6.12 Changes in Landform and Topography (Public Health and Safety)	
Objectives:	To prevent any injury to staff or members of the public which might incur through access to unstable surfaces, high faces etc.
Activities:	• Mining activities (general)
Impact:	Injury or death incurred as a result of access to unstable areas and high rock faces.
Mitigation Measure:	A **Health and Safety Plan and Programme** is to be complied and implemented on site. The mining areas must be placed out of bounds to members of the public and other unauthorised persons. Security must be put in place to prevent unauthorised access to the sites. The entire mining areas are to be fenced. Appropriate warning signage is to be erected around the mining areas.
Responsibility:	Site Agent Health and Safety Officer
Permit Requirements:	None
Institutional and Training requirements:	Appointment of a health and safety officer. All staff are to go through the health and safety training programme.
Monitoring:	Health and Safety to be monitored by an external, independent health and safety professional.

6.13 Solid Waste Generation and Disposal	
Objectives:	To ensure that the establishment and operation activities at the two borrowpits do not have a significant negative impact on the environment through the manner in which solid waste is stored, handled or disposed of.
Targets:	Minimise the quantities of solid waste by reducing, reusing and recycling materials wherever possible. To store, handle and dispose of all solid waste according to sound environmental principles and in accordance with the legal requirements.
Activities:	• Mining operations (general)
Impact:	Inappropriate handling and disposal of waste may result in contamination of water sources, soils and general pollution of the surrounding environment.
Mitigation Measure:	No construction or other waste may be disposed of at either site. All waste generated during the construction of the sites must be removed and disposed of at a registered waste disposal site. Adequate litter drums or other containers must be located throughout the construction camp (in Keiskammahoek) and at all construction sites (the borrowpits and road construction areas) to ensure that no litter is generated on site. The containers should be fitted with suitable lids and pegged to the ground so that dogs or any other scavengers cannot gain access to the container when the sites are unattended. 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 Site Agent shall be responsible for any clean-up resulting from the failure of his employees, or suppliers, to properly secure transported materials. No on-site burying or dumping of any waste materials, vegetation, litter or refuse shall occur. All solid waste shall be disposed of off site at least once weekly at an approved landfill site. The Site Agent shall provide the EEA with documentary proof of disposal during the biannual compliance audit site inspection.
Responsibility:	Site Agent
Permit Requirements:	None
Institutional and Training requirements:	Appointment of a designated on site staff member who will be responsible for the contractor's conformance with the approved EMP. Appointment of an External Environmental Auditor (EEA) to conduct bi-annual site inspections and audits.

	Solid Waste Management will form part of the environmental awareness training to take place on site.
Monitoring:	Solid waste management to be monitored by the EEA during the bi-annual site visits and to be reported on in the environmental performance assessment reports. The contractor must monitor solid waste management practice on a more regular basis (ie. during the period between the bi-annual inspections).

6.14 Hazardous Waste Generation and Disposal	
Objectives:	To manage the hazardous waste component so as to minimise the potential to cause harm to the human and the natural environment.
Targets:	To have zero spillages of hazardous materials on site.
Activities:	• Vehicle and plant repair and maintenance.
Impact:	The pollution of soil, surface water and groundwater as a result of spillages of hazardous substances.
Mitigation Measure:	Hazardous substances used on site will likely include fuel, oil and certain degreasers. 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. Fuel may be stored at the site camp in Keiskammahoek. The fuel storage area shall be located at the workshop, or a fuel storage depot, located within the construction camp. The Site Agent shall ensure that all liquid fuels (petrol and diesel) are stored in tanks with lids, which are kept firmly shut or in bowsers. The tanks / bowsers shall be situated within a concrete bundwall with a concrete base. The volume inside the bund shall be 110% of the total capacity of all the storage tanks / bowsers. The bunded area shall be covered to prevent the collection of rainwater. The Site Agent shall prevent unauthorised access into the fuel storage area. The Site Agent shall ensure that all fuels and chemicals are handled and stored in a manner so to minimise the risk of spills, leaks or structural failures. The Site Agent shall have on site all the necessary materials and equipment to deal with spills of any of the substances stored on site. The Site Agent shall set up a procedure to deal with a spillage or pollution event. Staff shall be appropriately trained to deal with any spills or pollution threat. No smoking shall be allowed within the vicinity of the fuel storage area. The Site Agent shall ensure that there is adequate fire-fighting equipment at the fuel stores. Gas and fuels shall not be stored in the same storage area. Where reasonably practical, plant shall be refuelled at the depot, or at the workshop, as applicable. If it is not reasonably practical, then the surface under the refuelling area shall be protected against pollution. The Site Agent shall ensure that there is always a supply of absorbent material (eg. Zorbit) readily available to absorb / breakdown hydrocarbon spills, and where possible, be designed to encapsulate minor hydrocarbon spillage. The quantity of such materials shall be able to handle a minimum of 200 litres of hydrocarbon liquid spill.

	Where practical, all maintenance and repair of equipment and vehicles on site shall be performed in the workshop (off the borrowpit sites). If it is necessary to do maintenance outside of the workshop area, then drip trays must be used. Only emergency repair and maintenance work is allowed outside of the workshop. The Site Agent shall ensure that there is no contamination of the soil, or vegetation, in the workshop and other plant maintenance facilities, including those areas where emergency plant maintenance has been conducted. The workshop (off the borrowpit sites) shall have a smooth impermeable concrete floor. The floor shall be bunded and sloped towards an oil trap or sump to contain any spillages of substances (e.g. oil). When servicing equipment, drip trays shall be used to collect the waste oil and other lubricants. Drip trays shall also be provided for stationary plant (such as compressors) and for "parked" plant (such as scrapers, loaders, vehicles). Drip trays shall be inspected and emptied daily, and serviced when necessary. Drip trays shall be closely monitored during rain events to ensure that they do not overflow. All vehicles and equipment shall be kept in good working order and serviced regularly. Leaking equipment shall be repaired immediately or removed from the site. The washing of equipment shall be restricted to urgent, or preventative maintenance requirements only. All washing shall be undertaken in a wash bay area at the site camp which must be equipped with a suitable impermeable floor and sump / oil trap. The use of detergents for washing shall be restricted to low phosphate and nitrate containing, low sudsing-type, detergents. The appropriate danger / warning signs must be erected at the diesel bowser, mine entrance and workshops. Fuel lubricants, solvents, paints, herbicides and other chemicals must be stored within the contractors camp site in a facility secured with lock and key. Storage should be on a bunded, impervious site (secondary containment). All used oil is to be collected and placed in drums stored on a concrete surface. Used oil must be recycled by a licensed dealer or disposed of at a registered landfill site, where the permit conditions of the landfill allow.
Responsibility:	Site Agent
Permit Requirements:	None
Institutional and Training requirements:	Appointment of a designated on site staff member who will be responsible for the contractor's conformance with the approved EMP. Appointment of an External Environmental Auditor (EEA) to conduct bi-annual

	site inspections and audits. Appropriate hazardous waste management will form part of the environmental awareness and training course.
Monitoring:	Solid waste management to be monitored by the EEA during the bi-annual site visits and to be reported on in the environmental performance assessment reports. The Site Agent must under regular compliance monitoring in between the EEA's bi-annual inspections.

6.15 Access Creation and Disruption	
Objectives:	To minimise the disruption of traffic on public roads.
Activities:	• Construction / upgrade of the access road at both borrowpit sites. • Transportation of material off site.
Impact:	The movement of heavy vehicles along the district road accessing the site may result in some disruption to traffic on the road. This is likely to be largely of nuisance value.
Mitigation Measure:	Increased traffic, especially heavy vehicle traffic, has the potential to draw complaints from residents nearby to BP 7378/4. The Site Agent is expected to address any complaints received. There are no houses within close proximity to BP 7378/1 and few road users travel along the section of road that passes the borrowpit site. Only persons wishing to reach the Mnyameni Dam will use that section of road. The Site Agent shall comply with all the applicable local, regional and national by-laws with regard to road safety and transport. He shall instruct his drivers and plant operators that vehicles will be expected to comply with all road ordinances, such as speed limits, roadworthiness, load securing / covering. Flagmen and signage must be utilised on site to warn motorists that heavy plant machinery will be entering and exiting the sites. Site vehicles should be permitted access only within the demarcated construction sites or on existing roads, as would be required to complete their specific tasks. Site vehicle traffic should be limited to specific access roads to prevent unnecessary damage to the surrounding natural environment.
Responsibility:	Site Agent
Permit Requirements:	None
Institutional and Training requirements:	Appointment of a designated on site staff member who will be responsible for the contractor's conformance with the approved EMP. Appointment of an External Environmental Auditor (EEA) to conduct bi-annual site inspections and audits.
Monitoring:	Will be monitored through a public complaints register.

6.16 Procurement of Goods and Services	
Objectives:	To maximise the benefits to the local economy through the procurement of goods and services locally if practical.
Activities:	• Mining operations (general)
Benefit:	The local economy within the Study Area and further afield within the surrounding areas of the Amahlati Local Municipality stands to benefit through the supply of materials or specialist services.
Measures to enhance benefit:	A **targeted procurement policy** to be implemented at the mine whereby goods and services should be sourced locally if possible. "Local" meaning the study area, followed by the Amahlati Local Municipality and finally by the Eastern Cape Province.
Responsibility:	Site Agent
Permit Requirements:	None
Institutional and Training requirements:	None
Monitoring:	None required.

6.17 Employment and Training	
Objectives:	To maximise the social and economic benefits to the local residents through employment and training.
Activities:	• Recruitment of labour • Training
Benefit:	The local community stand to benefit from the provision of jobs and the implementation of a staff training programme.
Measures to enhance benefit:	Staff (both skilled and unskilled) should be sourced from within the Amahlati Local Municipality if possible. A training programme should be put in place to train unskilled labour into skilled positions. The contractor will be compelled to maximise employment of labourers by means of following labour intensive practises as well as maximise local labour content. This is part of Government Policy to address poverty and unemployment. A labour desk will be set up and a Community Liaison Officer appointed to ensure equitable opportunities and inter alia to ensure that the local labour practises are recognised and protected, provided that these are within the ambit of legal and lawful practises. Consultation with affected parties will take place closer to the construction time. Within the Contractor's contract document, it will ensure that reasonable measures are put in place and maintained throughout the construction period.
Responsibility:	Site Agent
Permit Requirements:	None Required.
Institutional and Training requirements:	Implementation of a Staff Training Programme.
Monitoring:	Will be monitored via the Social and Labour Plan.

6.18 Additional Mitigation Measures

6.18.1 Community Relations

The Site Agent shall erect and maintain information boards at the start of the road construction site. Such boards shall include contact details for complaints by members of the public.

The Site Agent shall keep a "Complaints Register" on both sites. 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.

A **Project Steering Committee** must be set up with the community to assist the Mine Owner / Site Agent with employment issues and liaison with communities.

A **Community Liaison Officer** must be appointed from the local community. The CLO will be responsible for channelling any complaints from the community through to the Site Agent and will participate in resolving these issues.

6.18.2 Staff Safety and Education

All staff shall be given a health and safety induction course before beginning work on either of the sites. Part of the induction course will be to make the staff aware of the potential dangers associated with the mining process and the potential hazards around the mines.

The contractor is required to produce a **Health and Safety Plan** (HSP) as per the requirements of the Occupation Health and Safety Act and Regulations. The HSP must include general community safety in the vicinity of the mines, as well as measures to minimise the nuisance factors, such as dust and noise.

The Site Agent must maintain a suitable First Aid Kit at the site office and will have a list of the emergency service contact numbers readily available.

Telephone numbers of emergency services, including the local fire fighting service and HAZMAT / ZORBIT, shall be posted conspicuously in the office near the telephone.

No unauthorised firearms are permitted on either site.

All operations on the borrowpit sites must be undertaken according to the Mine Health and Safety Act No. 29 of 1996 and ensure the safety, health and welfare of the staff on site.

6.18.3 Work Stoppage

The DME 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.

6.18.4 Existing Services and Infrastructure

The Site Agent shall ensure that existing services at BP 7378/1 (if any are discovered during site establishment) are not disrupted or damaged.

The underground water supply pipeline 50m upslope of the proposed extensions to BP 7378/4 may not be disrupted or damaged. Should disruption or damage take place (due to the actions

of the Site Agent, his staff or sub-contractors) then the full cost of the repair or reinstatement of that service will be borne by the Site Agent.

7 MONITORING OF THE EMP

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

An External Environmental Auditor (EEA) will be appointed by the Department of Water Affairs and Forestry to undertake bi-annual site inspections and to produce a Biannual Performance Assessment document in compliance with DME's requirements. The Department of Water Affairs and Forestry shall arrange that these external audits do take place and that a system for addressing any problems identified during these audits, is formulated. The relevant documentation shall be kept and shall be available to the DME and the public.

8 DECOMMISSIONING AND CLOSURE

8.1 Environmental and Mine Closure Objectives

8.1.1 Mine Closure

The **Overall Environmental Objective** for mine closure is as follows:

"To render the mining areas[2] in a safe and environmentally acceptable condition on completion of the mining, rehabilitation and closure activities."

Specific **Environmental Goals** include:

- "To return the mining areas, as closely as possible, to their former condition and landuse through the shaping and landscaping of the surfaces and through the reestablishment of indigenous vegetation".
- "To minimise the residual impacts through ensuring that erosion is controlled, slopes are stable, vegetation cover is established and the area is left in a condition which does not pose a safety hazard to humans, livestock and indigenous fauna".
- "To minimise the visual impacts of the mines on closure through the avoidance of exposed faces and slopes and the through the reestablishment of the indigenous vegetation".
- "To obtain the necessary Mine Closure Certificates from the Department of Minerals and Energy".

8.1.2 Management of Impacts

The objectives and goals for the management of impacts are detailed in Section 6.

8.1.3 Socio-Economic Conditions

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

"To contribute to the economic and social development of the study area and the Amahlati Local Municipality."

[2] The mining areas are defined as everything within the boundaries of the perimeter fences including the haul roads and any other surface which was disturbed as a result of the mining operations.

Specific goals include:

- "To maximise the benefits to the local economy through the provision of jobs and support of local service providers and suppliers wherever possible."

- "To institute a training programme for all staff members."

8.2 Responsibilities

The Department of Water Affairs and Forestry shall be responsible for the complete rehabilitation of each of the sites, including borrowpit slopes, floor, spoil sites, access roads, haul routes etc. Where re-vegetation is not successful, these affected areas will be re-seeded and replanted until such time as a cover in excess of 80% has been achieved.

8.3 Rehabilitation Plan and Programme

The DWAF / Site Agent, in conjunction with the EEA, shall develop a comprehensive plan for rehabilitation of each site in its entirety, including the associated workshops, site camps etc. This plan must meet the approval of the DME.

The following points must be taken into account when drawing up the **Rehabilitation Plan and Programme**:

- The Plan should be flexible – where measures are found to be inefficient, the plan shall be modified.

- The DWAF shall be responsible for successful rehabilitation and re-vegetation of the sites, for a minimum period of 2 years after mining has ceased.

- The Plan shall include the eradication of young invasive, exotic species that may have become established during the construction period, in impacted areas and in rehabilitated areas.

- The growth of invasive exotic species shall be monitored during the 24 month period following decommissioning / closure.

- The Plan shall include grass seed mixes applicable to summer and winter.

- The Plan shall include suitable fertilisers and application rates.

- Successful re-vegetation means ≥ 80 % of the seeded area is covered with trees / grass / groundcover.

- Where there is insufficient topsoil to cover an area to specified depth, the Site Agent shall import suitable topsoil.

8.4 Additional Requirements

Environmental Management associated with the decommissioning of this project will ensure that the following items are addressed at closure and during the maintenance / liability period:

- All cleared sites are rehabilitated with indigenous grass species.
- All visible alien plants are removed from disturbed sites.
- The mines conform to the designed closure specifications, including drainage, slope stability, topsoiling and grass planting.
- All site infrastructure will be removed (from the camp site area in Keiskammahoek), where applicable, and those areas will be ripped and then covered with a 30mm thick layer of topsoil. Those areas will then be seeded with a mix of grasses indigenous to the area.
- The borrowpit sites must remain fenced with warning signs erected to caution the general public of the altered state of the environment within those areas. Drainage structures must also be left intact.
- The top edges of the mine will be cut back to an angle of 1:3.
- Overburden (decomposed rock) will be, where possible, placed over any exposed rock. This will be covered with a layer of topsoil no less than 30cm deep.
- The topsoil will be seeded at an appropriate time of the year (spring to early – mid summer). Sufficient grass cover will be maintained on the stockpiles during the operational life spans of the mines until such a time that the waste material is used in the rehabilitation of the mine faces.
- The mine areas will be fenced with stockproof fences to prevent access by livestock until such time that the vegetation has been allowed to recover. No dangerous faces which present a safety threat to communities will be left intact.
- All closure objectives prescribed by the DME must be met before retention monies will be released back to the applicant.
- The requirements detailed in Regulations 56, 57, 60, 61 and 62 pertaining to Site Closure must be fulfilled. They include the following key actions:
    - Identify and assess all residual and latent environmental impacts;
    - Undertake a performance assessment and an environmental risk report for each site; and

- Compile a **Closure Plan** and apply for a **Closure Certificate** for each site.

9 FINANCIAL PROVISION

The contract makes provision for the profiling and earthworks required for the rehabilitation of the borrowpits as well as the fencing, final landscaping and revegetation.

The rehabilitation cost schedule for the borrowpits have been included into APPENDIX E. The calculation assumes that site establishment will be required. A rehabilitation cost of R100, 000.00 (including VAT) was determined for each of the borrowpits.

Security for the financial provision will be provided by the Department of Water Affairs and Forestry (DWAF), who will retain a fixed percentage of the total contract value in retention money until the end of the maintenance period. An amount of R 200, 000.00 has been set aside by DWAF for the DME as a financial guarantee for the rehabilitation of the two borrowpits along DR07378. A letter of financial provision confirming this amount is included in APPENDIX F.

10 UNDERTAKING BY THE APPLICANT

The Client, the Department of Water Affairs and Forestry, has undertaken to comply with the requirements of the Environmental Management Plan. A signed copy of the undertaking is included in APPENDIX G.

A letter confirming that this is a DWAF project has been included in APPENDIX H.

APPENDIX A

CULTURAL HERITAGE IMPACT ASSESSMENT

PHASE 1 HERITAGE IMPACT ASSESSMENT FOR THE CATA/MNYAMENI AREA EAST LONDON, EASTERN CAPE

For: Lukhozi Engineering Consultants

PHONE: +27 (0)43 721 1321

SEPTEMBER 2008

Knight Piésold CONSULTING

Knight Piésold (Pty) Limited
Consulting Engineers
& Environmental Scientists

P O Box 383
Westville
3630

Tel: +27 31 266 8072
Fax: +27 31 266 4668
e-mail: ebecker@knightpiesold.com

Knight Piésold CONSULTING

CONTENTS

1.	INTRODUCTION	3
2.	PROJECT DESCRIPTION	3
3.	HERITAGE RELEVANCE OF THE CATA/MNYAMENI AREA	5
4.	LEGISLATION	5
5.	METHODOLOGY	5
6.	POTENTIAL HERITAGE RESOURCES	6
6.1	Site 1: Cata	6
6.2	Site 2: Mnyameni	7
7.	RECOMMENDATIONS AND WAY FORWARD	8
7.1	Processes to be followed in the event of discovery	9
7.2	General conditions of authorisation	9
8.	CONCLUSIONS	10
9.	RESOURCES	10

1. INTRODUCTION

Knight Piésold Consulting has been requested to undertake a Heritage Impact Assessment as part of an Environmental Impact Assessment Process for the proposed Cata/Myameni Borrow Pits project in the East London Municipal area, Eastern Cape. The purpose of the Heritage Impact Assessment is to identify any heritage resources or areas of cultural relevance that may be impacted on by the development proposal. Such resources or areas are considered protected in terms of the National Heritage Resources Act (No. 25 of 1999), and any proposals that may disturb or destroy these heritage resources would therefore be subject to the necessary application processes or procedures as decided by the relevant heritage authorities. The following document provides information with regard to the location of possible heritage resources and the proposed recommendations on the way forward.

TABLE 1: PROJECT AND CLIENT DETAILS	
PROJECT NAME	Cata/Mnyameni Dams (7 Dams)
CLIENT	Knight Piésold Rivonia on behalf of Lukhozi Engineering
NATURE OF PROPOSED DEVELOPMENT	Reuse of two existing borrowpits for road upgrade project
SURROUNDING LANDUSE	Rural
COORDINATES OF SITES SURVEYED **SITE 1: Cato Borrowpit Site** **SITE 2: Mnyameni Borrowpit Site**	 S 32° 39' 10.1" E 27° 06' 14.4" S 32° 36' 10.0" E 27° 03' 57.0"
JURSIDICTION	Amathole District Municipality, East London, Eastern Cape

2. PROJECT DESCRIPTION

The proposed project area is situated along the Gxulu River basin, next to the Keiskammahoek area. The borrow pits under investigation have both been mined at some point in the past under permit approval by the local municipality, however under new legislation, approval has to be obtained by the relevant Environmental Authority before mining can commence. In terms of this approval, the current investigation is aimed at determining the environmental and heritage impacts to the two sites, given that the borrow pits will be reopened and extended for mining activities. The borrow pits are both located in close proximity to rural settlement areas, as well as the waterworks access roads that the excavated material will service.

Currently the areas proposed for borrow pit development are already disturbed in terms of previous mining activities undertaken by the local municipality. The dirt roads in the area are of poor quality and inadequately maintained as a result of funding constraints. The main objective of mining the borrow pits is to utilize the material for the upgrade of poorly maintained water work roads that provide access to the Cata and Mnyameni dams.

The Cata and Mnyameni Dams provide the surrounding villages with water (Plate 1), and the access roads to the dams are no longer considered of a suitable standard given the current traffic volumes. It is therefore proposed to upgrade the existing roads by resurfacing and improving the road camber, which would require the excavation of material from the old borrowpits. The dams are also to provide water to local irrigation schemes, for example the Keiskammahoek Irrigation Scheme that consists of 854 HA (online data). The water demands of the Keiskammahoek Irrigation Scheme exceed the water availability from the Cata and Mnyameni dams and therefore the upgrade of the whole water supply area is of a necessity.

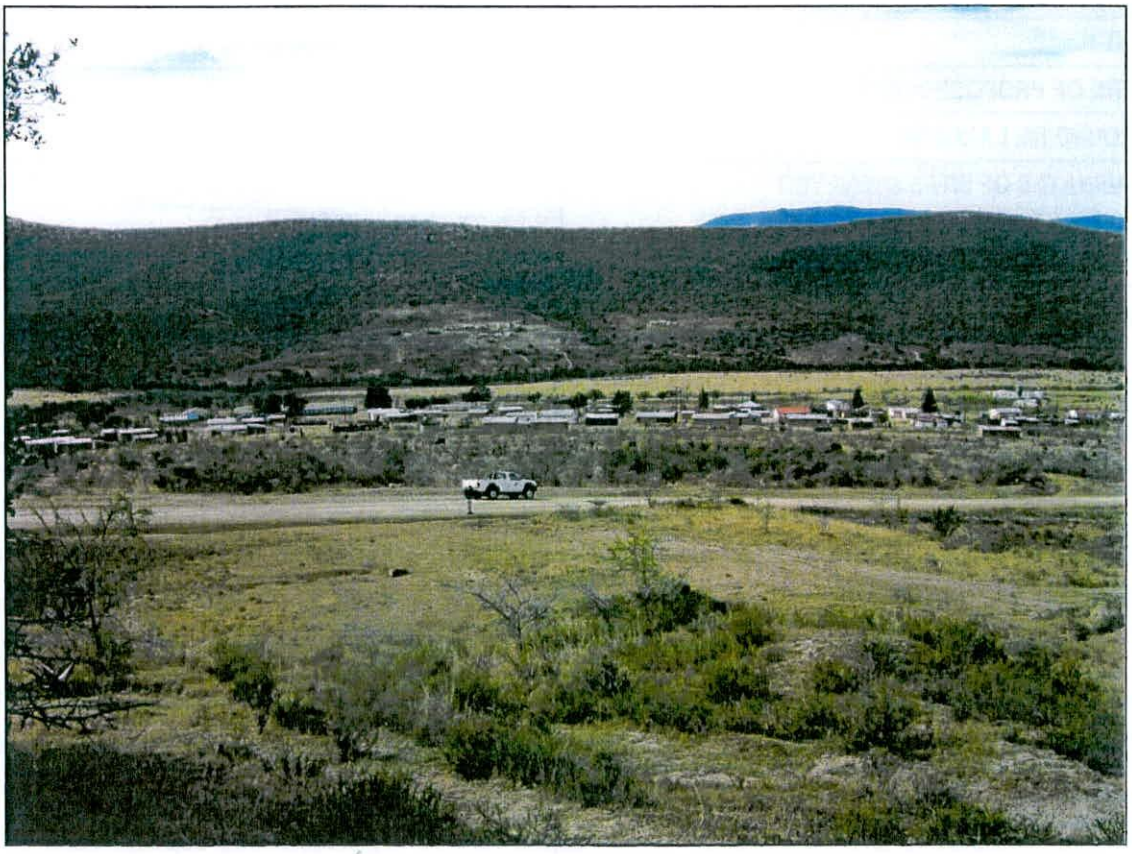


Plate 1: An example of one of the villages that benefit from water received from the Cata and Mnyameni dams.

3. HERITAGE RELEVANCE OF THE CATA/MNYAMENI AREA

The area is located close to the town of Keiskammahoek in close vicinity of the Gxulu River below the Amatola Mountains. The area played an important role in the time of the Frontier Wars between 1846 and 1853 (amahlati.co.za). Castle Eyre that is located on the outskirts of the area was built in 1852 according to historical records (online data). The town is an important commercial centre for timber and agricultural activities. Historically the local communities have been removed from their original occupational sites for the development of dams and agricultural activities that resulted in the loss of land. The outcome was that the local people commenced with the claim of land rights and compensation was paid in 1999 (Online).

4. LEGISLATION

Under current Legislation, Heritage Resources located within the Eastern Cape are protected in terms of the South African Heritage Resources Act (No. 25 of 1999). The following heritage resources are under the protection of the National Heritage Act and were a focus in this investigation:

1) *Structures: Any structures which are older than 60 years*
2) *Burial Grounds and Graves;*
3) *Battlefields and public monuments and memorials;*
4) *Archaeology, rock art, palaeontology, battlefields and meteorite sites*
5) *Objects (pottery, stone tools, spear heads etc.)*

5. METHODOLOGY

A site survey was necessary to provide insight into the type of environment, location of the site, the surrounding activities and the possible social problems that may occur if the proposed access road is upgraded and the old borrow pits are reopened:

- A project orientation process was undertaken at a desktop level to better understand the nature of the activity and the extent of the development proposal.
- A review of the project documentation and technical reports provided better insight into the nature of the proposed activity.
- A site meeting with Lukhozi Engineering and Knight Piésold Consulting was held on the 2ND of September 2008. The objectives of this meeting were for the project team to meet together onsite to better understand the receiving environment.

- A site investigation was undertaken on the 2nd of September 2008, and required a detailed reconnaissance foot survey, where a qualified heritage practitioner assessed the potential for heritage resources to be impacted on by the route proposed and/or the construction activities necessary to upgrade the access road. Two decommissioned borrowpits were accessed by four wheel drive vehicles and a foot survey was completed to determine if any heritage objects were located at the surface level. Areas that possibly could yield information with regard to grave sites were inspected closely. The position of the Cata/Mnyameni dams access road and borrowpit areas in relation to the existing homesteads and cultivated land areas assisted in the determination of where possible graves could be.
- A desktop investigation into the history of the area including an internet search and consultation with any relevant authorities.
- The compilation of the report and the determination of a way forward.

6. POTENTIAL HERITAGE RESOURCES

6.1 Site 1: Cata

The site proposed for further excavation is a decommissioned borrowpit that has been left unrehabilitated after the previous sand mining activities. As a result the borrowpit site itself did not present any known heritage resources. However as the proposed activities may impact a slightly bigger area given that the borrowpits would be accessed by large machinery and that construction may require overnight storage areas for such machinery, it was necessary to also investigate the immediate surrounding areas for their heritage resource potential. Based on Archaeological Records of the area, Stone Age deposits (Stone Tools etc) may potentially occur and were therefore the focus of the footsurvey. Other possible heritage resources relating to cultural or community activities in the area such as ritual sites and graves were also a focus of the investigation given the proximity of a homestead to the borrowpit.

Following the foot survey it was determined that no known heritage resources were evident on the surface, and there is therefore no objection in terms of heritage resources to the proposed borrowpit activities at this site provided the recommendations below are followed.

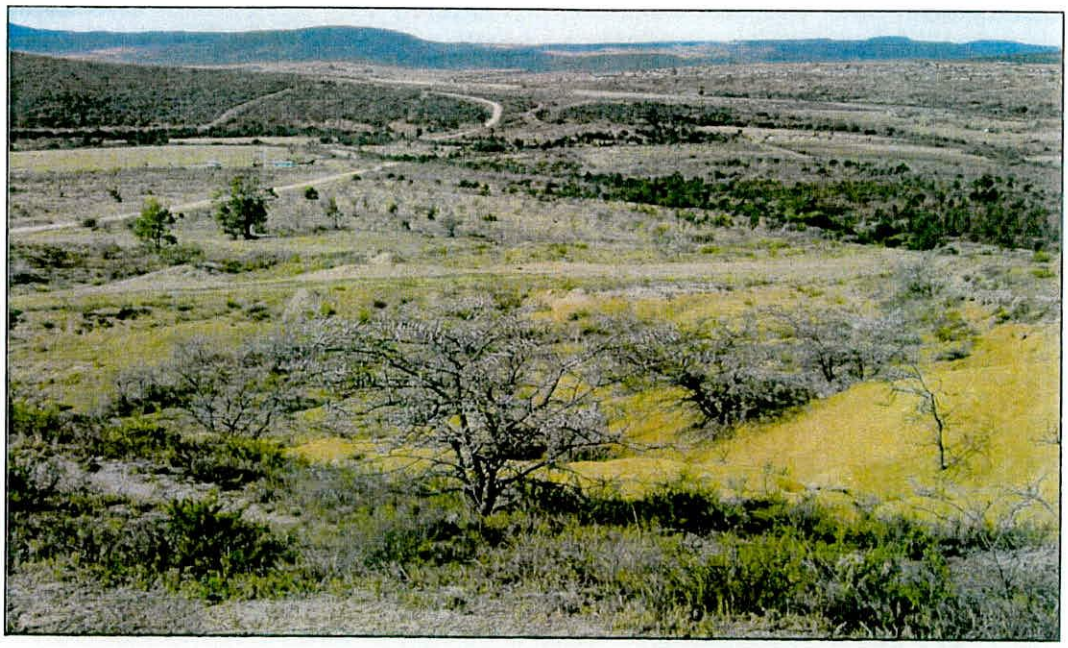


Plate 2: Typical topography of areas surrounding the Cato Dam

6.2 Site 2: Mnyameni

The site proposed for further excavation is a decommissioned borrowpit that has been left unrehabilitated after the previous sand mining activities. As a result the borrowpit site itself did not present any known heritage resources. However as the proposed activities may impact a slightly bigger area given that the borrowpits would be accessed by large machinery and that construction may require overnight storage areas for such machinery, it was necessary to also investigate the immediate surrounding areas for their heritage resource potential. Based on Archaeological Records of the area, Stone Age deposits (Stone Tools etc) may potentially occur and were therefore the focus of the foot survey. Other possible heritage resources relating to cultural or community activities in the area such as ritual sites and graves were also a focus of the investigation given the proximity of the community to the borrowpit.

Following the foot survey it was determined that no known heritage resources were evident on the surface, as the area is located in close proximity to forestry plantations where forestry activities would have already disturbed Archaeological Material or heritage resources. There is therefore no objection in terms of heritage resources to the proposed borrowpit activities at this site provided the recommendations below are followed.

Plate 3: Typical topography of areas surrounding the Mnyameni Dam

7. RECOMMENDATIONS AND WAY FORWARD

There are no heritage resource-based objections to the proposed borrowpit activities, but it is necessary to adhere to any conditions stipulated by the South African Heritage Resources Agency.

The following recommendations for this site are made:

- As the borrowpits are located next to rural homesteads and the surrounding areas may possibly be used by the community for ritual purposes, it is of importance that the Local Traditional Leaders are informed with regard to the activities that are proposed. Such notification and dialogue will reduce or prevent unnecessary conflict between the local community and the project team, and will ensure that the construction team is accepted by the community.
- The local community must be contacted prior to any excavation activities commencing to determine the existence of any sacred sites. Such sites are not to be disturbed in any way.

- Although no graves were identified in close proximity to the borrowpits, caution during the earthmoving activities is necessary, and the discovery of unmarked graves will require that activities cease until the relevant authorities have assessed the situation.
- It is also recommended that a monitoring process is put in place to ensure that heritage resources unearthed during excavations are not disturbed by earthmoving activities. Should heritage resources be discovered, the process described in Section 7.1 below is to be followed. It is advised that the local museums and Heritage Authorities assist with the monitoring programs.

7.1 Processes to be followed in the event of discovery

In the event of uncovering new heritage resources during the borrowpit mining, the activities are to cease immediately and SAHRA Heritage as well as Knight Piésold Consulting are to be contacted immediately. A specialist (Archaeologist) will investigate the area and determine the sensitivity of the new finds. The specialist will in coordination of SAHRA Heritage make recommendations in terms of the rescue of new heritage resources and following the correct permit procedure. A monitoring process is required to be completed by SAHRA Heritage as well as the specialist to ensure that the permit conditions stipulated are followed correctly. The permit conditions are of importance because it prevents any further damages to the new heritage resources and guides the developer in avoiding any further disturbances of any other possible heritage resources.

7.2 General conditions of authorisation

The following conditions should be included in the approval as well as in the Record of Decision (ROD):

a) In the event of the uncovering of graves during development activities South African Heritage Resources Agency must be contacted immediately and development must cease until further decision making is finalised;

b) In the event of uncovering of Heritage Objects Amafa South African Heritage Resources Agency must be contacted and development must cease until further decision making is finalised.

8. CONCLUSIONS

The mining of the borrowpits will not impact on any known heritage resources. The borrowpits are already significantly disturbed by previous activities. Although the area may yield deposits of Stone Age Material, they would be out of context at the borrowpits because of previous activities. Heritage resources may be uncovered during the earthmoving activities and in such event the developer is required to follow the conditions provided as per SAHRA and the ROD. The Cata/Mnyameni area yields information that relates to tangible and intangible Heritage Resources and both of these are protected in terms of the Heritage Resources Act (No. 25 of 1999). Graves and areas of worship are sacred that require sensitivity during the development processes and the local community is to be consulted during all phases of the project.

9. RESOURCES

amahlati.co.za

http://www.dwaf.gov.za/Documents/Other/WMA/12/AmatoleKeilSPAug04Sec1-4.pdf

http://land.pwv.gov.za/documents&publications/publications/sis%20strategy/11/11_43_42_55_7.htm

APPENDIX B

BORROWPIT DEVELOPMENT PLAN AND PHOTOGRAPHS

PHOTOGRAPHS – BORROWPIT 7378/1

Photo 1 – Aerial view of BP 7378/1

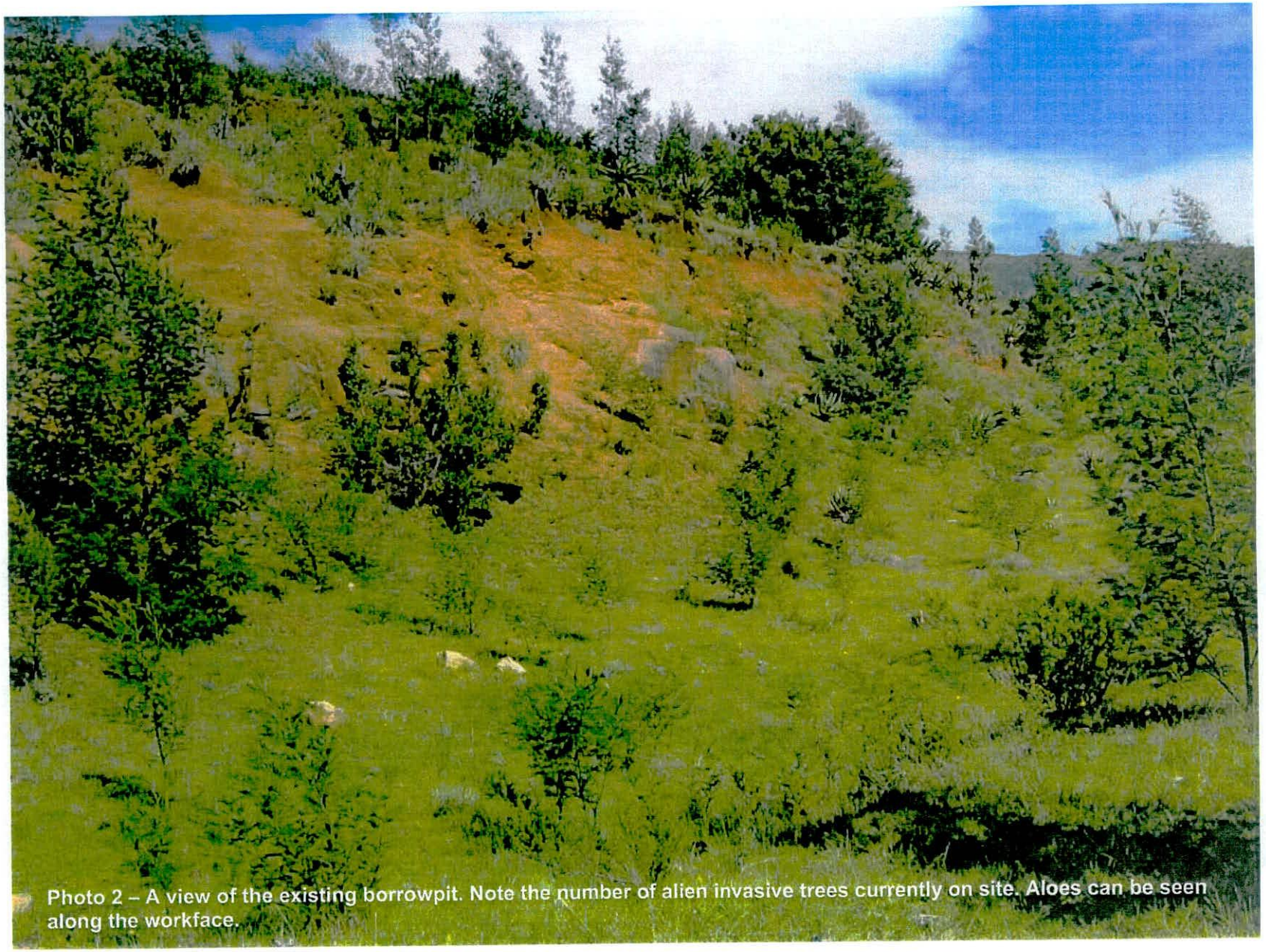


Photo 2 – A view of the existing borrowpit. Note the number of alien invasive trees currently on site. Aloes can be seen along the workface.

Photo 3 – The Mnyameni River downslope of the site.

Photo 4 – Close up view of the existing work face.

PHOTOGRAPHS – BORROWPIT 7378/4

Photo 1 – Aerial view of BP 7378/4

Photo 2 –View of the existing borrowpit (looking toward South-east)

Photo 3 – Close up view of the existing face (looking South)

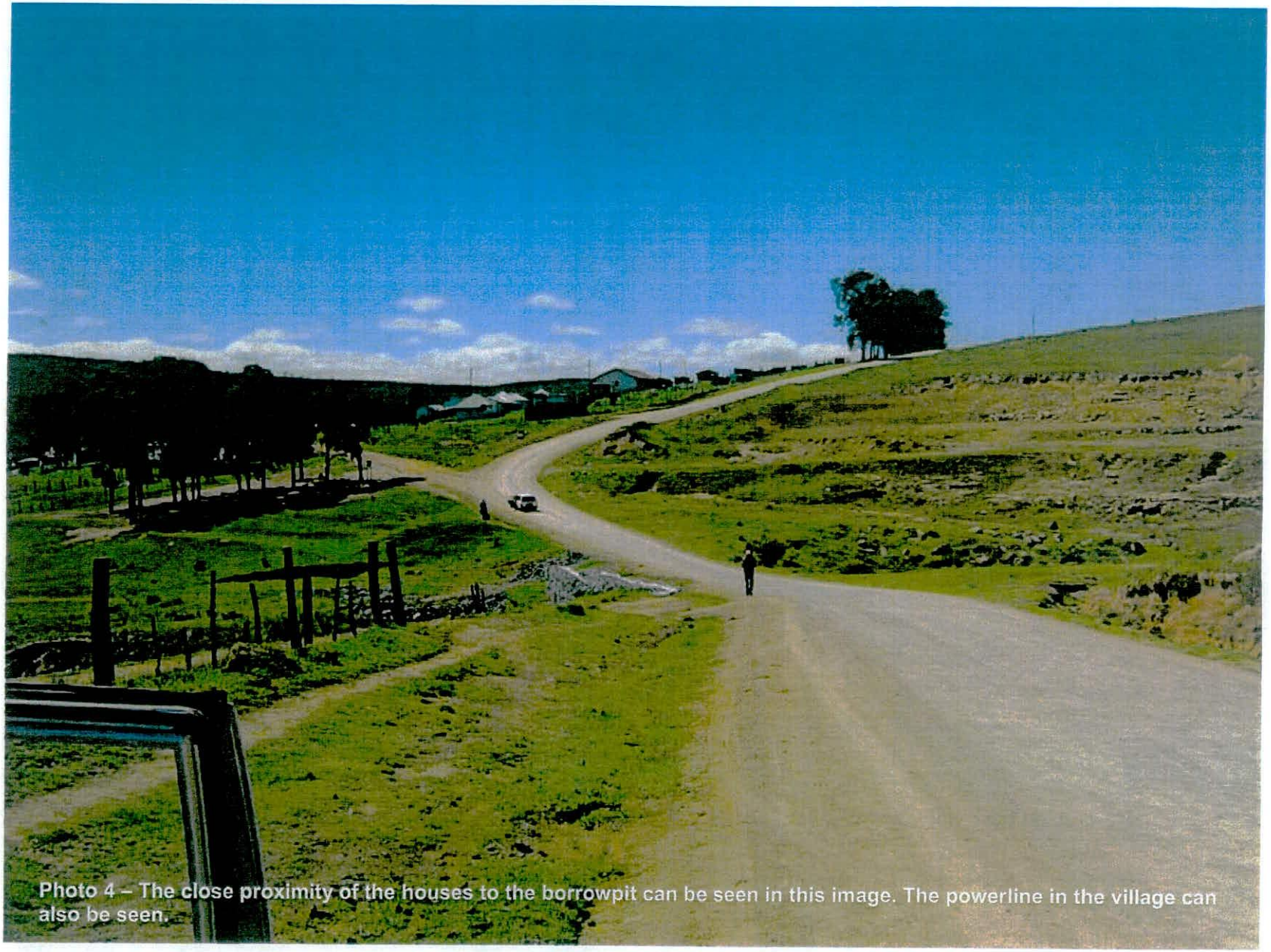


Photo 4 – The close proximity of the houses to the borrowpit can be seen in this image. The powerline in the village can also be seen.

APPENDIX C

PUBLIC CONSULTATION

TERRECO

IPHETSMANA LOKUCHOLA-CHOLA ULWAZI

IPROJECT: Ukwenziwa ngedvabile kuendlela uDR07378

IGAMA: Yanani MKhaphia.

Umhali Okufutshane

INOMBOLOZAKHO

INOMBOLO YOMNEXEBA	0768551839	FAX:	
CELLPHONE	0795930155	EMEYILE:	
IDILESI:			

ULUVO LWAKHO:

We dont have any problems with regards to the borrow-pit. The work must go ahead.

Ndiyavumelana ndinika negunya ukuba ilitye lale borrowpit ikufutshane nam lisetyenziswe ekwenziweni komgago u DR07378.

SAYINA: N. MKABA UMHLA: 25/11/2008

TERRECO

IPHETSMANA LOKUCHOLA-CHOLA ULWAZI

IPROJECT: Ukwenziwa ngedvabile kuendlela uDR07378	
IGAMA:	UPPER - Gxulu Village
Umhali Okufutshane	NomBuyiselo Tolobe

INOMBOLOZAKHO

INOMBOLO YOMNEXEBA	—	FAX:	—
CELLPHONE	—	EMEYILE:	—
IDILESI:	190506, Gxulu		

ULUVO LWAKHO:

No problem, go ahead with the proposed development.

Ndiyavumelana ndinika negunya ukuba ilitye lale borrowpit ikufutshane nam lisetyenziswe ekwenziweni komgaqo u DR07378.

SAYINA: N. Tolobe UMHLA: 25/11/2008

TERRECO

IPHETSMANA LOKUCHOLA-CHOLA ULWAZI

IPROJECT: Ukwenziwa ngedvabile kuendlela uDR07378

IGAMA: UPPER - GXULU

Umhali Okufutshane Xolelwa Zathu

INOMBOLOZAKHO

INOMBOLO YOMNEXEBA	0728182690	FAX:	
CELLPHONE		EMEYILE:	
IDILESI:			

ULUVO LWAKHO:

There are no problems so far and we welcome the proposed mining of this borrow-pit, because it is for our own benefit.

Ndiyavumelana ndinika negunya ukuba ilitye lale borrowpit ikufutshane nam lisetyenziswe ekwenziweni komgaqo u DR07378.

SAYINA: X. Zatu UMHLA: 25/11/2008

TERRECO

IPHETSMANA LOKUCHOLA-CHOLA ULWAZI

IPROJECT: Ukwenziwa ngedvabile kuendlela uDR07378	
IGAMA: UPPER GXULU	
Umhali Okufutshane	Nosisana Kom

INOMBOLOZAKHO

INOMBOLO YOMNEXEBA	—	FAX:	—
CELLPHONE	—	EMEYILE:	—
IDILESI:	GREEN FIVE FLATS AT THE CORNER NEXT TO THE BP.		

ULUVO LWAKHO:

The only problem is the flow of water during rain, when it rains Water flow from this borrow-pit down to the road and this becomes a problem because there is no bridge for cars, So phi when you are mining This borrow-pit make sure that you re-divert the flow of water.

Ndiyavumelana ndinika negunya ukuba ilitye lale borrowpit ikufutshane nam lisetyenziswe ekwenziweni komgaqo u DR07378.

SAYINA: N. Kom. UMHLA: 25/11/2008

TERRECO

IPHETSMANA LOKUCHOLA-CHOLA ULWAZI

IPROJECT: Ukwenziwa ngedvabile kuendlela uDR07378
IGAMA: UPPER - OXULU
Umhali Okufutshane Ncamile Mluma

INOMBOLOZAKHO

INOMBOLO YOMNEXEBA		FAX:	
CELLPHONE		EMEYILE:	
IDILESI:	1903/6, Uxulu		

ULUVO LWAKHO:

No problem No problem, we are happy with the proposed upgrading of the road, please make sure that the road standard is good and that there is a bridge, fix the one that is damage.

Ndiyavumelana ndinika negunya ukuba ilitye lale borrowpit ikufutshane nam lisetyenziswe ekwenziweni komgaqo u DR07378.

SAYINA: _____ UMHLA: 25/11/2008

TERRECO

IPHETSMANA LOKUCHOLA-CHOLA ULWAZI

IPROJECT: Ukwenziwa ngedvabile kuendlela uDR07378	
IGAMA:	4 PPER – Gxulu
Umhali Okufutshane	Nofamily G. Khondleka

INOMBOLOZAKHO

INOMBOLO YOMNEXEBA		FAX:	
CELLPHONE		EMEYILE:	
IDILESI:	195503 / Gxulu Loc.		

ULUVO LWAKHO:

My house is not near that Borrow-pit but plese fence it off after taking out material, because our kids are playing there. Please for the safety of our children.

Ndiyavumelana ndinika negunya ukuba ilitye lale borrowpit ikufutshane nam lisetyenziswe ekwenziweni komgaqo u DR07378.

SAYINA: N. Kondleka UMHLA: 25/11/2008

Duncan Scott

From: "Duncan Scott" <scottd@terreco.co.za>
To: <mhlopekazi@dla.gov.za>
Sent: 25 November 2008 04:10 PM
Attach: Locality plan_Chata BPs_50.jpg
Subject: Borrowpit use on state owned land

Dear Sir,

I am an environmental consultant who is assiting the DWAF with an application to extend and mine two borrowpits near Keiskammahoek. They want to do maintenance work on an access road to the Mnyameni Dam. They need to mine material for road building for that purpose.

As part of my consultation process I consult with landowners and I believe the land that the borrowpits are positioned on is state land. Therefore I approach you department as the land owner in this case.

I received your contact details from Mr Matebese in the Mthatha office of the Department of Land Affairs. Mr Matebese usually assists me with projects such as these that take place in areas that wer part of the old Transkei and are currently state owned.

I have attached the names and localities of the two borrowpits that will be affected. They are presented on a map.

The maintenance work will be undertaken along the DR07378. Both of the borrowpits are existing mines and are in close proximity to that road.

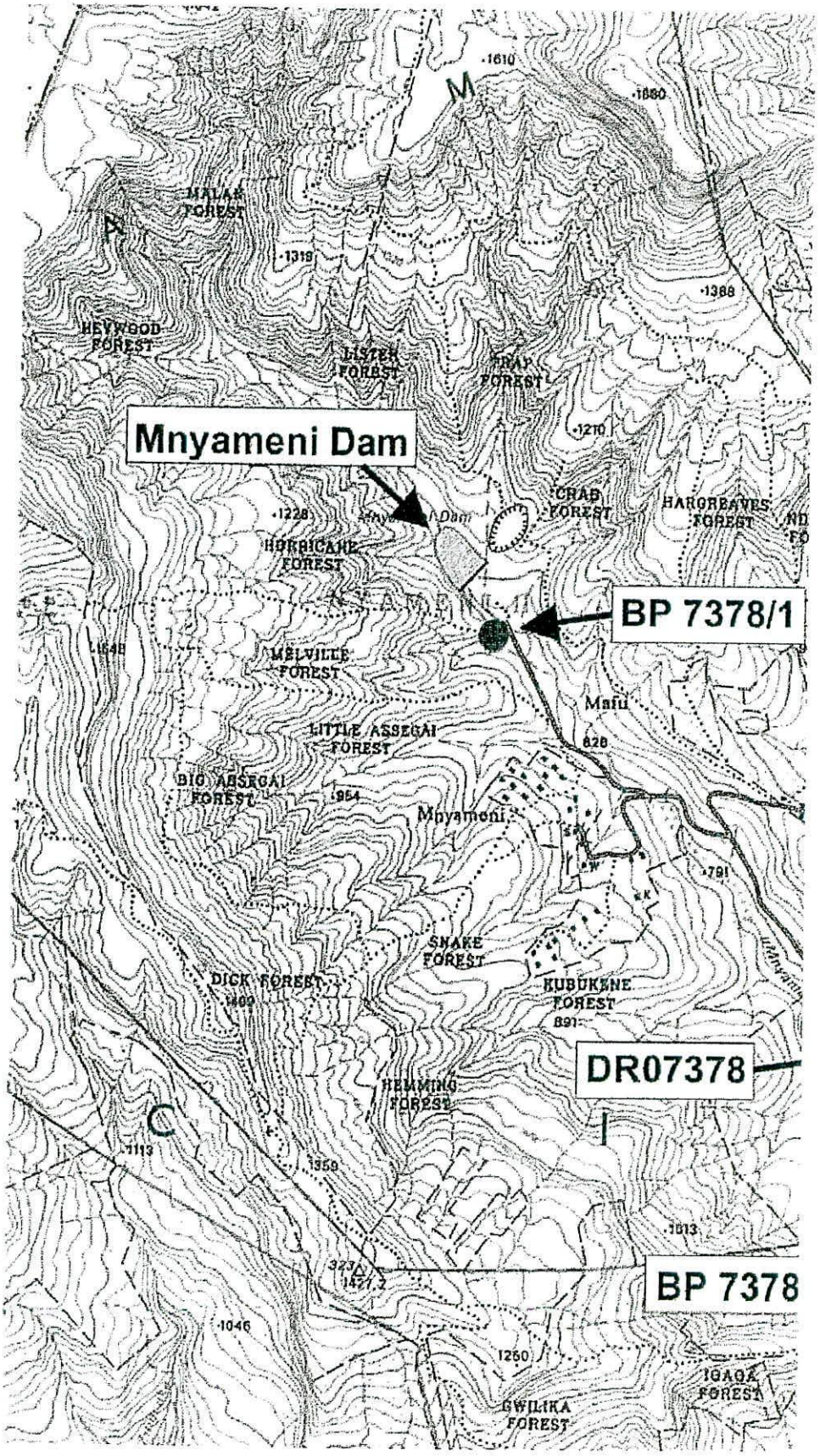
Could you please provide me with comment regarding the use of these borrowpits (as the representative of the land owner).

Thank you veyr much for your assistance.

Regards,

Duncan Scott
TERRECO cc
Geotechnical, Environmental and Waste Management Services

Tel: 043 721 1502
Fax: 043 721 1535
Cell: 083 974 0553


Mnyameni Dam
BP 7378/1
DR07378
BP 7378
MALAN FOREST
HEYWOOD FOREST
LISTER FOREST
CRAP FOREST
HARGREAVES FOREST
HURRICANE FOREST
MELVILLE FOREST
LITTLE ASSEGAI FOREST
BIG ASSEGAI FOREST
SNAKE FOREST
DICK FOREST
KUBUKANE FOREST
HEMMING FOREST
IGAQA FOREST
GWILIKA FOREST
Mafu
Mnyameni
1610
1680
1319
1388
1210
1228
1648
628
954
791
1469
891
1113
1359
1613
1046
1260

Duncan Scott

From: "Mabuti Hlopekazi" <MHlopekazi@dla.gov.za>
To: "Duncan Scott" <scottd@terreco.co.za>
Sent: 27 November 2008 08:33 AM
Subject: Re: Borrowpit use on state owned land

Good Morning Sir

The office will make a follow up on this issue as a matter of urgency

Best Regards

Mabuti Hlopekazi

>>> "Duncan Scott" <scottd@terreco.co.za> 2008/11/25 16:10 >>>
Dear Sir,

I am an environmental consultant who is assiting the DWAF with an application to extend and mine two borrowpits near Keiskammahoek. They want to do maintenance work on an access road to the Mnyameni Dam. They need to mine material for road building for that purpose.

As part of my consultation process I consult with landowners and I believe the land that the borrowpits are positioned on is state land. Therefore I approach you department as the land owner in this case.

I received your contact details from Mr Matebese in the Mthatha office of the Department of Land Affairs. Mr Matebese usually assists me with projects such as these that take place in areas that wer part of the old Transkei and are currently state owned.

I have attached the names and localities of the two borrowpits that will be affected. They are presented on a map.

The maintenance work will be undertaken along the DR07378. Both of the borrowpits are existing mines and are in close proximity to that road.

Could you please provide me with comment regarding the use of these borrowpits (as the representative of the land owner).

Thank you veyr much for your assistance.

Regards,

Duncan Scott
TERRECO cc
Geotechnical, Environmental and Waste Management Services

Tel: 043 721 1502
Fax: 043 721 1535
Cell: 083 974 0553

APPENDIX D

IMPACT ASSESSMENT TABLES

POTENTIAL IMPACT – CONSTRUCTION PHASE	ASPECT	Nature	Severity	Duration	Extent	Probability	Confidence	MITIGATION POTENTIAL	SIGNIFICANCE		MITIGATION REF
									Without Mitigation	With Mitigation	
1.1 Soil Compaction and Erosion ***Activities:*** • Clearing and grubbing • Stripping of topsoil • Creation of stormwater drainage systems ***Description:*** The compaction of soil may occur during the site preparation phase as a result of operating heavy machinery. Compaction of soil may result in the loss of soil viability which will affect the ability of the vegetation to recover. Compacted soil decreases infiltration and therefore increases the amount of surface runoff which will contribute to the rate of erosion. The removal of vegetation cover and exposure of underlying soil will increase the risk of erosion, particularly on steeper slopes. Erosion may result in the loss of viable topsoil and downstream impacts on the receiving water bodies.	Surface Disturbance	Negative Direct	M	M	S	L	H	M	MEDIUM NEGATIVE	LOW NEGATIVE	6.4 6.7
			M	M	S	L	H	M	MEDIUM NEGATIVE	LOW NEGATIVE	
1.2 Soil Pollution ***Activities:*** • Operation of machinery ***Description:*** The operation of heavy machinery during the stripping and clearing of the borrowpits may result in spillages of hydraulic oils due to breakdowns or spillages of diesel during refuelling in the field. Spillages may result in the pollution of soil which could affect soil viability.	Hazardous Waste	Negative Direct	M	S	S	P	M	H	MEDIUM NEGATIVE	LOW NEGATIVE	6.3 6.4 6.13 6.14
			M	S	S	P	M	H	MEDIUM NEGATIVE	LOW NEGATIVE	
1.3 Air Pollution ***Activities:*** • Clearing and grubbing • Stripping of topsoil • Creation of stormwater drainage systems • Stripping of overburden ***Description:*** Vehicle emissions (exhaust emissions) will be generated by the operation of plant on site. Dust will be generated from the use of machinery during the stripping of vegetation, topsoil and overburden. Exposed surfaces will contribute to atmospheric dust particularly during high wind conditions. Excessive exposure to dust will impact on human health. Lower levels may be considered of nuisance value. This impact is most relevant at BP 7378/4 due to its fairly close proximity to houses. The impact on Public Health and Safety is discussed under Section 1.10 below.	Emissions to Air (Gaseous) Emissions to Air (Particulate – Dust)	Negative Direct	M	S	S	D	H	M	MEDIUM NEGATIVE	LOW NEGATIVE	6.5
			M	S	S	D	H	M	MEDIUM NEGATIVE	MEDIUM / LOW NEGATIVE	

SEVERITY: (Refer to Table 5.2) H = High; M = Medium; L = Low; + = Positive	DURATION: (Refer to Table 5.3) S = Short Term; M = Medium Term; L = Long Term; P = Permanent	EXTENT: (Refer to Table 5.3) S = Site; L = Local; R = regional; N = National	PROBABILITY: (Refer to Table 5.3) U = Unlikely; L = Likely; P = Possible; D = Definite
MITIGATION PROTENTIAL: (Refer to Table 5.4) H = High; M = Medium; L = Low	BP 7378/1	BP 7378/4	

POTENTIAL IMPACT – CONSTRUCTION PHASE	ASPECT	Nature	Severity	Duration	Extent	Probability	Confidence	MITIGATION POTENTIAL	SIGNIFICANCE		MITIGATION REF
									Without Mitigation	With Mitigation	
1.4 Surface Water Pollution (Dirty Water Runoff and Pollutants) ***Activities:*** • Clearing and grubbing • Stripping of topsoil • Stripping of overburden • Creation of stormwater drainage systems • Topsoil and overburden stockpiles ***Description:*** Without proper management, runoff from exposed soil surfaces and stockpiles is likely to become highly sedimented (ie carry a high sediment load). The compaction of surfaces and the creation of hard, impermeable surfaces will increase the amount of runoff generated. Stormwater runoff will ultimately enter the surrounding environment from an energy diversion point. A stormwater management system is therefore proposed, with regular monitoring of downstream impacts. This impact is most relevant at BP 7378/1 where the Mnyameni River is 50m downslope of the site. Spillages of hydrocarbons (such as hydraulic oils) may enter into surface water bodies if washed off site.	Release to water (diffuse & point)	Negative Direct	L	M	L	P	H	H	MEDIUM – LOW NEGATIVE	LOW NEGATIVE	6.3 6.4
			L	M	L	P	H	H	MEDIUM – LOW NEGATIVE	LOW NEGATIVE	
1.5 Habitat Degradation and Loss ***Activities:*** • Clearing and grubbing ***Description:*** The preparation of the sites will involve the clearing of vegetation. The area surrounding the BP 7378/4 site is currently degraded grassland while the areas surrounding BP 7378/1 are populated with degraded grassland species, aloes and a fairly large number of Black Wattle *Acacia mearnsii* trees. The site preparation will effectively result in the complete transformation of the sites in terms of plant and animal habitat. The vegetation assessment indicated that the vegetation type affected by the mining areas is not unique and is in fact well represented in the surrounding areas. One may therefore assume that the loss of the vegetation on the footprint of the mining area will not have a significantly detrimental impact on the vegetation type as a whole. Notwithstanding this, an effort should be made to minimize the area of impact and to reestablish the vegetation as close to the original condition as possible, following completion of the mining operations. The aloe plants that will be removed at BP 7387/1 must be planted in a designated nursery area for use during rehabilitation.	Surface Disturbance	Negative Direct	M/L	L	S	D	H	M	MEDIUM NEGATIVE	LOW NEGATIVE	6.8
			M/L	L	S	D	H	M	MEDIUM NEGATIVE	LOW NEGATIVE	
1.6 Spread of invasive alien species ***Activities:*** • Clearing and grubbing ***Description:*** The removal of indigenous vegetation and the creation of disturbed surfaces is an open invitation for the invasion of alien plant species. Alien invader species such as Black Wattle have been recorded in the area Currently exist at BP 7378/1). Invasive alien plants effectively out compete many of the indigenous species and ultimately lead to a loss of biodiversity. This impact must be managed throughout the life of the mines through the implementation of a detailed alien plant eradication programme.	Surface Disturbance	Negative Direct	M	L	S	L	H	H	MEDIUM NEGATIVE	LOW NEGATIVE	6.8
			M	L	S	L	H	H	MEDIUM NEGATIVE	LOW NEGATIVE	

SEVERITY: (Refer to Table 5.2) H = High; M = Medium; L = Low; + = Positive	DURATION: (Refer to Table 5.3) S = Short Term; M = Medium Term; L = Long Term; P = Permanent	EXTENT: (Refer to Table 5.3) S = Site; L = Local; R = regional; N = National	PROBABILITY: (Refer to Table 5.3) U = Unlikely; L = Likely; P = Possible; D = Definite
MITIGATION PROTENTIAL: (Refer to Table 5.4) H = High; M = Medium; L = Low	BP 7378/1	BP 7378/4	

POTENTIAL IMPACT – CONSTRUCTION PHASE	ASPECT	Nature	Severity	Duration	Extent	Probability	Confidence	MITIGATION POTENTIAL	SIGNIFICANCE		MITIGATION REF
									Without Mitigation	With Mitigation	
1.7 Public Nuisance – Traffic Disruption ***Activities:*** • Accessing the sites • Fencing of the sites ***Description:*** Accessing the borrowpits may result in some disruption to traffic along the gravel public road. This will be short-lived and of low significance. The DR07378 is a low traffic volume rural road. Fencing of the site may impact on pedestrian movement across the site. Considering that the site does not form part of an obvious thoroughfare nor is there any evidence of well used paths, this impact is unlikely to be significant.	Creation/disruption of access	Negative Direct	L	S	S	P	H	L	LOW NEGATIVE	LOW NEGATIVE	6.15
			L	S	S	P	H	L	LOW NEGATIVE	LOW NEGATIVE	
1.8 Public Nuisance – Dust Generation ***Activities:*** • Accessing the borrowpits • Clearing and grubbing • Stripping of topsoil • Creation of stormwater drainage systems • Stripping of overburden ***Description:*** Dust will be generated from the use of machinery to construct platforms and during the stripping of vegetation, topsoil and overburden. Exposed surfaces will contribute to atmospheric dust particularly during high wind conditions. The closest houses to BP 7378/4 are approximately 40m away while at BP 7378/4 they are further than 1 000m away.	Emissions to air - particulate	Negative Direct	L	M	S	L	M	M	MEDIUM NEGATIVE	LOW NEGATIVE	6.5
			L	M	S	L	M	M	MEDIUM NEGATIVE	MEDIUM - LOW NEGATIVE	
1.9 Public Nuisance – Noise ***Activities:*** • Accessing the sites • Clearing and grubbing • Stripping of topsoil • Stripping of overburden • Creations of stormwater drainage systems ***Description:*** During the site establishment phase, noise will be generated primarily by heavy earthmoving machinery as the mining area is stripped of topsoil and overburden. As such, the noise levels are likely to be those commonly experienced on any civil construction site. Activities will be limited to normal working hours. The closest houses to BP 7378/1 are approximately 1 000m away while at BP 7378/4 they are much closer with houses roughly 40m away. The impact of noise on mine workers' health will be addressed by the Mine Health and Safety Plan and will include the use of protective hearing devices.	Noise Disturbance	Negative Direct	L	M	S	D	M	M	MEDIUM NEGATIVE	LOW NEGATIVE	6.6
			L	M	S	D	M	M	MEDIUM NEGATIVE	MEDIUM – LOW NEGATIVE	

SEVERITY: (Refer to Table 5.2) H = High; M = Medium; L = Low; + = Positive	DURATION: (Refer to Table 5.3) S = Short Term; M = Medium Term; L = Long Term; P = Permanent	EXTENT: (Refer to Table 5.3) S = Site; L = Local; R = regional; N = National	PROBABILITY: (Refer to Table 5.3) U = Unlikely; L = Likely; P = Possible; D = Definite
MITIGATION POTENTIAL: (Refer to Table 5.4) H = High; M = Medium; L = Low	BP 7378/1	BP 7378/4	

POTENTIAL IMPACT – CONSTRUCTION PHASE	ASPECT	Nature	Severity	Duration	Extent	Probability	Confidence	MITIGATION POTENTIAL	SIGNIFICANCE		MITIGATION REF
									Without Mitigation	With Mitigation	
1.10 Public Health and Safety ***Activities:*** • Accessing the site • Clearing and grubbing • Stripping of topsoil • Stripping of overburden • Creations of stormwater drainage systems ***Description:*** Public health and safety may be at risk as a result of a number of aspects: generation of dust and noise, the operation of heavy earthmoving machinery on site and the creation of excavations and stockpiles. The impacts of noise and dust generation on public health and wellbeing are discussed in the sections above. The erection of the security fence and presence of security staff as well as proper safety signage will minimize the safety risks posed to nearby residents and other members of the public.	Emissions to air, Noise, surface disturbance, changes in landform, topography	Negative Direct	M	M	S	P	M	H	MEDIUM NEGATIVE	LOW NEGATIVE	6.12 6.14 6.15
			M	M	S	P	M	H	MEDIUM NEGATIVE	LOW NEGATIVE	
1.11 Degradation of landscape value, aesthetic appeal or sense of place ***Activities:*** • Clearing and grubbing • Stripping of topsoil • Stripping of overburden ***Description:*** The site establishment phase will have a visual impact as vegetation and topsoil is stripped. The activities will be visible from some of the surrounding areas but BP 7378/1 less so as it in positioned in a valley and the surrounding dwellings are all further 1 000m away. This section of the road is also seldom used as evident from the overgrown nature of the road in this area. The borrowpits are located adjacent to the DR07378 and are therefore highly visible from that road. The borrowpits, however, are existing sites with high visual impacts. Considering that the surrounding landuse is largely rural agricultural in nature, the site establishment activities are likely to be noticeable and therefore will have a significant impact on the aesthetic value of the landscape. This will be mitigated somewhat by minimizing cleared areas and by landscaping where possible.	Surface disturbance, change in landform and topography	Negative Direct	M	L	L	D	M	M	HIGH – MEDIUM NEGATIVE	MEDIUM – LOW NEGATIVE	6.3 6.5 6.6 6.8 6.9 6.10 6.11 6.13 6.14
			M	L	L	D	M	M	HIGH – MEDIUM NEGATIVE	MEDIUM NEGATIVE	
1.12 Cultural Heritage ***Activities:*** • Clearing and grubbing • Stripping of topsoil • Stripping of overburden ***Description:*** During site establishment there is the potential for the destruction of national heritage sites to be destroyed or damaged. However no sites of cultural importance were discovered at either the BP 7378/1 or BP 7378/4 site, or within their surrounds, during the Heritage Impact Assessment undertaken by Knight Piésold. Therefore the expansion of the borrowpit will not impact on such resources.	Surface disturbance, change in landform and topography	Negative Direct	L	L	L	D	M	M	NON - SIGNIFICANT	NON - SIGNIFICANT	6.9
			L	L	L	D	M	M	NON - SIGNIFICANT	NON - SIGNIFICANT	

SEVERITY: (Refer to Table 5.2) H = High; M = Medium; L = Low; + = Positive	DURATION: (Refer to Table 5.3) S = Short Term; M = Medium Term; L = Long Term; P = Permanent	EXTENT: (Refer to Table 5.3) S = Site; L = Local; R = regional; N = National	PROBABILITY: (Refer to Table 5.3) U = Unlikely; L = Likely; P = Possible; D = Definite
MITIGATION POTENTIAL: (Refer to Table 5.4) H = High; M = Medium; L = Low	BP 7378/1	BP 7378/4	

POTENTIAL IMPACT – CONSTRUCTION PHASE	ASPECT	Nature	Severity	Duration	Extent	Probability	Confidence	MITIGATION POTENTIAL	SIGNIFICANCE		MITIGATION REF
									Without Mitigation	With Mitigation	
1.13 Change in Landuse ***Activities:*** • General mining activities ***Description:*** The expansion of the borrowpits will result in a temporary change of landuse which will be largely reinstated on closure.	Surface disturbance, change in landform and topography	**Negative Direct**	H	L	S	D	H	M	HIGH NEGATIVE	LOW NEGATIVE	6.10
			H	L	S	D	H	M	HIGH NEGATIVE	LOW NEGATIVE	
1.14 Economic Development, income generation and social upliftment ***Activities:*** • Procurement of goods and services • Employment and training ***Description:*** The site establishment phase is likely to require the use of generalized and specialized services. Preference will be given to local service providers and suppliers where possible and to the employment of local labour. Employment of local labour, use of existing SMME's based in the area, and the support of local businesses in the supply of goods and services will benefit the regional economy.	Materials Consumption, recruitment and training	**Positive Direct and Indirect**	M+	M	R	P	M	N/A	LOW POSITIVE		6.16 6.17
			M+	M	R	P	M	N/A	LOW POSITIVE		

SEVERITY: (Refer to Table 5.2) H = High; M = Medium; L = Low; + = Positive	DURATION: (Refer to Table 5.3) S = Short Term; M = Medium Term; L = Long Term; P = Permanent	EXTENT: (Refer to Table 5.3) S = Site; L = Local; R = regional; N = National	PROBABILITY: (Refer to Table 5.3) U = Unlikely; L = Likely; P = Possible; D = Definite
MITIGATION PROTENTIAL: (Refer to Table 5.4) H = High; M = Medium; L = Low	BP 7378/1	BP 7378/4	

POTENTIAL IMPACT – OPERATION PHASE	ASPECT	Nature	Severity	Duration	Extent	Probability	Confidence	MITIGATION POTENTIAL	SIGNIFICANCE		MITIGATION REF
									Without Mitigation	With Mitigation	
2.1 Soil Compaction and Erosion ***Activities:*** • Extraction of Material ***Description:*** Refer to Section 1.1	Surface Disturbance	Negative Direct	M	M	S	L	H	M	MEDIUM NEGATIVE	LOW NEGATIVE	6.4 6.7
			M	M	S	L	H	M	MEDIUM NEGATIVE	LOW NEGATIVE	
2.2 Soil Pollution ***Activities:*** • Operation of machinery ***Description:*** Refer to Section 1.2	Hazardous Waste	Negative Direct	M	S	S	P	M	H	MEDIUM NEGATIVE	LOW NEGATIVE	6.3 6.4 6.13 6.14
			M	S	S	P	M	H	MEDIUM NEGATIVE	LOW NEGATIVE	
2.3 Air Pollution ***Activities:*** • Extraction of material • Loading of trucks • Transportation of material ***Description:*** Refer to Section 1.3	Emissions to Air (Gaseous) Emissions to Air (Particulate – Dust)	Negative Direct	M	S	S	D	H	M	MEDIUM NEGATIVE	LOW NEGATIVE	6.5
			M	S	S	D	H	M	MEDIUM NEGATIVE	MEDIUM - LOW NEGATIVE	
2.4 Surface Water Pollution (Dirty Water Runoff and Pollutants) ***Activities:*** • Extraction of Material ***Description:*** Refer to Section 1.4	Release to water (diffuse & point)	Negative Direct	L	M	L	P	H	H	MEDIUM – LOW NEGATIVE	LOW NEGATIVE	6.3 6.4
			L	M	L	P	H	H	MEDIUM – LOW NEGATIVE	LOW NEGATIVE	
2.5 Spread of invasive alien species ***Activities:*** • Extraction of material ***Description;*** Refer to Section 1.6	Surface Disturbance	Negative Direct	M	L	S	L	H	H	MEDIUM NEGATIVE	LOW NEGATIVE	6.8
			M	L	S	L	H	H	MEDIUM NEGATIVE	LOW NEGATIVE	

SEVERITY: (Refer to Table 5.2) H = High; M = Medium; L = Low; + = Positive	DURATION: (Refer to Table 5.3) S = Short Term; M = Medium Term; L = Long Term; P = Permanent	EXTENT: (Refer to Table 5.3) S = Site; L = Local; R = regional; N = National	PROBABILITY: (Refer to Table 5.3) U = Unlikely; L = Likely; P = Possible; D = Definite
MITIGATION PROTENTIAL: (Refer to Table 5.4) H = High; M = Medium; L = Low	BP 7378/1	BP 7378/4	

POTENTIAL IMPACT – OPERATION PHASE	ASPECT	Nature	Severity	Duration	Extent	Probability	Confidence	MITIGATION POTENTIAL	SIGNIFICANCE		MITIGATION REF
									Without Mitigation	With Mitigation	
2.6 Public Nuisance – Traffic Disruption ***Activities:*** • Transporting of material to construction sites ***Description:*** The transportation of material to the various construction sites along the construction site may result in traffic disruption. One should bear in mind, however, that there will already be disruption to traffic caused by the road construction activities and the transportation of material to site is unlikely to add significantly to this. There is generally little traffic along the DR07378.	Creation/disruption of access	Negative Direct	L	S	S	P	H	L	LOW NEGATIVE	LOW NEGATIVE	6.15
			L	S	S	P	H	L	LOW NEGATIVE	LOW NEGATIVE	
2.7 Public Nuisance – Dust Generation ***Activities:*** • Extraction of material • Loading of material • Transportation of material to site ***Description:*** Dust will be generated from excavation and loading of material as well as the exposure of bare soil within the borrowpits. Dust will be generated from the use of trucks to transport material to the construction sites.	Emissions to air - particulate	Negative Direct	L	M	L	L	M	M	MEDIUM NEGATIVE	LOW NEGATIVE	6.5
			L	M	L	L	M	M	MEDIUM NEGATIVE	MEDIUM - LOW NEGATIVE	
2.8 Public Nuisance – Noise ***Activities:*** • Extraction of material • Loading of material • Transportation of material to site ***Description:*** Refer to Section 1.9.	Noise Disturbance	Negative Direct	M	M	L	D	M	M	MEDIUM NEGATIVE	LOW NEGATIVE	6.6
			M	M	L	D	M	M	MEDIUM NEGATIVE	MEDIUM – LOW NEGATIVE	
2.9 Public Health and Safety ***Activities:*** • Extraction of material • Loading of material • Transportation of material to site ***Description:*** Public health and safety may be at risk as a result of a number of aspects: generation of dust and noise, the operation of heavy earthmoving machinery of site and the creation of excavations and stockpiles. The impacts of noise and dust generation on public health and wellbeing are discussed in the sections above. The erection of the security fence and presence of security staff as well as proper safety signage will minimize the safety risks posed to nearby residents and other members of the public.	Emissions to air Noise, surface disturbance, changes in landform, topography	Negative Direct	M	M	S	P	M	H	MEDIUM – HIGH NEGATIVE	LOW NEGATIVE	6.12 6.14 6.15
			M	M	S	P	M	H	MEDIUM – HIGH NEGATIVE	LOW NEGATIVE	

SEVERITY: (Refer to Table 5.2) H = High; M = Medium; L = Low; + = Positive	DURATION: (Refer to Table 5.3) S = Short Term; M = Medium Term; L = Long Term; P = Permanent	EXTENT: (Refer to Table 5.3) S = Site; L = Local; R = regional; N = National	PROBABILITY: (Refer to Table 5.3) U = Unlikely; L = Likely; P = Possible; D = Definite
MITIGATION PROTENTIAL: (Refer to Table 5.4) H = High; M = Medium; L = Low	BP 7378/1	BP 7378/4	

POTENTIAL IMPACT – OPERATION PHASE	ASPECT	Nature	Severity	Duration	Extent	Probability	Confidence	MITIGATION POTENTIAL	SIGNIFICANCE		MITIGATION REF
									Without Mitigation	With Mitigation	
2.10 Degradation of landscape value, aesthetic appeal or sense of place ***Activities:*** • Excavation of the material – expansion of the borrowpits ***Description:*** As the borrowpits are mined, they will grow in size extending as indicated in the development plans. The activities will be visible from some of the surrounding areas but BP 7378/1 less so as it in positioned in a valley and the surrounding dwellings are all further 1 000m away. This section of the road is also seldom used as evident from the overgrown nature of the road in this area. The borrowpits are located adjacent to the DR07378 and are therefore highly visible from that road. The borrowpits, however, are existing sites with high visual impacts. Considering that the surrounding landuse is largely rural agricultural in nature, the site establishment activities are likely to be noticeable and therefore will have a significant impact on the aesthetic value of the landscape. This will be mitigated somewhat by minimizing cleared areas and by landscaping where possible.	Surface disturbance, change in landform and topography	Negative Direct	M	L	L	D	M	M	HIGH – MEDIUM NEGATIVE	MEDIUM – LOW NEGATIVE	6.3 6.5 6.6 6.8 6.9 6.10 6.11 6.13 6.14
			M	L	L	D	M	M	HIGH – MEDIUM NEGATIVE	MEDIUM NEGATIVE	
2.11 Economic Development, income generation and social upliftment ***Activities:*** • Procurement of goods and services • Employment and training ***Description:*** Refer to Section 1.14.	Materials Consumption, recruitment and training	Positive Direct and Indirect	M+	M	R	P	M	N/A	LOW POSITIVE		6.16 6.17
			M+	M	R	P	M	N/A	LOW POSITIVE		

SEVERITY: (Refer to Table 5.2) H = High; M = Medium; L = Low; + = Positive	DURATION: (Refer to Table 5.3) S = Short Term; M = Medium Term; L = Long Term; P = Permanent	EXTENT: (Refer to Table 5.3) S = Site; L = Local; R = regional; N = National	PROBABILITY: (Refer to Table 5.3) U = Unlikely; L = Likely; P = Possible; D = Definite
MITIGATION POTENTIAL: (Refer to Table 5.4) H = High; M = Medium; L = Low	BP 7378/1	BP 7378/4	

POTENTIAL IMPACT – CLOSURE PHASE	ASPECT	Nature	Severity	Duration	Extent	Probability	Confidence	MITIGATION POTENTIAL	SIGNIFICANCE		MITIGATION REF
									Without Mitigation	With Mitigation	
3.1 Soil Compaction and Erosion ***Activities:*** • Shaping of the borrowpits • Topsoiling ***Description:*** Refer to Section 1.1	Surface Disturbance	Negative Direct	M	M	S	L	H	M	MEDIUM NEGATIVE	LOW NEGATIVE	6.4 6.7
			M	M	S	L	H	M	MEDIUM NEGATIVE	LOW NEGATIVE	
3.2 Soil Pollution ***Activities:*** • Operation of machinery ***Description:*** Refer to Section 1.2	Hazardous Waste	Negative Direct	M	S	S	P	M	H	MEDIUM NEGATIVE	LOW NEGATIVE	6.3 6.4 6.13 6.14
			M	S	S	P	M	H	MEDIUM NEGATIVE	LOW NEGATIVE	
3.3 Air Pollution ***Activities:*** • Shaping of the borrowpits • Topsoiling ***Description:*** Refer to Section 1.3	Emissions to Air (Gaseous) Emissions to Air (Particulate – Dust)	Negative Direct	M	S	S	D	H	M	MEDIUM NEGATIVE	MEDIUM / LOW NEGATIVE	6.5
			M	S	S	D	H	M	MEDIUM NEGATIVE	MEDIUM / LOW NEGATIVE	
3.4 Surface Water Pollution (Dirty Water Runoff and Pollutants) ***Activities:*** • Shaping of the borrowpits • Topsoiling ***Description:*** Refer to Section 1.4	Release to water (diffuse & point)	Negative Direct	L	M	L	P	H	H	MEDIUM – LOW NEGATIVE	LOW NEGATIVE	6.3 6.4
			L	M	L	P	H	H	MEDIUM – LOW NEGATIVE	LOW NEGATIVE	

SEVERITY: (Refer to Table 5.2) H = High; M = Medium; L = Low; + = Positive	DURATION: (Refer to Table 5.3) S = Short Term; M = Medium Term; L = Long Term; P = Permanent	EXTENT: (Refer to Table 5.3) S = Site; L = Local; R = regional; N = National	PROBABILITY: (Refer to Table 5.3) U = Unlikely; L = Likely; P = Possible; D = Definite
MITIGATION PROTENTIAL: (Refer to Table 5.4) H = High; M = Medium; L = Low	BP 7378/1	BP 7378/4	

POTENTIAL IMPACT – CLOSURE PHASE	ASPECT	Nature	Severity	Duration	Extent	Probability	Confidence	MITIGATION POTENTIAL	SIGNIFICANCE		MITIGATION REF
									Without Mitigation	With Mitigation	
3.5 Spread of invasive alien species ***Activities:*** • Spreading of topsoil • Hydroseeding ***Description;*** Refer to Section 1.6	Surface Disturbance	Negative Direct	M	L	S	L	H	H	MEDIUM NEGATIVE	LOW NEGATIVE	6.8
			M	L	S	L	H	H	MEDIUM NEGATIVE	LOW NEGATIVE	
3.6 Public Nuisance – Dust Generation ***Activities:*** • Shaping of the Borrowpits • Spreading of topsoil ***Description:*** Dust will be generated from the shaping of the borrowpits as well as the spreading of the topsoil.	Emissions to air - particulate	Negative Direct	M	M	L	L	M	M	MEDIUM NEGATIVE	MEDIUM - LOW NEGATIVE	6.5
			M	M	L	L	M	M	MEDIUM NEGATIVE	LOW NEGATIVE	
3.7 Public Nuisance – Noise ***Activities:*** • Shaping of the Borrowpits • Spreading of topsoil ***Description:*** Refer to Section 1.9.	Noise Disturbance	Negative Direct	M	M	L	D	M	M	MEDIUM NEGATIVE	MEDIUM – LOW NEGATIVE	6.6
			M	M	L	D	M	M	MEDIUM NEGATIVE	LOW NEGATIVE	
3.8 Public Health and Safety ***Activities:*** • Shaping of the borrowpits • Spreading of topsoil ***Description:*** Public health and safety may be at risk as a result of a number of aspects: generation of dust and noise, the operation of heavy earthmoving machinery of site and the creation of excavations and stockpiles. The impacts of noise and dust generation on public health and wellbeing are discussed in the sections above. The erection of the security fence and presence of security staff as well as proper safety signage will minimize the safety risks posed to nearby residents and other members of the public.	Emissions to air Noise, surface disturbance, changes in landform, topography	Negative Direct	M	M	S	P	M	H	MEDIUM – HIGH NEGATIVE	LOW NEGATIVE	6.12 6.14 6.15
			M	M	S	P	M	H	MEDIUM – HIGH NEGATIVE	LOW NEGATIVE	
3.9 Degradation of landscape value, aesthetic appeal or sense of place ***Activities:*** • Shaping of the borrowpits • Topsoiling • Hydroseeding ***Description:*** These are existing borrowpits. The final rehabilitation will result in an improvement to the visual impact of the sites.	Surface disturbance, change in landform and topography	Negative Direct	M+	P	S	D	M	N/A	MEDIUM POSITIVE		6.3 6.5 6.6 6.8 6.9 6.10 6.11 6.13 6.14
			M+	P	S	D	M	N/A	MEDIUM POSITIVE		

SEVERITY: (Refer to Table 5.2) H = High; M = Medium; L = Low; + = Positive	DURATION: (Refer to Table 5.3) S = Short Term; M = Medium Term; L = Long Term; P = Permanent	EXTENT: (Refer to Table 5.3) S = Site; L = Local; R = regional; N = National	PROBABILITY: (Refer to Table 5.3) U = Unlikely; L = Likely; P = Possible; D = Definite
MITIGATION PROTENTIAL: (Refer to Table 5.4) H = High; M = Medium; L = Low	BP 7378/1	BP 7378/4	

APPENDIX E

REHABILITATION COST SCHEDULE

Rehabilitation Cost Summary Table for BP 7378/1

Description	Unit	Quantity	Rate	Amount
Creation of benches along the top of the quarry				
Excavator	hr	50	400	20,000.00
Tipper Truck	hr	50	400	20,000.00
Lowbed Hire	km	200	10	2,000.00
Disturbed Areas (processing areas , stockpiles etc)				
Profiling (incl plant hire)	ha	1.14	2500	2,850.00
Topsoil (topsoil on site, placing only with TLB)	hr	50	16.5	825.00
Hydroseeding	ha	0	13000	0.00
Fertiliser (0.6t/ha of 2:3:2)	t	1.2	2750	3,300.00
Seed purchase	kg	18	100	1,800.00
Stormwater Control	sum	1	10000	10,000.00
Labour	man days	10	60	600.00
Demolishing of Buildings				
All building are private homes				0.00
Provisional sum for breaking concrete structures	sum	0	5000	0.00
Alien vegetation Control				0.00
Labour	days	60	60	3,600.00
Herbicide	ltr	60	150	9,000.00
After Care & Maintenance				
Labour	man days	30	60	1,800.00
Herbicide	ltr	30	150	4,500.00
Sub Total				**80,275.00**
Establishment and Management should current mine			@10%	8,027.50
operator become liquidated or incapacitated				
GRAND TOTAL				**88,302.50**

Rehabilitation Cost Summary Table for BP 7378/4

Description	Unit	Quantity	Rate	Amount
Creation of benches along the top of the quarry				
Excavator	hr	58	400	23,200.00
Tipper Truck	hr	58	400	23,200.00
Lowbed Hire	km	170	10	1,700.00
Disturbed Areas (processing areas , stockpiles etc)				
Profiling (incl plant hire)	ha	1.5	2500	3,750.00
Topsoil (topsoil on site, placing only with TLB)	hr	50	16.5	825.00
Hydroseeding	ha	0	13000	0.00
Fertiliser (0.6t/ha of 2:3:2)	t	1.6	2750	4,400.00
Seed purchase	kg	20	100	2,000.00
Stormwater Control	sum	1	10000	10,000.00
Labour	man days	15	60	900.00
Demolishing of Buildings				
All building are private homes				0.00
Provisional sum for breaking concrete structures	sum	0	5000	0.00
Alien vegetation Control				0.00
Labour	days	60	60	3,600.00
Herbicide	ltr	60	150	9,000.00
After Care & Maintenance				
Labour	man days	30	60	1,800.00
Herbicide	ltr	40	150	6,000.00
Sub Total				**90,375.00**
Establishment and Management should current mine			@10%	9,037.50
operator become liquidated or incapacitated				
GRAND TOTAL				**99,412.50**

APPENDIX G

LETTER OF UNDERTAKING FROM DWAF

Private Bag X 313, Pretoria, 0001
Sedibeng Building, 185 Schoeman Street, Pretoria
Tel: (012) 336 7500 Fax: (012) 323 4472 / (012) 326 2715

UNDERTAKING

I,..... WG vd Westhuizen
D: Strategic Asset Management .....

.....

The undersigned and duly authorised thereto by The Department of Water Affairs and Forestry hereby undertake to implement all the aspects contained in the EMP and accept full responsibility therefore.

SIGNED at ....Pretoria..... this .....31..... day August 2009....

SIGNATURE

WITNESSES:

1.....

2.....

Official use

APPROVAL

Approved in terms of the provisions of the Minerals and Petroleum Resources Development Act, 2002 (Act 28 of 2002).

SIGNED at ..... this ..... day ..... 20.....

REGIONAL MANAGER
EASTERN CAPE