pollution	Negative	Construction & Operational	Local	3	5	2	Moderate	All noise sources shall be controlled at the source; Vehicle silencers should be in good working order and should be maintained. No construction/operational work should be done after working hours or on Sundays and Public Holidays.	Local	4	5	3	Low
Visual	Change in Sense of Place	Negative	Construction, Operational & Closure	Local	3	2	3	High	Borrow Pits are to be rehabilitated to represent the former habitat/surrounding land use character.	Local	5	4	6	Low
Visual	Decreased Visual Quality	Negative	Construction, Operational & Closure	Local	4	2	4	Moderate	Protect and maintain the vegetated slopes as a natural screen. Ensure that any signage (i.e. at entrance gate of construction camp site) is visible but not visually intrusive. Ensure good housekeeping at the construction campsite and control litter and general site cleanliness. Ensure that adequate ablution facilities are in place, that the workforce utilises these facilities and that they are placed where they are not visible to the public.	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

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.	Local	8	6	7	Low
Archaeology, Palaeontology & Heritage Sites	Loss of sites	Negative	Construction & Operational	Local	3	3	2	High	All finds of human remains shall be reported to the nearest police station. Human remains from the graves of victims of conflict, or any burial ground or part thereof which contains such graves and any other graves that are deemed to be of cultural significance may not be destroyed, damaged, altered, exhumed or removed from their original positions without a permit from the South African Heritage and Resource Agency (SAHRA) Work in areas where artefacts are found shall cease immediately and SAHRA notified. Under no circumstances shall the Contractor, employees, subcontractors or subcontractors' employees remove, destroy or interfere with archaeological artefacts.	Local	5	6	7	Low

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	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	Improved Road Quality	Positive	Operational	Municipal	4	3	3	Moderate	No Mitigation Required	N/A				
Socio -Economic	Safety Risk	Negative	Construction & Operational	Local	2	2	3	Very High	The mining area shall be fenced off and access to the site shall be restricted by means of a gate for Borrow pits R344_BP02 & R344_BP03. R344-CHDM-IR01_BP01 is not to be fenced as per the landowners request, but is sufficiently removed from public access. All Occupational Health & Safety Standards shall be strictly adhered to. Excavations should be made safe prior to closure.	Site Specific	2	2	8	Moderate

### **The No-Go Alternative**

The “no-go” alternative simply involves leaving the sites in their current condition and not undertaking the proposed mining operations at any of the borrow pits. This means that the impacts identified as a result of the construction/operational phase would not occur, these being impacts related to vegetation removal, soil erosion and pollution, surface water, groundwater and terrestrial pollution, air quality and visual impacts. Although no negative environmental issues identified for the construction/operational phase would occur, the existing borrow pits would not be rehabilitated thus leaving them in their current visual state and without the use of these sources the financial feasibility to re-gravel/maintain the district road would be jeopardized, thus potentially resulting in the road remaining in a poor condition, and in all likelihood deteriorating further, resulting in further soil erosion and unsafe road conditions.

## 14 Mitigatory Measures & Environmental Management

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

### 14.1 Responsibilities of the Role Players

#### 14.1.1 Developer

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

#### 14.1.2 Consulting Engineer

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

### 14.1.3 Contractor

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

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

### 14.1.4 Environmental Control Officer (ECO)

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

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

The ECO shall be responsible for liaising with the DMR.

### **Monitoring of Compliance with the EMP**

The ECO shall conduct internal monthly environmental audit reports for the applicant/developer and will supply quarterly 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

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description of the general state of the site, with specific reference to sensitive areas and any matters of non-compliance. The ECO is to suggest corrective action measures to eliminate the occurrence of the non-compliance incidents. In order to keep a record of any non-compliance, an Environmental Incident Record shall be kept.

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

#### 14.1.5 Environmental Liaison Officer (ELO)

The contractor shall appoint an Environmental Liaison Officer (ELO) to assist with day-to-day monitoring of the construction activities. Any issues raised by the ECO shall be routed to the ELO for the contractors' attention. The ELO shall be *permanently* on site during the construction phase to ensure daily environmental compliance with the EMP and shall 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 ELO shall be responsible for undertaking weekly environmental inspections (according to the criteria specified in the EMP), and accompany the ECO during site visits, audits or assessments.

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

## 14.2 General Requirements

### 14.2.1 Mining Plans

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

### 14.2.2 Demarcating the mining area

- The mining area must be clearly demarcated by means of beacons at its corners and/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.
- No fencing is to be erected at R344-CHDM-IR01\_BP01, this is at the request of the Landowner - Mr W.H. Scott.
- Mining operations shall only take place within this demarcated area.
- Mining is to take place according to the proposed mine development plans. Mined out areas are to be used as spoil site thereby facilitating rehabilitation.



## 14.3 Infrastructural Requirements

### 14.3.1 Topsoil Management

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

#### 14.3.1.1 Topsoil stripping

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

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

#### **14.3.1.2 Soil stockpiling**

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

#### **14.3.2 Access to the Borrow Pit Sites**

##### **14.3.2.1 Establishment of Access Roads**

- The access road to the mining areas and the camp-site/site office must be via existing access roads/ jeep tracks.
- Should a portion of the access road be upgraded or newly constructed the following must be adhered to:
  - The route shall be selected that a minimum number of bushes or trees are felled and existing fence lines shall be followed as far as possible.

- Water courses and steep gradients shall be avoided as far as is practicable.
- Adequate drainage and erosion protection in the form of cut-off berms or trenches shall be provided where necessary.
- 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 fencing is to be erected at R344-CHDM-IR01\_BP01.
- No other routes will be used by vehicles or personnel for the purpose of gaining access to the site.

#### **14.3.2.2 Maintenance of Access Roads**

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

#### **14.3.2.3 Dust control on the access and haul roads**

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

#### **14.3.2.4 Rehabilitation of access roads**

- Whenever a mining permit is suspended, cancelled or abandoned or if it lapses and the holder does not wish to renew the permit or right, any access road or portions thereof, constructed by the holder 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 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 ECO may require that the soil be analyzed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a seed mix to the ECO specification.
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### 14.3.3 Office/Camp Sites

#### 14.3.3.1 Establishing Office/Camp Sites

- Should any office/ camp sites be established, these are to be established within the boundaries of the mining area.
- No camp or office site shall be located closer than 100 meters from a stream, river, spring, dam or pan.
- The area chosen for these purposes shall be the minimum reasonably required in order to remove as little vegetation as possible.
- Topsoil shall be handled as described in this EMP. This topsoil is to be used for rehabilitation of the area once the office/camp sites have been removed.
- Only gas cooking facilities shall be allowed for purposes of making food. No open fires shall be allowed.
- Lighting and noise disturbance or any other form of disturbance that may have an effect on the public living in the vicinity shall be kept to a minimum by avoiding work after hours.

#### 14.3.3.2 Toilet facilities, waste water and refuse disposal

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

- Spills should be cleaned up immediately to the satisfaction of the ECO by removing the spillage together with the polluted soil and by disposing of them at a licensed waste disposal facility.
- Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., shall be stored in a container at a collecting point and collected on a regular basis and disposed of at a licensed waste disposal facility.
- All other waste shall also be removed from site on a regular basis and disposed of at a licensed waste disposal facility.
- Waste containers shall be provided with lids or netting to prevent waste from being disturbed by scavengers or being blown away by wind.
- Specific precautions shall be taken to prevent refuse from being dumped on or in the vicinity of the camp site. This could include environmental awareness training and the provision of a suitable number of refuse bins.
- No burning of refuse is to take place on site.
- Materials shall be appropriately secured to ensure safe passage between destinations. Loads including, but not limited to sand, fine vegetation, refuse and paper shall have appropriate cover to prevent them spilling from the vehicle during transit. The Contractor shall be responsible for any clean-up resulting from the failure of his employees, or suppliers, to properly secure transported materials.

#### **14.3.3.3 Rehabilitation of the office/camp site**

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

from the mining operation be corrected and the area be seeded with a seed mix to the ECO specification.

- Photographs of the camp and office sites, before, during and after the mining operations shall be taken by the ECO and/or ELO at selected fixed points and kept on record.

#### 14.3.4 Maintenance Yard & Storage Areas

##### 14.3.4.1 Establishing the vehicle maintenance yard and secured storage areas

- Should a vehicle maintenance yard be required, this vehicle maintenance yard and secured storage areas shall not be located closer than 100 meters from any stream, river, spring, dam or pan, and shall be within the boundaries of the mining area.
- The areas chosen for these purposes shall be the minimum reasonably required and involve the least disturbance to vegetation.
- Topsoil shall be removed from these areas and handled as described in this EMP.
- The vehicle maintenance yard and secured storage areas shall be constructed of impermeable material and bunded.
- Runoff from vehicle maintenance yards and secured storage areas shall be contained on site in a suitable receptacle and removed for appropriate disposal at a licensed waste disposal facility. The receptacle shall be emptied when 75% full. Records of safe disposal shall be kept on site and presented to the ECO.
- Store all materials defined as hazardous within a bunded and secure area (>50L).
- The floor and bund walls should be impervious to the material stored and should be capable of containing 110% of the total volume of hazardous substance stored.
- Fuel or lubricant tanks shall be secured and provided with collision protection.
- Valves shall be locked when not in use, and shall be protected from vandalism and unauthorized use.
- Valves shall be within the confines of the bunded/impervious areas.
- Small quantities of hazardous substances (50L or less) shall be stored in appropriate containers within a secure storage area.
- Base of the storage area shall be impervious and so designed as to ensure that the hazardous substances do not infiltrate into the soil.
- Used fuels, oils, hydraulic fluids, paints and solvents and grease shall be stored in drums or other suitable containers. Care shall be taken to avoid ingress of rain water into containers.
- Once the containers are full then they shall be labeled, sealed and removed from the site to a licensed waste disposal site.
- The relevant Material Safety Data Sheets (MSDS) shall be available on Site. Procedures detailed in the MSDSs shall be followed in the event of an emergency situation.

- Provide collection systems (i.e. trays or impervious linings) under machinery or equipment that may dispense hazardous substances (i.e. generators and pumps).

#### **14.3.4.2 Maintenance of vehicles and equipment**

- The maintenance of vehicles and equipment used for any purpose shall take place only in the maintenance yard areas provided.
- The maintenance yard areas shall be fully contained and impervious.
- Runoff from the maintenance yard areas shall be collected and contained on site in a suitable receptacle and removed for appropriate disposal at a licensed waste disposal facility. The receptacle shall be emptied when 75% full. Records of safe disposal shall be kept on site and presented to the ECO.
- Equipment used in the mining/ process must be adequately maintained so that during operations it does not spill oil, diesel, fuel, or hydraulic fluid.
- Machinery or equipment used on the mining area must not constitute a pollution hazard. The ECO shall order such equipment to be repaired or withdrawn from use if he or she considers the equipment or machinery to be polluting and irreparable.
- The washing of equipment and vehicles shall be restricted to urgent or preventative maintenance requirements only. All washing shall be undertaken in a wash bay area which must be equipped with a suitable impermeable floor and sump / oil trap.

#### **14.3.4.3 Waste disposal**

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

- All spills should be cleaned up immediately to the satisfaction of the ECO by removing the spillage together with the polluted soil and by disposing of them at a licensed waste disposal facility

#### **14.3.4.4 Rehabilitation of vehicle maintenance yard and secured storages areas.**

- On completion of mining operations, the above areas shall be cleared of any contaminated soil, which must be disposed of at a licensed waste disposal facility. Records of safe disposal shall be kept on site and presented to the ECO.
- All buildings, structures or objects on the vehicle maintenance yard and secured storage areas shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002.
- The surface shall be ripped or ploughed to a depth of at least 300mm and topsoil previously removed from these areas shall be spread evenly to its original depth over the whole area.
- The area shall then be fertilized if necessary in order to assist re-establishment of the vegetation and then be seeded with an indigenous grass seed mix.

## **14.4 Operational Procedures**

### **14.4.1 Limitations on mining**

- Mining shall be limited to the areas indicated on the mining plans for each individual borrow pit.
- The contractor shall ensure that operations take place only in the demarcated areas.
- New mining excavations will not be conducted within 32 m of a drainage line.
- Security must be put in place to prevent unauthorized access to the site.
- The entire mining area is to be fenced is where indicated by the mining plan for the particular borrow pit utilised.
- Appropriate warning signage is to be erected around the mining area.
- Open/close status of existing gates must be undertaken in consultation with the existing landowner.

### **14.4.2 Water Use License**

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



### 14.4.3 Excavations

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

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

### 14.4.4 Rehabilitation of excavation areas

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

- The excavated area must serve as a final depositing rocks and coarse material not used in the road construction.
  - Waste material (general waste, litter, etc) shall not be deposited in the excavations.
  - Once excavations have been refilled and profiled with acceptable contours and erosion control measures, the topsoil previously removed shall be returned to form a layer no less than 50mm. If insufficient topsoil is available, then it must be imported from elsewhere if such material is available.
  - The area shall be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with an indigenous grass seed mix in order to propagate the locally or regionally occurring vegetation.
  - Near vertical slopes (1:1 to 1:2) must be stabilized using natural rock wall structures constructed using conventional building methods or in forms with slurry forced between the structures. All structures must have a 'natural' look and facilities for plants to grow in.
  - All areas where the slopes are 1:3 to 1:6 must be logged or otherwise stepped (using stabilization cylinders or similar) in order to prevent soil erosion. Logs/ cylinders must be laid in continuous lines following the contours and spaced vertically 0.8-1.2 m apart, depending on the steepness of the slope. These logs/ cylinders must be secured by means of steel pegs and wire in rocky areas, and treated wooden pegs in other areas.
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- The post-mining area must be fenced where fencing has been indicated on the borrow pit mining plan in order to prevent access by livestock until such time that the vegetation has been allowed to establish sufficiently.
- The site must remain fenced at R344\_BP02 & R344\_BP03 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 fencing is to be erected at R344-CHDM-IR01\_BP01.
- No dangerous faces which present a safety threat to communities should be left.

#### 14.5 Vegetation Removal and Habitat Disturbance

- Natural features, indigenous flora and fauna within the vicinity of the project works, should be protected and damage or disturbance prevented or minimised, specifically:
  - No plant species outside of the designated mine site and associated areas may be removed.
  - No mining staff may have access to indigenous vegetation outside of the Site.
  - The use of indigenous plants as firewood is prohibited.
  - All fauna (including domestic livestock) within, and surrounding the site, shall be protected. They shall not be caught, poisoned, trapped, snared or killed.
  - The minimum amount of vegetation must be removed. Excessive clearing of a site must be avoided. Disturbance outside of the immediate construction area must be avoided.
  - Replanting of these or other indigenous species in disturbed areas will be required, under the guidance of the Environmental Controller.
  - Indigenous Vegetation Removal may not exceed 0.98 ha at each borrow pit.
- Planning and construction must ensure that alien plants are not introduced to the disturbed areas. This can be accomplished by:
  - Utilising the saved topsoil from the construction area and regular monitoring during the revegetation phase and immediately after the revegetation phase.
  - Preventing continuous disturbances of the rehabilitated areas.
  - Alien invader species must be removed from the site and destroyed as per the DWAF Working for Water specifications for that species.
  - Any regrowth must be controlled in the same manner.
  - Soil should not be moved from one part of the site to another unnecessarily.

## 14.6 Surface Waters/Drainage Lines

- Site staff shall not be permitted to use the stream/drainage lines/water bodies for the purpose of bathing, washing of clothing or as a water resource.
- The stream/drainage/inland water bodies lines shall not be used for mining activities such as washing of equipment or the disposal of any type of waste.
- Water may not be abstracted from the stream for any reason or use, unless authorised by the Department of Water Affairs.
- All fuel, chemical, oil storage areas shall be confined to areas at least 100 meters away from any watercourse and/or drainage line and is to be secured and appropriately stored on bund areas and in storage areas.
- Appropriate structures and methods to confine spillages such as the construction of berms and pans shall be used in order to prevent contamination of the rivers and streams.
- Release of chemicals directly into the environment is strictly prohibited.
- Waste should be managed and removed from site on a regular basis and the use of degreasing agents should be strictly prohibited.
- Illegal dumping of construction material within the Drainage Environment is strictly prohibited.
- No new mining excavations are to be allowed within 32 m of the drainage lines.

## 14.7 Stormwater Management

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

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

- No rock, silt, petroleum product, timber, vegetation, domestic waste, or any deleterious substance shall be placed or allowed to disperse directly into the drainage lines.
- Halt construction activity on exposed soil during events of high rainfall intensity and runoff.
- Minimise vegetation cover removal on all the cleared areas - i.e. only clear those areas where mining and stockpiling is currently taking place.

- A cutoff-berm must be located above the borrow pit face, protecting the active mining area and topsoil and overburden stockpiles from erosion. This storm water will then be channelled towards the natural drainage in the area.
- Soil erosion shall not be tolerated on the Site. Uncontrolled erosion will cause siltation and pollution of the downstream areas and result in loss of valuable topsoil. The Contractor should take all reasonable measures to prevent soil erosion and protect areas susceptible to erosion. Erosion prevention measures must be implemented to the satisfaction of the ECO and DMR.
- Areas particularly susceptible to erosion include:
  - areas stripped of topsoil,
  - soil stockpiles, and
  - steep slopes (gradients>8%).
- Where erosion does occur, the Contractor shall reinstate such areas to the satisfaction of the DMR through the construction of contour berms, cut-off drains, or planting of grass sods / ground cover, as may be necessary. Topsoil that has been washed away shall be replaced.
- The berms will remain in place after closure in order to allow for the protection of the downstream environment from sedimentation and erosion which may arise during the rehabilitation period prior to the establishment of adequate grass cover.

#### 14.8 Air Emissions

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

- Minimise idling of engines at all times.

#### 14.9 Noise Management

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

#### 14.10 Visual Quality

- Protect and maintain the vegetation not required to be removed as a natural screen.
- Ensure that any signage (i.e. at entrance gate of construction camp site) is visible but not visually intrusive.
- Ensure good housekeeping and control litter and general site cleanliness. The construction camp should be so sited so as to limit its visual impact.
- Ensure that adequate ablution facilities are in place, that the workforce utilises these facilities and that they are placed where they are not visible to the public.
- Workforce shall be dressed in appropriate neat and safe construction uniforms.
- Bright colours shall only be used for the safety issues for which they are intended.
- Safety lighting should only be used for the safety issues for which they are intended.
- Only emergency after-hours work should be done.
- Rehabilitation of Borrow pits after utilisation must be undertaken to decrease visual impact

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

- The Contractor shall have a first aid box and a trained First Aider (as required by the OHS Act) available on site at all time.
- Potable (human drinking quality) drinking water shall be provided to all construction crews at all times.
- The Contractors (and all sub-contractors) shall provide all their employees (permanent, contracted or casual) with:

- Overall that have a reflective strip across the back, and around both legs
  - Steel capped safety boots
  - Hard hats
  - These are to be worn on the site at all times
- The Project Manager shall ensure that there are White Hard hats and reflective vests (yellow with reflective strip) available for use by any visitors, other project consultants and authorities.
  - The Contractor shall maintain a site office that is clearly identified. A sign instructing all visitors to report to the site off must be erected at the site entrance. Visitors shall not move around the site unaccompanied.
  - The contractor shall ensure that all construction vehicles using public roads are in a roadworthy condition, they adhere to speed limits, their loads are secured and that all other regulations are adhered to.
  - The mining area must be placed out of bounds to members of the public and other unauthorized persons.
  - Security must be put in place to prevent unauthorized access to the site.
  - The entire mining area is to be fenced where indicated by the mining plan.
  - Appropriate warning signage is to be erected around the mining and processing area.
  - The contractor will be required to develop a Health and Safety Plan identifying all potential health and safety hazardous and providing a plan and programme for the management and monitoring of these risks.

#### **14.12 Emergency Procedures & Remediation**

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

#### **14.13 Fire Risk & Burning**

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

#### **14.14 Accidental leaks & spillages**

- An Emergency Action Plan and Procedure for the prevention and remediation of spillages of hazardous substances shall be developed by the Contractor. This must include clear roles & responsibilities.
- The Contractor shall ensure that his employees are aware of the procedure to be followed for dealing with spills and leaks, which shall include the immediate notification of the Project Manager, ECO and the relevant authorities.
- The Contractor shall ensure that the necessary materials and equipment for dealing with spills and leaks is available on site at all times.
- Potentially hazardous materials shall be handled and stored on site in containers with tight lids that shall be sealed and disposed of at an appropriately permitted hazardous waste disposal site.
- The Contractor shall maintain a hazardous materials register which must document the use, storage, final destination and method of disposal of all hazardous substances.
- The contractor shall submit copies of Material Safety Data Sheets (in accordance with the requirements of the OHS Act - i.e. sixteen point MSDS format) to the ECO. Copies shall also be kept on site.
- Treatment and remediation of the spill areas shall be undertaken to the reasonable satisfaction of the DMR.
- In the event of a hydrocarbon spill, the source of the spillage shall be isolated and contained (i.e. be protected from rainfall and surface runoff). The Contractor shall ensure that there is always a supply of absorbent material readily available to absorb / breakdown spilt hydrocarbon material and where possible, materials designed to encapsulate minor hydrocarbon spillage. This is particularly relevant in the fuel storage and dispensing area.

- The quantity of such materials shall be able to handle a minimum of 200liters of hydrocarbon liquid spill.
- The telephone numbers for the closest Hazardous Materials Emergency Response offices should be prominently displayed as bitumen and diesel spillage frequently occur on mining sites. A swift cleanup procedure is critical in order to prevent contamination.

#### 14.15 Archaeology, Palaeontology & Heritage Sites

- All recommendations by the Specialists (section 11.2 & section 21.2) and all recommendations by SAHRA must be adhered to.
- All finds of human remains shall be reported to the nearest police station.
- Human remains from the graves of victims of conflict, or any burial ground or part thereof which contains such graves and any other graves that are deemed to be of cultural significance may not be destroyed, damaged, altered, exhumed or removed from their original positions without a permit from the South African Heritage and Resource Agency (SAHRA)
- Work in areas where artifacts are found shall cease immediately and SAHRA notified.
- Under no circumstances shall the Contractor, employees, subcontractors or subcontractors' employees remove, destroy or interfere with archaeological artifacts.
- Any person who causes intentional damage to archaeological or historical sites and/or artifacts could be penalized or legally prosecuted in terms of the national Heritage Resources Act 25 of 1999.
- A fence of at least 3m outside the extremities of the site shall be erected to protect archaeological sites.
- All known and identified archaeological sites shall be left untouched.
- In terms of the National Heritage Resources Act (Act 25 of 1999), in the event that any object or material of archaeological or palaeontological importance is noted during the construction & operational process, work in the immediate area should be immediately stopped and SAHRA notified without delay. Should any such sites be identified (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, marine shell and charcoal/ash concentrations), unmarked human burials or other categories of heritage resources are found during the proposed activities, SAHRA APM Unit (Mariagrazia Galimberti, Tel: 021 462 4502) must be alerted immediately, and an accredited professional archaeologist must be contacted as soon as possible to inspect the findings.
- Should substantial fossil remains (notably articulated vertebrate skeletons or skulls) be exposed during construction, however, the ECO should safeguard these - in situ, where feasible. SAHRA



and / or a professional palaeontologist should then be alerted as soon as possible so that appropriate mitigation measures can be implemented.

#### 14.16 Socio-economic

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

#### 14.17 Community Relations

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

#### 14.18 Work Stoppage

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

#### 14.19 Site Closure/Decommissioning

The Applicant, the Department of Roads and Public Works, shall be responsible for the complete rehabilitation of the sites, access roads, site camp / office, stockpile area, ablution facilities and storage areas.

- All site infrastructure, equipment, plant, and other items used during the mining period will be removed from the site in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 and those areas will be ripped and then covered with a 50mm thick layer of topsoil. Those areas will then be hydroseeded with a mix of grasses indigenous to the area.
- All waste shall be removed from site. It will not be permitted to be buried or burned on the site.
- All access roads or portions thereof, constructed by the holder and which will no longer be required by the landowner/tenant, shall be removed/ripped and/or rehabilitated in order to represent the former habitat.
- Foreign materials, which may hamper the re-growth of the vegetation, must be removed prior to rehabilitation and disposed of at a licensed waste disposal site.
- All cleared sites are rehabilitated with indigenous grass species.

- The mine must conform to the designed closure specifications, including drainage, slope stability, topsoiling and tree / grass planting.
- Drainage structures must be left intact.
- Areas showing signs of erosion due to mining activities shall be suitably stabilized or rehabilitated.
- All abluion facilities shall be removed from site.
- The mine area will be fenced with a stockproof fence to prevent access by livestock until such time that the vegetation has been allowed to recover. This will be undertaken only where indicated by the mining plans. No dangerous faces which present a safety threat to communities will be left.
- 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.
- Remaining boulders and spoil will be pushed up against the slopes of the mine face. That rock material will be covered with overburden (decomposed rock) and a 50cm thick layer of topsoil and then hydroseeded.
- Final rehabilitation shall be completed within a period specified by DMR and should take cognizance of the season.

## 15 Quantum of Financial Provision for Rehabilitation

The Quantum of Financial Provision 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.

<b>Table B.11: Rates (per hectare) to determine the quantum for financial provision (Class C mines)</b>			
	<b>Environmental sensitivity of mine area</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Rate per hectare to determine the quantum (rands)</b>	20 000.00	50 000.00	80 000.00
<b>Minimum amount</b>	R 10 000.00		

## 16 Monitoring & Performance of the EMP

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

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

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

## 17 Environmental Awareness

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

## 18 Environmental Objectives and Goals

### 18.1 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 Mineral Resources.

## 18.2 Socio-Economic Aspects

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

**To contribute significantly and meaningfully towards the economic and social development of the surrounding communities within the 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.

## 18.3 Archaeological, Palaeontological & Heritage Aspects

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

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

Specific goals include:

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

## 19 Public Participation

The public participation process for the utilisation of the borrow pits identified on R344 was held in conjunction with the public participation process for all the identified road sections in this area and their relevant identified borrow pits.

### 19.1 Advertisement

- Public participation was initiated by the placement of a Legal Notice (English and Xhosa) in both the local daily newspapers, The Daily Dispatch and the EP Herald on 13 October, 2011 (Appendix B). The general public were given 30 days (from 13 October, 2011) to register as Interested & Affected Parties and to submit any issues / concerns they might have regarding this proposed project.
- 2 x Signboards, in English and Xhosa, was erected strategically at points at the beginning and the end of the borrow pits identified along the R344, on 12 October, 2011, in order to notify the general public/community and passers-by of the proposed activity (Appendix C).

### 19.2 Key Interested and Affected Parties

- Letters of Notification were sent via e- mail to the registered landowners of the properties on which the identified borrow pits are located during October, 2011 (Table 8).
- A Letter of Notification and the Background information documents were posted via parcel mail to the 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 12 October, 2011.
- Notice of the activity and a background information document was posted via registered mail to Mr Similo Dayi, the Municipal Manager for the Tsolwana Local Municipality on 12 October, 2011.
- A Background Information Document was posted to the Tsolwana Municipality for Cllr Van Heerden, the Tsolwana Municipality Ward Councillor for ward number 5 (the ward in which the proposed borrow pits are located), on 12 October, 2011.
- Identified Key Interested and Affected Parties (Table 9) were posted either via registered or parcel mail notification of the proposed activity and the Background Information Document for this project on 12 October, 2011.
- All email and/or hard copy correspondence received from and issued to key I & AP's is retained in Appendix D.

**Table 8: Contact Details of Registered Landowners**

Borrow pit no.	Farm Number	Registered Owner	E-mail Address	Telephone Number
R344-CHDM-IR01_BP01	Farm 249	WILLIAM HENRY SCOTT	info@scottofafrica.co.za	045 - 848 0104
R344-CHDM-IR01_BP02	Farm 1/203	JONATHAN DENIS ABLORT MORGAN	redcliffe@bosberg.co.za	045 848 0152
R344-CHDM-IR01_BP03	Farm RE/240	JONATHAN DENIS ABLORT MORGAN	redcliffe@bosberg.co.za	045 848 0152

**Table 9: Identified Key Interested & Affected Parties.**

Borrow Pits - Key I & AP's - R344							
	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@deae t.cape.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:	jimjan@iafrica.com, phillip@wessabk.co.za		
4	Ms. Mariagrazia Galimberti	Tel:	021 462 4502	Mbl:		South African Heritage Resources Agency, PO Box 4637, Cape Town 8000	APM Impact Assessor
		Fax:	021 462 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 Acting Director: Health & Community Services
		Fax:	045 839 3467	Eml:	fnel@chrishanidm.gov.za		
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:			
11	Mr Similo Dayi	Tel:	045 846 0033	Mbl:		PO Box 21, TARKASTAD, 5370, 12 Murray Street, TARKASTAD	Municipal Manager - Tswolwana Local Municipality
		Fax:	045 846 0025	Eml:			
12	Cllr Van heerden	Tel:		Mbl:	072 275 1683	PO Box 21, TARKASTAD, 5370	Ward 5 Councilor – Tsolwana Local Municipality
		Fax:		Eml:			

### 19.3 Interested and Affected Parties

All Registered Interested and Affected Parties which registered in response to the letters of notification or the advertisements/signage are presented in Table 10. All email and/or hard copy correspondence received from and issued to the Registered Interested & Affected Parties is retained in Appendix D.

**Table 10: Registered Interested and Affected Parties.**

Registered I & AP's – R344						
Name		Tel/Fax		Mobile/Email	Postal	Comments
1	JD Ablort - Morgan	Tel	045 848 0152	Mbl	PO Box 137, Tarkastad, 5370	<ol style="list-style-type: none"> <li>1. Register as an I &amp; AP.</li> <li>2. Borrow pits R344-CHDM-IR01_BP02 &amp; R344-CHDM-IR01_BP03 located on my properties</li> <li>3. Approves of their use for road maintenance/regravelling.</li> <li>4. Restoration of the borrow pits is the responsibility of the state.</li> </ol>
		Fax	045 848 0152	Eml		
2	W.H. Scott	Tel	045 - 848 0104	Mbl	PO BOX 80, Tarkastad 5370	Land owner on which R344-CHDM-IR01_BP01 is located. In telephonic conversation with Mr Scott: Mr Scott has no objection to the utilisation of the borrow pit, however the borrow pit is not to be fenced.
		Fax		Eml		

#### 19.4 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 D.

**Table 11: Summary of comments made during the public participation.**




I & AP Name	Concerns/Issues/Comments	EAP Response
JD Ablort –Morgan - Landowner	<ul style="list-style-type: none"> <li>• Register as an I &amp; AP.</li> <li>• Borrow pits R344-CHDM-IR01_BP02 &amp; R344-CHDM-IR01_BP03 located on my properties</li> <li>• Approves of their use for road maintenance/regravelling.</li> <li>• Restoration of the borrow pits is the responsibility of the state.</li> </ul>	<ul style="list-style-type: none"> <li>• All Comments noted.</li> </ul>
W.H. Scott	In telephonic conversation with Mr Scott: <ul style="list-style-type: none"> <li>• Mr Scott has no objection to the utilisation of the borrow pit, however the borrow pit is not to be fenced.</li> </ul>	<ul style="list-style-type: none"> <li>• Comments noted – Mining plan amended to not include fencing at this particular borrow pit.</li> </ul>



## 20 Mining Plans

Electronic Adobe PDF Version Only

DOUBLE CLICK the PAPER CLIPS here to access the Mining Plans.

R344-CHDM-IR01_BP01: Mining plan	
R344-CHDM-IR01_BP02: Mining plan	
R344-CHDM-IR01_BP03: Mining plan	

Hardcopy/Paper Version - See overleaf







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## 21 Specialist Report

### 21.1 Preliminary Materials Identification Investigation

**Electronic Adobe PDF Version Only**

DOUBLE CLICK the PAPER CLIPS here to access the reports.

R344 - CHDM-IR01_BP01 - Report	
R344-CHDM-IR01_BP01 - Data Sheet	
R344 - CHDM-IR01_BP02 - Report	
R344-CHDM-IR01_BP02 - Data Sheet	
R344 - CHDM-IR01_BP03 - Report	
R344-CHDM-IR01_BP03 - Data Sheet	



Hardcopy/Paper Version - See overleaf

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## 21.2 Archaeological & Palaeontological Assessment

**Electronic Adobe PDF Version Only**

DOUBLE CLICK the PAPER CLIPS here to access the reports.

AIA-Chris Hani BP1, EC - ArchaeoMaps	
PIA - Chris Hani - Metsi Metseng Geological & Environmental Services	




Hardcopy/Paper Version - See overleaf

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## 22 Appendix A: Letters of Confirmation, Retention Monies & 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 Retention Monies - 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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## 23 Appendix B: Advertisement placed in Daily Dispatch and EP Herald

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 saziiso sikhutshwa phantsi kwesaziiso 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 zamisebenzi kawonke-wonke icela ubuhlobo nentsebenziswana yokuboleka umlindi. Iqweba ukwenyusa isinga lezemisebenzi yazendlela 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
DR06599	CHRIS HANI	LADY FRERE	2
DR06600	CHRIS HANI	LADY FRERE	1
DR06602	CHRIS HANI	LADY FRERE	3
R344	CHRIS HANI	TARKASTAD	3

**Proponent/Abanikazi zimemo:**  
Department of Roads & Public Works (Eastern Cape)  
Private Bag X0023  
Bhisho  
5805

**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](mailto:conroy@besc.co.za) / [lee-anne@besc.co.za](mailto: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 nje nomnye onomdla nochapahzelekayo, nceda faka igama lakho, nenkcukacha apho unokuqhagamisheleka khona, nentsebenziswano ekutsalayo nekuchaphazelayo koluphuhliso, uyigqithise kumntu o- Mcebiso zingadlulanga lintsuku ezi meshumi mathathu (30 days) sibhengeziwe esi saziiso.

**Date of advertisement:**  
October 12, 2011

Figure 16: Daily Dispatch Notice.

11020  
Official Notices

11020  
Official Notices

## NOTICE/ ISAZISO

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

**Activity/Umsebenzi ozakwenziwa:** The Department of Roads & Public Works proposes to utilize borrow pits for road upgrade/ regravelling projects located in the Cacadu & ChrisHani District Municipalities/Isabelenzindlela ne zemisebenzi kawonke-wonke icela ubuhlobo nentsebenziswano yokubulelwa umlindi. Iqweba ukwenyuca isinga lezemisebenzi yozenzilela 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/Umliki macebiso:**  
BESC  
PO Box 8241, Nahoon, 5210, East London.  
Mr. Conroy van der Riet/  
Ms. Lee-Anne Plaudloot  
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, nenkukacha apho unokuqha amishelaka khona, nento ekutsalayo nekuchaphazelayo kolu-phuhliso, uyigqithise lumniki-Macebiso zingadlulanga iintsuku ezi mashumi mathathu (30 days) sibhergeziwe esi saziso.

**Date of advertisement:**  
October 13, 2011

1310429834/WD

Figure 17: EP Herald Notice


24 Appendix C: Signboards



Figure 18: Images of the Signboards erected for R344

## 25 Appendix D: Public Participation - Correspondence

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



## BIOTECHNOLOGY & ENVIRONMENTAL SPECIALIST CONSULTANCY CC

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

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

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.

Malcolm Logie

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

Page 1 of 2



**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 DMR	No of New Borrow Pits Recommended for EWP
					E	S	E	S			
1	ORT014-881	15.8	Qutheni		31° 21' 51"	29° 54' 00"	31° 50' 11"	29° 52' 13"	3	1	
2	ORT014-882 (R6)	30	Qutheni		29° 17' 02"	29° 28' 44"	31° 52' 04"	29° 29' 41"	2	2	
3	ORT014-883 (R06/170)	5.1	Pyandeni		31° 13' 04"	29° 07' 01"	31° 20' 49"	29° 05' 57"	1	1	
4	ORT014-884 (R06/885)	12.3	Phakamela		29° 28' 28.3"	29° 13' 21.2"	29° 27' 18.8"	29° 27' 25.8"	4	5	
5	DR014-885	16.4	Isithanga		31° 04' 20.8"	29° 39' 13.9"	31° 09' 32.1"	29° 34' 32.1"	2	1	
6	DR014-886	50	Isithanga		31° 17' 03.8"	29° 48' 31.9"	31° 39' 36.9"	29° 49' 03.9"	2	1	
7	DR014-887	23	Emahlweni		31° 37' 29.8"	27° 23' 58.4"	31° 38' 36.1"	27° 22' 57.6"	2	2	
8	DR014-888	7	Emahlweni		31° 49' 14.8"	27° 20' 25.9"	31° 44' 03.0"	27° 20' 25.0"	1	1	
9	DR014-889	7.7	Emahlweni		31° 49' 14.5"	27° 23' 48.8"	31° 42' 46.0"	27° 23' 36.0"	4	5	
10	R344 - BP01		Tobolona		31° 17' 38.2"	29° 18' 57.9"			1	1	
11	R344 - BP02		Tobolona		31° 18' 48.4"	29° 18' 32.9"			1	1	
12	R344 - BP03		Tobolona		31° 18' 51.7"	29° 18' 55.9"			1	1	
13	Phakamela Local Road	54	Phakamela		31° 25' 50.2"	29° 03' 45.5"			5	5	
14	DR014-893	28.64	Kouga		31° 01' 44"	29° 28' 48"	31° 07' 00"	29° 30' 23"	2	2	
15	MR014-897	200.00	Kouga / Bhebezi		31° 07' 41.9"	29° 14' 11.9"	31° 07' 41.9"	29° 14' 11.9"	2	1	
16	Shaleniama BP		Koo-Kamma		31° 07' 41.9"	29° 14' 21.9"			1	1	
17	DR014-898		Koo-Kamma		31° 06' 19.8"	29° 17' 52.8"			1	1	
18	DR014-899		Koo-Kamma		31° 04' 21.8"	29° 19' 39.8"			1	1	
<b>Totals</b>									<b>54</b>	<b>58</b>	<b>8</b>
Total No of Borrow pits for											<b>30</b>

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 regavelled.
- Notifying the Relevant Municipal and Government Departments
- Notifying the Department of Rural Development as the custodian of the rural land
- Notifying the Municipal Ward Councilors
- Where applicable notify Relevant Landowners of Private Land

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

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

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

Page 2 of 2

**Lee-Anne Proudfoot**

**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  
Mobile: +27 83 421 3991  
Direct Email: [lee-anne@besc.co.za](mailto:lee-anne@besc.co.za)  
Office Tel: +27 43 726 4242  
Office Fax: +27 43 726 3199  
Office Email: [info@besc.co.za](mailto:info@besc.co.za)  
Web: <http://www.besc.co.za>

**Lee-Anne Proudfoot**

**From:** Deidre Watkins <Deidre.Watkins@dmr.gov.za>  
**Sent:** 26 September 2011 08:19 AM  
**To:** Lee-Anne Proudfoot  
**Subject:** RE: Proposed utilisation of borrow pits - Cacadu Region & Other inaccessible roads

Good Morning Lee-Anne,

We also have problems in the office with the SAMRAD system, but I will ask Siyanda to check on the system for the coordinate data given. Thanks.

Best regards,  
Deidre

Siyanda,

If it is possible, please can you check the SAMRAD system, as per query in Lee-Anne's email. Please indicate to her whether this is possible at the moment or not. Thanks.

Best regards,  
Deidre

**Lee-Anne Proudfoot**

**From:** Siyanda Lurwenga <Siyanda.Lurwenga@dmr.gov.za>  
**Sent:** 29 September 2011 02:04 PM  
**To:** Lee-Anne Proudfoot  
**Subject:** RE: Proposed utilisation of borrow pits - Cacadu Region & Other inaccessible roads

Good day Lee-Anne

sorry I could not provide you the information as per the spread sheet template that you have attached.

I have completed checking the statuses of the identified borrow pits. Almost none of the borrow pits on the provided list could be identified on our records, except that the provided coordinates for road number DR1774 site Brakkenduine BP plots about 85 meters north of a licenced borrow pit to DRT and road number MR00397 which plots over a rejected DRT application. The identified site for road DR01763 seems not to be a borrow pit as it is owned by an individual. Thanks

Best regards,  
Siyanda

**Lee-Anne Proudfoot**

**From:** Siyanda Lurwenga <Siyanda.Lurwenga@dmr.gov.za>  
**Sent:** 30 September 2011 09:30 AM  
**To:** Lee-Anne Proudfoot  
**Subject:** RE: Proposed utilisation of borrow pits - Cacadu Region & Other inaccessible roads

Hi Lee-Anne

Sorry for providing you with incomplete information. I have entered the new coordinates for road DR01774 site Brakkenduine BP and I can confirm that the new coordinate plots on the identified authorized borrow pit issued to DRT and its details are as follow;

Permit Holder: DRT  
File Number: 175 MR  
Expiry Date: 2019/01/08

With reference to your point number two regarding the basis on which the identified borrow pit for road M00397 was rejected, all I can do is to give you a reference number of that application so that you can perhaps contact Deidre and find out from her. We usually don't put reasons for refusal on our system, in fact our system hasn't got that functionality. The application reference is 125 MR submitted by DRT.

Lastly the provided coordinates for road DR01763 site 1763\_BP02 plots directly on a permit that was issued into an individual meaning there is someone mining over the same area. The operation is not permitted to DRT hence I am saying it is not a borrow pit application, it is a normal mining permit authorization that is not exempted from any provision of the Act, but am not quite sure whether it is still valid or it lapsed because it's an old authorization.  
Thanks

Regards,  
Siyanda



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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](mailto:lee-anne@besc.co.za)

Page 1 of 2

Malcolm Logie

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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: 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.

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

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



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

Mr. Conroy van der Riet  
 (Cand. Sci. Nat. - Environmental Scientist)  
 Senior Environmental Consultant  
 Mobile: 083 993 1243  
 Email: [conroy@besc.co.za](mailto: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° 23'45.20"	Chris Hani	EMALAHLENI	3	BENGU
DR08602	08602_BP02	31° 41'59.30"	27° 24'45.60"	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

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

Page 1 of 2

Malcolme Logie

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 CEAP-SA; MSAIE & ES; MIAIA; Pr.Sci.Nat.(Environ.Sci.)  
 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
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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
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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

**Lee-Anne Proudfoot**

**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)

**Lee-Anne Proudfoot**

**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



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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 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](mailto:lee-anne@besc.co.za)

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

Page 1 of 2

Malcolm Logie

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CEAP-SA; MSAIE & ES; MIAIA; Pr.Sci.Nat.(Environ.Sci.)  
CK 95.10210/23



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

Page 2 of 2



**Lee-Anne Proudfoot**

**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](mailto:kvanryneveld@gmail.com)

**Lee-Anne Proudfoot**

**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)

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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Office Tel: +27 43 726 4242  
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 Office Email: [info@besc.co.za](mailto:info@besc.co.za)  
 Web: <http://www.besc.co.za>

**Lee-Anne Proudfoot**

**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](mailto:mgalimberti@sahra.org.za)  
Phone : +27 (0)21 462 4502  
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Web : [www.sahra.org.za](http://www.sahra.org.za)



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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](mailto: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](mailto:conroy@besc.co.za)

Page 1 of 2

Malcolm Logie

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



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 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](mailto:lee-anne@besc.co.za)

Mr. Conroy van der Riet  
 (Pr.Sci.Nat. - Environmental Scientist)  
 Senior Environmental Consultant  
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 Email: [conroy@besc.co.za](mailto:conroy@besc.co.za)

Page 1 of 2

Malcolme Logie

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



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 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](mailto:conroy@besc.co.za)

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

Page 1 of 4

Malcolme Logie

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



## 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 Cadadu & 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 nochabhazekayo, nceda faka igama lakho, nenkcukacha zakho ughagamshelaka khona, nento ekutsalayo nekuchaphazelayo koluphuhliso, uyigqithise kumniki- Mcebiso zingadlulanga iintsuku ezi mashumi mathathu (30 days) sibhengeziwe esi saziso.

Yours sincerely,


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

Lee-Anne Proudfoot  
(Pr.Sci.Nat – Environmental Scientist)  
Senior Environmental Consultant  
Email: [lee-anne@besc.co.za](mailto: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	Brakkenduike 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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Telephone: 043 726 4242 Facsimile: 043 726 3199  
E-mail: info@besc.co.za http://www.besc.co.za

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

Name

Telephone Number  Mobile Number

Facsimile Number  Email Address

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

EIA Project

Submission

Signature \_\_\_\_\_ Name (Print) \_\_\_\_\_ Date \_\_\_\_\_

Page 4 of 4

**Lee-Anne Proudfoot**

**From:** Lee-Anne Proudfoot <lee-anne@besc.co.za>  
**Sent:** 11 October 2011 10:55 AM  
**To:** 'info@scottof africa.co.za'  
**Subject:** Utilisation of a Borrow pit - R344  
**Attachments:** 2011-R572 – BID – Borrow Pits – R344 – DRPW.pdf

Dear Mr and Mrs Scott,

As discussed telephonically earlier today, 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. The Department has identified borrow pits along the R344 that they would like to utilise for maintenance/re-gravelling. One of these borrow pits is located on your property, Swallow Krantz. 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 this activity. Please find attached the background information document. Attached in the background information document is an Interested and Affected Party Registration Form, please complete this and send back to me at your earliest convenience.

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

Kind Regards

Lee-Anne

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


Biotechnology & Environmental Specialist Consultancy cc  
PO Box 8241, Nahoon, 5210, East London, South Africa  
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Mobile: +27 83 421 3991  
Direct Email: [lee-anne@besc.co.za](mailto:lee-anne@besc.co.za)

Office Tel: +27 43 726 4242  
Office Fax: +27 43 726 3199  
Office Email: [info@besc.co.za](mailto:info@besc.co.za)  
Web: <http://www.besc.co.za>

25.2 Correspondence issued to and received from Registered Interested and Affected Parties

10-OCT-2011 16:32 JDA MORGAN 0458480152 P. 01



**Biotechnology & Environmental Specialist Consultancy cc**  
PO Box 8241, Nahoon, 5210, East London, South Africa  
 9 Douglas Road, Vincent, 5247, East London, South Africa  
 Telephone: 043 726 4242 Facsimile: 043 726 3199  
 Email: info@besc.co.za info@besc.co.za

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

Name: J.D. ABLERT - MORGAN

Telephone Number: 045-848 0152 Mobile Number: \_\_\_\_\_

Facsimile Number: 045-848 0152 Email Address: redcliffe@besc.co.za

Postal Address		Physical Address	
Address: <u>P.O. BOX 137</u>	Address: <u>VENTNOR</u>	City: <u>TARAKASTAD</u>	City: <u>TARAKASTAD</u>
Zip Code: <u>5370</u>	Zip Code: <u>5370</u>	Country: <u>RSA</u>	Country: <u>RSA</u>

EIA Project: DEPART MENT ROADS + PUBLIC WORKS  
CARIS HANI DISTRICT MUNICIPALITIES  
BORROW PITS FOR RE-GRAVING ROADS

Submission: ① I AM AN INTERESTED PARTY  
② I HAVE BORROW PITS R344-CHDM-1R01  
R02 and R03 ON MY PROPERTY  
③ I APPROVE OF THEIR USE FOR  
ROAD MAINTENANCE + RE-GRAVING  
④ RESTORATION OF PITS, IF NECESSARY, WOULD  
BE FOR CHDM'S ACCOUNT AND ATTENTION  
⑤ WE HAVE BEEN IN CONTACT BEFORE.

Signature: JDA Morgan Name (Print): JDA MORGAN Date: 10/10/2011

**Lee-Anne Proudfoot**

**From:** Lee-Anne Proudfoot <lee-anne@besc.co.za>  
**Sent:** 11 October 2011 08:17 AM  
**To:** 'redcliffe@bosberg.co.za'  
**Subject:** Utilisation of Borrow Pits - R344  
**Attachments:** 2011-R572 – BID – Borrow Pits – R344 – DRPW.pdf

Dear Mr Ablort - Morgan,

This serves to confirm that we have received your I&AP registration form and that you have been registered as an I & AP. We have taken note of all comments listed on your I&AP registration form. Please find attached the background information document for the proposed utilisation of borrow pits: R344.

Kind Regards

Lee-Anne

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

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

Mobile: +27 83 421 3991  
 Direct Email: [lee-anne@besc.co.za](mailto:lee-anne@besc.co.za)

**Lee-Anne Proudfoot**

**From:** Conroy van der Riet <conroy@besc.co.za>  
**Sent:** 07 October 2011 10:24 AM  
**To:** 'phillips@smokesignal.co.za'  
**Cc:** 'lee-anne@besc.co.za'  
**Subject:** Identified Borrow Pits - R344  
**Attachments:** Borrow Pits - R344 (Round2).kmz

Dear Ms Phillips

Our telephone conversation earlier today refers.

Please find attached the Google Earth kml drawing file for the identified borrow pits along the R344 as requested. We will be sending out the official notice letters and Background Information Documents to the relevant landowners during the course of next week.

The landowners we have identified are:

Landowner	Farm Number	Borrow Pit
SCOTT WILLIAM HENRY	FARM 249	BP01
MORGAN JONATHAN DENIS ABLORT	FARM 1/203	BP02
MORGAN JONATHAN DENIS ABLORT	FARM RE/240	BP03

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


Please can you acknowledge receipt of this email, and supply us with your contact details if we need it in the future.

Regards

Conroy

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

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



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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**

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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 Hant D.M.

REPORT NUMBER 2011-R599 to 2011 - R608

DATE OF REPORT December 13, 2011

**PARTICULARS OF RECEIVING PERSON/AUTHORITY**

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Organisation Dept. of Water Affairs

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## 26 Appendix E: Site Photographs

### 26.1 Borrow pit R344-CHDM-IR01\_BP01



Figure 19: Borrow Pit # R344-CHDM-IR01\_BP01.

### 26.2 Borrow pit R344-CHDM-IR01\_BP02



Figure 20: Borrow Pit # R344-CHDM-IR01\_BP02.

### 26.3 Borrow pit R344-CHDM-IR01\_BP03



Figure 21: Borrow Pit # R344-CHDM-IR01\_BP03.

## 27 Appendix F: Mammal species of the Eastern Cape region

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



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

## 28 Appendix G: Bird species of the Eastern Cape region

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

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

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

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

## 29 Appendix H: Threatened Birds of the Eastern Cape

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

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

### 30 Appendix I: Borrow pit Information

Rd_Nr_	No_	E	S	Farm	SG Code/Region Code/ComLandName	Municipal Area	Ward
R344 - CHDM- IR01	R344 - CHDM- IR01_BP01	26°18'9.70"	32°18'24.15"	FARM 249	C07400000000024900000	Tsolwana LM	5
R344 - CHDM- IR01	R344 - CHDM- IR01_BP02	26°19'28.0 0"	32°18'46.90"	FARM 1/203	C07400000000020300001	Tsolwana LM	5
R344 - CHDM- IR01	R344 - CHDM- IR01_BP03	26°19'54.4 0"	32°19'31.70"	FARM RE/240	C07400000000024000000	Tsolwana LM	5



## 31 Appendix J: Curriculum Vitae

### 31.1 Dr Malcolm Logie

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

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

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

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

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

*Safety, Health & Environmental Management Systems*

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

*Environmental Site Assessments*

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

*Environmental Auditing*

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

*Environmental Impact Assessments*

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

#### Professional Affiliations & Registrations

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

#### South African Council of Natural Scientific Professions

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

#### Rhodes University Investec Schools of Business

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

#### Fields of Competence

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

- Environmental Impact Assessments

#### Education

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

#### Key Projects

Recent key projects include:

##### South African Breweries Millers (SAB Miller)

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

##### BHP Billiton (MOZAL), Mocambique

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

##### Coca-Cola Company

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

##### Lonmin Platinum, South Africa

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

##### Dorbyl Automotive Technologies, South Africa.

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

##### Telkom SA Ltd, South Africa.

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

##### Environmental Site Assessments

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

##### SHEQ Management Systems Auditing

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

#### European Scope of Accreditation

Malcolme has competency in the following Industrial Sectors:

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

## 31.2 Ms Lee-Anne Proudfoot

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

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

Lee-Anne's project experience includes:

#### *Environmental Impact Assessments*

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

#### *Environmental Site Assessments*

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

#### *Environmental Management Plans*

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

#### *Environmental Auditing*

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

#### *Geographical Information Systems (GIS)*

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

#### *Visual Impact Assessments (VIA)*

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

#### *Aquatic Impact Assessments (AIA)*

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

#### *Project Management*

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

#### **Professional Affiliations & Registrations**

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

#### **Fields of Competence**

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

#### **Education**

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

#### **Key Projects**

##### **African Dune Investments (Pty) Ltd**

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

##### **ABSA Development Company/Bigen Africa**

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

##### **African Dune Investments (Pty) Ltd**

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

##### **Amatola Green Power (Pty) Ltd**

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

**The Environmental Law Consultancy**

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

**International Finance Corporation**

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

**Carpano Investments (Pty) Ltd**

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

**Kempston Leisure (Pty) Ltd**

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

**Edcot Trust (Pty) Ltd**

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

**Kempston Leisure (Pty) Ltd**

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

**Wild Coast Ski Boat Club**

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

**Wild Coast Fishing Co-operative**

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

**Wild Coast Fishing Co-operative**

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

**Alvitex 103 (Pty) Ltd**

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

**Rakel (Pty) Ltd**

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

**Alvitex 103 (Pty) Ltd**

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

**Leisure Homes for Senior Citizens**

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

**Fire Ring**

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

**Blue Beacon Investments (Pty) Ltd**

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

**Buffalo City Municipality – Waste Management**

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

**Buffalo City Development Agency**

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

**Southern Palace Investments 414 (Pty) Ltd**

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

**Nuffield Trust**

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

**Riverleigh VII**

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

**True Group Building (Pty) Ltd**

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

### 31.3 Mr Conroy van der Riet

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

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

Conroy's project experience includes:

##### *Environmental Impact Assessments*

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

##### *Environmental Site Assessments*

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

##### *Environmental Management Plans*

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

##### *Environmental Management Systems*

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

##### *Environmental Auditing*

Conroy's auditing experience includes ISO 14001, OHSAS 18001 and ISO 9001 certification level audits; legal compliance, and environmental performance audits across a wide range of industrial sectors in South Africa.

##### *Geographical Information Systems (GIS)*

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

##### *Visual Impact Assessments (VIA)*

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

##### *Site Rehabilitation*

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

##### *Water Use Licensing*

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

##### *Waste Licensing*

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

##### *Project Management*

Conroy has experience in managing projects for a wide range of developments.

#### **Professional Affiliations & Registrations**

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

#### **Fields of Competence**

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

## Education

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

## Employment Record

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

## Key Projects

### PG Bison

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

### Kraft Foods SA

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

### Goodyear SA

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

### Pragma Africa (Pty) Ltd

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

### Buffalo City Municipality – Waste Management

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

### SANRAL

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

### Bigen Africa (Pty) Ltd & Ndlambe Local Municipality

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

### Uhambiso

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

### Chris Hani District Municipality – Bulk Services

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

### Chris Hani District Municipality – Water Supply

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

### Alvitex 103 (Pty) Ltd

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

### African Dune Investments

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

### Thynk Property Partners (Pty) Ltd

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

### Eskom

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

### Buffalo City Municipality – Planning and Economic Development

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

### The Diocese of Grahamstown

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

### Bunker Hills Investments (Pty) Ltd

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

### Rakel (Pty) Ltd

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

### Rapitrade (Pty) Ltd

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

### Golden Falls (Pty) Ltd

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

### Beautiful Connections (Pty) Ltd

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

**Riverleigh VII cc**

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

**Purple Moss 29 (Pty) Ltd**

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

**Silicon Smelters (Pty) Ltd (FerroAtlantica)**

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

**Wild Coast Fishing Co-operative**

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

**ELGC**

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

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