PROPOSED SAND MINE ON THE FARM NIAGARA NO 380,

ELUNDINI LOCAL MUNICIPALITY

EASTERN CAPE PROVINCE

CLOSURE PLAN

DEPARTMENTAL REFERENCE NUMBER:

EC 30/5/1/3/2/10749 MP

DECEMBER 2022

PREPARED FOR:

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EXECUTIVE SUMMARY

Greenmined Environmental (Pty) Ltd is the consultants responsible for the mining permit application, and considering this, the Annual- and Final Rehabilitation, Decommissioning and Mine Closure Plan (*in aliis verbis* Closure Plan) was accordingly drafted for the proposed mine.

The purpose of this document is to provide site management with an Annual Rehabilitation Plan as well as the Final Rehabilitation, Decommissioning and Closure Plan, compiled in terms of the NEMA Amendment Act, 2014 (Act No. 25 of 2014) read with the Regulations pertaining to the Financial Provision for Prospecting, Exploration, Mining or Production Operations, November 2017 (GN 1228, Financial Provision Regulations 2017. The closure plan entails a review of the following aspects:

1. Annual rehabilitation as reflected in the annual rehabilitation plan;
2. Final rehabilitation, decommissioning and closure of the mining operations at the end of the life of operations as reflected in the final rehabilitation, decommissioning and mine closure plan;
3. Remediation of latent or residual environmental impacts, which may become known in the future, as, reflected in the environmental risk assessment report.

Annual Rehabilitation Plan:

Upon approval of the mining permit application and receipt of the EA, the holder will annually report on the planned rehabilitation actions.

Rehabilitation, Decommissioning and Mine Closure Plan:

Rehabilitation will include activities to be divided into medium- and long term categories. In the medium term, rehabilitation will entail the continuous reinstatement and seeding of mined areas, and the management of weeds and invasive plant species. In the long term, rehabilitation will involve final landscaping of the site, the replacement of the topsoil on the final area and the removal of the machinery/equipment prior to the submission of a closure application to the Department of Mineral Resources and Energy (DMRE). The Applicant will further be responsible for the seeding of all rehabilitated areas.

Environmental Risk Assessment Report:

At this stage, no latent risks that will potentially arise during closure phase of the mining area were identified. By reason of the fact that no latent risks regarding the management of the mining area were identified no additional monitoring, auditing, or reporting requirements are required at this stage.

LIST OF DEFINITIONS

Abandonment: The act of abandoning and relinquishment of a mining claim or intention to mine, a voluntary surrender of the claim or mine to the next party.

Appropriately qualified: A person who has training in the skills appropriate to the type of work to be done, and experience of the type of mine and of the size, complexity and safety classification of the deposit or the environmental conditions (or both) pertaining to the specific project.

Closure Plan: Annual Rehabilitation and Final Rehabilitation, Decommission and Closure Plan.

Biodiversity: Biodiversity is an abbreviation of “biological diversity”. It means the variety of living things – the different plants, animals and microorganisms, the genes they contain and the ecosystems of which they are a part.

Closure: The act of reinstating a redundant mine which is acceptable for final mine closure.

Context of an environmental impact: The overall environmental setting in which an environmental impact occurs. It includes all "natural" components and characteristics (or both) and all "human and social" components and characteristics (or both). It has both spatial and time dimensions.

Design: The documented result of a systematic process during which all relevant factors and criteria are considered. The design includes the design report, the working drawings, and the operations manual.

Environmental impact: Any change in the state of a component of the environment, whether adverse or beneficial, that wholly or partially results from activities, projects, or developments.

Environmental integrity: The reliability of performance of the environmental impact management measures associated with the facility, with respect to the environmental performance objectives.

Environmental management programme: A programme contemplated in the Mineral and Petroleum Resources Development Act, submitted to, and approved by the Director: Mineral Development, and detailing the plan to be adopted and implemented by a mine for managing the environmental effects of the operations of the mine.

Environmental objectives: Those objectives that represent the desired state of environmental components that have been adopted for the mine.

Intensity of an environmental impact: The severity of the consequences of an environmental impact, as judged by suitably qualified persons.

Manager of a mine (general manager): Any competent person appointed in terms of the Mine Health and Safety Act, 1996 (Act 29 of 1996), to be responsible for the control, management, and direction of a mine.

Rehabilitated land: Is defined as land that has previously been mined through or areas, which have been disturbed by the mining process. These areas have been levelled, covered with topsoil, fertilized, seeded and can support a sustained long-term vegetation cover.

Redundant: No longer required for mining operation.

Reliability: The probability that a specified event will not occur in a specified time (usually expressed as a ratio, when measured in quantitative terms).

Risk: The probability that a specified event, such as failure, will occur in a specified time.

Scheduled closure: Planned closure of the mine

Significant environmental impact: An impact in respect of which consultation (with the relevant authorities and other interested and affected parties) on the context and intensity of its effects provides reasonable grounds for mitigating measures to be included in the environmental management programme. Significance is determined by the integration of the context and intensity of the effects of the impact, and the likelihood that the impact will occur.

Topsoil: means the layer of soil covering the earth which –
(a) provides a suitable environment for the germination of seed;
(b) allows for penetration of water; and
(c) Is a source of microorganisms, plant nutrients and in some cases seed.

Unscheduled closure: The closure cost associated with immediate closure and provision.

LIST OF ABBREVIATIONS

BAR	Basic Assessment Report
DMRE	Department of Mineral Resources and Energy
DWS	Department of Water and Sanitation
EIA	Environmental Impact Assessment
EPA	Environmental Performance Assessment
EMPR	Environmental Management Program
I&AP's	Interested and Affected Parties
MPRDA	Mineral and Petroleum Resources Act, 2002 (Act No 28 of 2002)
NWA	National Water Act, 1998 (Act No. 36 of 1998)
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEM:WA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
WCMR	Waste Classification and Management Regulations
WWF	World Wildlife Fund

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1. INTRODUCTION

The Applicant, World Focus 1143 CC, applied for environmental authorisation (EA) and a mining permit to mine sand from the Tsitsa River on a portion of the farm Niagara No 380 in the Joe Gqabi Magisterial District of the Eastern Cape.

Greenmined Environmental (Pty) Ltd ("Greenmined") is the consultants responsible for the mining permit application, and considering this, an Annual- and Final Rehabilitation, Decommissioning and Mine Closure Plan (*in aliis verbis* Closure Plan) was accordingly drafted for the proposed sand mine. This report (the Closure Plan) stipulates the rehabilitation methods to be followed in the restoration of the earmarked mining footprint. The report was compiled in line with Government Notice 940 of the National Environmental Management Act, 1998 [NEMA] (Act No. 107 of 1998) together with Regulation 62 of the Minerals and Petroleum Resources Development Act, 2002 [MPRDA] (Act No. 28 of 2002). The information used in this report was sourced during the EIA process.

1.1 BACKGROUND INFORMATION

The farm Niagara No 380, in the Elundini municipal area, is mainly used for subsistence farming (crop cultivation & grazing). The land use of the property also includes informal sand mining (historic) from mainly the riverbank of the Tsitsa River.

1.2 PROJECT PROPOSAL

Considering the above, the Applicant applied for environmental authorisation (EA) and a sand mining permit (MP) over 1.16 ha of the above-mentioned property. The proposed mining method will entail direct excavation of the sand from the permitted area, to win building and filling sand suitable for the construction and road building industry. The layout of the mining area will be simple, consisting of a sand recovery zone (riverbed and -bank) and an area used to stockpile the material until it is sold. No infrastructure (other than a chemical toilet) will be established at the site.

The proposed mining activities will therefore entail the following:

- site establishment;
- winning of sand (from riverbed and -bank);
- stockpiling and transporting material from site; and
- sloping and landscaping upon closure of the mining area.

The proposed sand mine will appoint eight employees. No chemicals will be stored on site, and vehicle/equipment maintenance will be done at an existing off-site workshop of the Applicant (in town). Sand mining will take place during normal work hours (no work on Sundays).

Mining machinery that will operate within the footprint is expected to consist of the following:

- TLB;
- Excavator (occasional); and
- Tipper Trucks.

1.3 OBJECTIVE OF THE CLOSURE PLAN

The purpose of the Closure Plan is to describe the rehabilitation processes that need to take place to ensure that the mine reaches its full environmental potential upon closure.

The primary objective, at the end of the mine's life, is to obtain a closure certificate at minimum cost and in as short a period as possible whilst still complying with the requirements of the Minerals and Petroleum Resources Development Act (Act No. 28 of 2002) [MPRDA]. To realise this, the following main objectives must be achieved:

- Remove all temporary infrastructure and waste from the mine as per the requirements of this EMPR and of the Provincial Department of Minerals and Resources and Energy.
- Shape and contour disturbed areas in compliance with the EMPR.
- Ensure that permanent changes in topography (due to mining) are sustainable and do not cause erosion or the uncontrolled damming of surface water.
- Use the topsoil effectively to promote the re-establishment of vegetation.
- Ensure that all rehabilitated areas are stable and self-sustaining in terms of vegetation cover.
- Eradicate all weeds/invader plant species by intensive management of the mining area.

2. DETAILS OF THE AUTHOR

World Focus 1143 CC appointed Greenmined to compile the Closure Plan of the mine. Ms Christine Fouché is the responsible consultant for the project and holds a Diploma in Nature Conservation and a B.Sc. in Botany and Zoology with seventeen years' experience in doing environmental impact assessments and compliance monitoring in South Africa (see CV and proof of experience attached as Appendix N to the BAR & EMPR).

Name of the Practitioner: Ms Christine Fouché (Senior Environmental Specialist)
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Declaration of Independence:

I, Christine Fouche, in my capacity as environmental assessment practitioner declare that–

- I act as independent environmental officer in this matter;
- I will perform the work relating to this matter in an objective manner, even if the results and findings are not favourable to the holder of the authorisation;
- I have expertise in conducting environmental related projects, including knowledge of the Act and regulations that have relevance to the activity;
- I will adhere to and comply with all responsibilities as indicated in the National Environmental Management Act and Environmental Impact Assessment Regulations.
- I do not have and will not have any vested interest in the activity other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2014 (as amended).

Christine Fouché Date: 28 November 2022

3. LEGAL BACKGROUND AND BEST PRACTICES

This section provides an overview of the legislative requirements applicable to the project, including the acts, guidelines and policies considered in the compilation of the Closure Plan.

3.1 THE CONSTITUTION OF SOUTH AFRICA, 1996 (ACT NO. 108 OF 1996)

The legislative motivation for this project is underpinned by The Constitution of South Africa, 1996 (Act No. 108 of 1996), which states that:

The State must, in compliance with Section 7(2) of the Constitution, respect, protect, promote and fulfil the rights enshrined in the Bill of Rights, which is the cornerstone of democracy in South Africa. Section 24 of the Constitution:

24. Environment

-Everyone has the right-

(a) To an environment that is not harmful to their health or well-being; and

(b) To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that-

(i) Prevent pollution and ecological degradation;

(ii) Promote conservation; and

(iii) Secure ecologically sustainable development and use of natural resources while promoting a justifiable economic and social development.

Section 24 of the Constitution of South Africa requires that all activities that may significantly affect the environment and require authorisation by law must be assessed prior to approval. In addition, it provides for the Minister of Environmental Affairs or the relevant provincial Ministers to identify:

- New activities that require approval;
- Areas within which activities require approval; and
- Existing activities that should be assessed and reported on.

Section 28(1) of the Constitution of South Africa states that:

"Every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring".

If such pollution or degradation cannot be prevented, then appropriate measures must be taken to minimise or rectify such pollution or degradation. These measures may include:

- Assessing the impact on the environment.
- Informing and educating employees about the environmental risks of their work and ways of minimising these risks;
- Ceasing, modifying, or controlling actions which cause pollution/degradation;
- Containing pollutants or preventing movement of pollutants;
- Eliminating the source of pollution or degradation; and
- Remedying the effects of the pollution or degradation.

3.2 THE MINERALS AND PETROLEUM RESOURCES ACT, 2002 (ACT NO. 28 OF 2002) [MPRDA]

The table below summarises the relevant sections in terms of the MPRDA, 2002.

Table 1: Summary of the relevant rehabilitation sections of the MPRDA, 2002

AREA OF CONCERN	SECTION	LEGAL REQUIREMENTS
Environmental Management	Section 37	*Requires that the principles set out in section 2 of NEMA must apply to all prospecting and mining operations, and that the generally accepted principles of sustainable development must be applied by integrating social, economic, and environmental factors during the planning and implementation phases of mining projects.*
	Section 38	*Requires the applicant to manage all environmental impacts in accordance with his or her environmental management plan (EMPR) or the approved EMPR.*
	Section 39	*Deals with the requirements of an EMP/EMPR, whichever is applicable.*
Financial Provision	Section 41	*Financial provision needs to be provided and annually assess the environmental liability.*
Closure Certificate	Section 43	*Holder of a mining permit is responsible for all environmental liabilities as may be identified in the EMP, application needs to be made to the regional manager for the closure certificate.*
Removal of Infrastructure	Section 44	*When the mining operation comes to an end the mine may not remove buildings, structures or objects which may not be demolished or removed in terms of any other law.*

3.2.1 Regulation 527 of the MPRDA, 2002

Government Notice No. R.527, as published in the Government Gazette, 23 April 2004 (GG No. 26275, Volume 466) of MPRDA stipulate that the following closure objectives must form part of the EMPR:

- Identify the key objectives for closure of the operation to guide the project design;
- Development and management of environmental impacts;
- Provide future land use objectives for the site; and
- Provide proposed closure costs.

Table 2: Requirements of Government Notice 527

AREA OF CONCERN	REGULATION	LEGAL REQUIREMENTS
The need to prevent and alleviate pollution arising from mining activities.	Regulation 42(1)	*Section 42(1) of the MPRDA stipulates that the closure process must start at the commencement of a mining operation and continue throughout the entire life of the mine. Furthermore, future closure and land use objectives must be included in the EMP Section 42(1) d stipulates that any environmental damage or residual impacts that are identified during the Environmental Risk Assessment (ERA) phase must be acceptable to all Interested and Affected Parties (I&AP's) in line with Section 24(a) of the National Constitution.*
Mine Closure	Regulation 43	*A closure plan contemplated in Section 43(3)(d) of the Act, forms part of the EMPR or EMP and must include – a summary of the results of progressive rehabilitation undertaken.*
Part III of R 527 deals with environmental regulations for mineral development, petroleum exploration and production.	Regulation 56	*In accordance with applicable legislative requirements for mine closure, the holder of a prospecting right, mining right, retention permit or mining permit must ensure that –The land is rehabilitated, as far as is practicable, to its natural state, or to a predetermined and agreed standard or land use which conforms with the concepts of suitable development.*

3.3 THE NATIONAL WATER ACT, 1998 (ACT NO. 36 OF 1998) [NWA]

The National Water Act, 1998 (Act No. 36 of 1998) (NWA) aims to provide management of the national water resources to achieve sustainable use of water for the benefit of all water users. This requires that the quality of water resources is protected as well as integrated management of water resources with the delegation of powers to institutions at the regional or catchment level. The purpose of the NWA is to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in ways, which take into account:

- Meeting the basic human needs of present and future generations;
- Promoting equitable access to water;
- Redressing the results of past racial discrimination;
- Promoting the efficient, sustainable, and beneficial use of water in the public interest;
- Facilitating social and economic development;
- Providing for growing demand for water use;
- Protecting aquatic and associated ecosystems and their biological diversity;
- Reducing and preventing pollution and degradation of water resources;
- Meeting international obligations; and
- Managing floods and droughts.

The following sections of the NWA, 1998 are relevant.

Table 3: NWA, 1998 applicable sections

AREA OF CONCERN	SECTION	LEGAL REQUIREMENTS
Prevention and remedying effects of pollution.	Section 19	*Any situation exists or which may cause or is likely to cause pollution of a water resource, must take all reasonable measures to prevent any such pollution from occurring, continuing, or recurring.*
Control of emergency incidents.	Section 20	*Incidences of pollution needs to be reported the Department and the relevant catchment agency.*
General principles: Water uses	Section 21	*An application in terms of the NWA will be submitted to DWS in due course.*

3.4 THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO 107 OF 1998) [NEMA]

The National Environmental Management Act (NEMA) strives to regulate national environmental management policy and is focussed primarily on co-operative governance, public participation and sustainable development. NEMA makes provisions for co-operative environmental governance by establishing principles for decision making on matters affecting the environment, institutions that will promote co-operative governance and procedures for co-ordinating environmental functions exercised by organs of state and to provide for matters connected therewith.

The following sections are relevant.

Table 4: NEMA, 1998 applicable sections

AREA OF CONCERN	SECTION	LEGAL REQUIREMENTS
Principles that may significantly affect the environment.	Section 28	*General duty of care on every person who causes, has caused or may cause significant pollution or degradation of the environment to take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment.*
Control of emergency incidents.	Section 30	*Incidences of pollution needs to be reported the Department.*
Environmental Management Plan.	Section 34	*A draft EMP must include –* *information on any proposed management or mitigation measures that will be taken to address the environmental impacts that have been identified in a report contemplated by*

AREA OF CONCERN	SECTION	LEGAL REQUIREMENTS
		these Regulations, including environmental impacts or objectives in respect of – *(iv) rehabilitation of the environment;* *as far as reasonably practicable, measures to rehabilitate the environment affected by the undertaking of any listed activity or specified activity to its natural or predetermined state or to a land use which conforms to the generally acceptable principle of sustainable development, including where appropriate, concurrent, or progressive rehabilitation measures.*

3.4.1 Regulation 1228 of NEMA, 1998

NEMA, GNR 1228 GG 41236, known as the NEMA Financial Provision Regulations, 2015 (amended 2017), was promulgated in November 2015, and in terms of these regulations holders of a mining permit are allowed a transitional period of 39 months (19 February 2019) from the date of promulgation to comply. The compliance date was extended to 19 September 2023.

As mentioned earlier the permit holder must annually update the annual rehabilitation, final rehabilitation and remediation of latent environmental impacts and ensure it is compliant with the Financial Provision Regulations of 2015. The reports need to be conducted in the format that was supplied in the regulations as per Appendix 5 and Appendix 6.

3.5 THE NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT NO 57 OF 2008) [NEM:WA]

The rehabilitation measures must be aligned with the objections of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEM: WA) which includes:

(a) To protect health, well-being and the environment by providing reasonable measures for—
  (i) Minimising the consumption of natural resources;
  (ii) Avoiding and minimising the generation of waste;
  (iii) Reducing, re-using, recycling and recovering waste;
  (iv) Treating and safely disposing of waste as a last resort;
  (v) Preventing pollution and ecological degradation;
  (vi) Securing ecologically sustainable development while promoting justifiable economic and social development;

(vii) Promoting and ensuring the effective delivery of waste services;
(viii) Remediating land where contamination presents, or may present, a significant risk of harm to health or the environment; and
(ix) Achieving integrated waste management reporting and planning;

(b) To ensure that people are aware of the impact of waste on their health, well-being and the environment;
(c) To provide for compliance with the measures; and
(d) Generally, to give effect to Section 24 of the Constitution in order to secure an environment that is not harmful to health and well-being

3.5.1 Waste Classification and Management Regulations, 2013 (GNR 634)

Waste Classification and Management Regulations (WCMR) promulgated under the National Environmental Management: Waste Act, 2008 (NEM:WA) (effective 2013) provides mechanisms to:

- Facilitate the implementation of the waste hierarchy to move away from landfill;
- Reuse, recovery, and treatment;
- Separate waste classification from the management of waste;
- Divert waste from landfill and into utilisation where possible; and
- Provide measures to monitor the progress

The Waste Classification and Management Regulations ultimately enables the improved and more efficient classification and management of waste; provide for safe and appropriate handling, storage, recovery, reuse, recycling, treatment and disposal of waste and will also enable accurate and relevant reporting on waste generation and management. All waste generators, excluding domestic generators, must ensure that the waste they generate is classified within 180 days of its generation.

All wastes that were classified in terms of the “Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste in terms of the Department of Water Affairs’’ (2nd Edition, 1998; Department of Water Affairs and Forestry) or alternative classifications that were approved prior to the WCMR taking effect, must be re-classified and assessed within three years from the commencement of these Regulations.

Reference is made to the NEM:WA, part 8 of Chapter 4 regarding contaminated land:

All owners of land that is significantly contaminated become obliged to report that contamination is occurring. Part 8 of Chapter 4 is concerned with the remediation of contaminated land. This new legal regime for identifying contaminated land, determining its status and the risk that it poses, and regulating the remediation process is introduced. This law imposes significant legal obligation on the owners of land and on those who cause contamination, with potentially serious financial consequences. Part 8 applies where the pollution only manifest sometime after the contamination occurred and also where the action of a person (for example, the excavation of land pursuant to a development) results in a change to pre-existing contamination. Along with the notice brining Part 8 into effect, norms and standards for the remediation of contaminated land and soil quality (list certain contaminants and specify soil screening values for human health and environmental protection). This act also has several important implications for the sale of and, sellers who know that their lands is contaminated can no longer keep silent and this is classified as an offence.

3.6 FURTHER ACTS RELEVANT TO MINE REHABILITATION

- The Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983).
- The South African Mineral Resource Committee (SAMREC) Code. Of particular importance in this regard is the determination of whether the mine has made an adequate provision for environmental rehabilitation in terms of Section 41 of the MPRDA.

3.7 BEST PRACTICE AND INTERNATIONAL GUIDELINES

Mine closure is an international challenge. South Africa has produced various well-known and reputable guidelines on matters directly linked and or associated with mine closure. Such was the need for guidelines to manage mine closure provisions in a consistent manner provided for by the DMRE (2005).

These guidelines are the only official mine closure guideline as contemplated in Regulation 54(1) in the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002). Of particular importance is that this guideline document governs the closure cost assessment process in South Africa and is applied by the DMRE through its respective regional managers in each province.

The Chamber of Mines (CoM) (2007) issued a guideline for the rehabilitation of mined land. This document is a result of scientific knowledge experts. It is an on the ground reference document which provides written guidelines on the best rehabilitation techniques. Of value is how the document distinguishes between the financing, the planning and the licensing components of a typical mining program.

The World Wildlife Fund (WWF) in 2012 published a discussion document named the "Financial provision for the rehabilitation and closure in South African Mining: Discussion Document on Challenges and recommended improvements". The document focuses on the adequacy of financial provisions and pulls a very strong link between insufficient financial allocations and that of derelict and abandoned mines in South Africa. The document further emphasizes the importance of establishing a dependency between the EMPR/EMP and financial provision which is updated and adequate

Recently a released guideline from the Government of Western Australia (GWA 2011) provides insight to the importance of mine closure. The guidelines (GWA 2011) state that planning for mine closure is a critical component of environmental management in the mining industry. Notably is that this industry leading practice also requires that planning for mine closure should start before mining commence and should continue throughout the life of the mine until final closure and relinquishment. This approach enables better environmental outcomes. It is also good business practice, as it should avoid the need for costly remedial earthworks late in the project lifecycle.

4. ENVIRONMENTAL AND PROJECT CONTEXT

4.1 PROJECT LOCATION

The mining permit application was lodged over 1.16 ha of the farm Niagara No 380 in the Joe Gqabi Magisterial District. The table below lists the GPS coordinates of the proposed mining footprint.

Table 5: GPS coordinates of the proposed mining footprint.

NUMBER	DEGREES, MINUTES, SECONDS		DECIMAL DEGREES	
	LAT (S)	LONG (E)	LAT (S)	LONG (E)
A	30º56'44.87"	28º26'29.75"	-30.945797º	28.441596º
B	30º56'43.56"	28º26'30.43"	-30.945433º	28.441785º
C	30º56'42.76"	28º26'30.65"	-30.945211º	28.441846º
D	30º56'42.61"	28º26'30.76"	-30.945170º	28.441877º

NUMBER	DEGREES, MINUTES, SECONDS		DECIMAL DEGREES	
	LAT (S)	LONG (E)	LAT (S)	LONG (E)
E	30º56’41.54”	28º26’31.27”	-30.944871º	28.442020º
F	30º56’40.51”	28º26’32.08”	-30.944585º	28.442245º
G	30º56’39.88”	28º26’32.94”	-30.944411º	28.442483º
H	30º56’39.63”	28º26’34.32”	-30.944341º	28.442868º
I	30º56’39.57”	28º26’35.26”	-30.944325º	28.443128º
J	30º56’39.73”	28º26’36.75”	-30.944369º	28.443542º
K	30º56’39.81”	28º26’39.07”	-30.944391º	28.444187º
L	30º56’39.97”	28º26’39.70”	-30.944436º	28.444360º
M	30º56’40.39”	28º26’40.88”	-30.944552º	28.444690º
N	30º56’40.38”	28º26’41.07”	-30.944549º	28.444743º
P	30º56’40.55”	28º26’41.64”	-30.944597º	28.444900º
Q	30º56’40.78”	28º26’42.10”	-30.944662º	28.445028º
R	30º56’42.30”	28º26’44.06”	-30.945083º	28.445571º
S	30º56’42.84”	28º26’45.20”	-30.945232º	28.445889º
T	30º56’42.95”	28º26’45.64”	-30.945263º	28.446010º
U	30º56’43.91”	28º26’47.30”	-30.945530º	28.446471º
V	30º56’44.56”	28º26’46.95”	-30.945710º	28.446375º
W	30º56’44.52”	28º26’46.53”	-30.945701º	28.446259º
X	30º56’44.16”	28º26’45.94”	-30.945599º	28.446094º
Y	30º56’43.82”	28º26’45.49”	-30.945506º	28.445970º
Z	30º56’43.14”	28º26’44.67”	-30.945316º	28.445742º
aa	30º56’41.90”	28º26’42.81”	-30.944972º	28.445224º
bb	30º56’41.11”	28º26’41.76”	-30.944754º	28.444933º
cc	30º56’40.60”	28º26’40.43”	-30.944612º	28.444563º
dd	30º56’40.24”	28º26’39.26”	-30.944512º	28.444239º
ee	30º56’40.25”	28º26’37.78”	-30.944514º	28.443828º
ff	30º56’40.57”	28º26’35.57”	-30.944603º	28.443213º
gg	30º56’40.83”	28º26’33.81”	-30.944675º	28.442726º
hh	30º56’41.34”	28º26’32.67”	-30.944818º	28.442408º
ii	30º56’42.68”	28º26’31.54”	-30.945188º	28.442094º
jj	30º56’45.14”	28º26’30.22”	-30.945872º	28.441728º
kk	30º56’45.00”	28º26’29.98”	-30.945832º	28.441660º

Figure 1: Satellite view showing the position of the proposed mining area (blue polygon). (Image obtained from Google Earth)

4.2 PROPOSED MINING OPERATION

4.2.1 Site Establishment Phase

Site establishment entails the demarcation of the mining boundaries, clearance of vegetation and stripping and stockpiling of topsoil (if needed) from the riverbank/riparian area.

4.2.1.1 Demarcation of Mining Boundaries

Pursuant to receipt of an EA and MP, and prior to site establishment, the boundaries of the mining area will be demarcated with visible beacons.

4.2.1.2 Access Road

The Applicant will use the existing gravel farm road (±1.8 km), to access the mining area and transport material from the mine. The farm road has a formal entrance from the R56. If necessary, the farm road will be upgraded, and maintained by the permit holder for the duration of the operational phase.

4.2.1.3 Vegetation Clearing and Topsoil Stripping (Riverbank/Riparian Area)

The proposed mining footprint extends across the riparian zone of the river onto a largely modified area. The specialist did not identify any wetlands (other than the river) and/or protected plant species in the earmarked area that needs to be preserved. The area is also highly infested by Silver Wattle (*Acacia dealbata*) and Weeping Willow (*Salix babilonica*).

The hydrologist proposed a 10 m buffer around the riparian zone to prevent sedimentation of the river from the stockpiles, and therefore recommended that no sand stockpiles are kept within the buffer zone. The ABSA (Aquatic Biodiversity Specialist Assessment) does however allow for the mining of the riverbank, provided that a slope is maintained to prevent erosion and/or increased flooding.

Considering this, upon commencement the Applicant will strip the vegetation layer and topsoil of the area to be mined. The woody material will be donated to the community as firewood (in agreement with the landowner). The complete A-horizon will be stripped and stockpiled to be replaced during the rehabilitation of the area. If it is unclear where the topsoil layer ends the top 300 mm of soil will be stripped. It will be part of the obligations of site management to prevent the mixing of topsoil heaps with other soil heaps. The topsoil berm will measure a maximum of 2 m in height to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen. The Applicant will ensure all stockpiles remain outside the proposed 10 m buffer zone.

4.2.1.4 Introduction of Mining Machinery

As mentioned earlier, no infrastructure, other than a chemical toilet, will be established within the mining area, and no infrastructure will be placed in the riverbed. Mining machinery that will operate within the footprint is expected to consist of the following:

- TLB;
- Excavator (occasional); and
- Tipper Trucks.

The Applicant will not construct/establish any permanent infrastructure (such as a workshop or storage facilities) within the permitted mining area.

4.2.2 Operational Phase

The operational phase will involve the recovery of the sand with a TLB (and/or excavator) that will stockpile it outside the riverbed but inside the mining area until it is loaded onto trucks that will transport it from the site to clients. The Applicant will make use of a single access point into the river to limit damage to the riparian zone.

The layout of the mining area will be simple, consisting of a sand recovery zone (riverbed and -bank) and an area used to stockpile the material until it is sold. Mining from the riverbed, will only take place during the low flow periods of the Tsitsa River, and all machinery and equipment will be removed from the river during high flow. The permit holder will however continue with the mining of sand from the riverbank and sales of stockpiled material throughout the year.

Mining on the riverbank will be sloped to prevent erosion and increased flooding. As mentioned earlier, all stockpiles will be outside the 10 m buffer zone to prevent increased sedimentation of the river.

The proposed sand mine will appoint eight employees. No chemicals will be stored on site, and vehicle/equipment maintenance will be done at an existing off-site workshop of the Applicant (in town). Sand mining will take place during normal work hours (no work on Sundays).

4.3 TOPOGRAPHY

The natural topography of both S1 & S2 is flat, dropping gradually from the riverbank into the riverbed. The proposed activity (S1/S2) will impact the topography of the earmarked footprint in that the virgin soil level of the riverbank/riparian area will be reduced.

4.4 VISUAL CHARACTERISTICS

The visual character of the surrounding areas mainly comprises of an agricultural setting, intersected by Wattle plantations, and occasional small scale sand mining from the river and/or -banks. The aesthetic ambiance of the study area is that of a rural area with highly natural landscapes.

The proposed mining activities in S1/S2 will be intermittently visible within proximity (±2 km radius) to the footprint. For S1, visibility will exclusively be from the higher laying areas to the east, south, and south-west. The hill to the north (of the study area) will screen the activities to the communal lands of Mt Fletcher. S2 will mainly be visible from the south-west, west, north-west, and the north.

4.5 AIR AND NOISE QUALITY

The air quality of the study area is generally very good given the area's predominant agricultural use and rural character. Likewise, the noise ambiance is very low (classified as ambient rural / pastoral) with noise levels mainly affected by traffic along the R56, and the farming equipment operational in the surrounding environment.

4.6 GEOLOGY

The greater study area lies in the central part of the Karoo basin where the upper Karoo Supergroup strata are exposed. Along the rivers and streams much younger reworked sands and alluvium overly the older strata.

The proposed project area shows signs of past sand excavations that are scattered along the riverbanks, along with high levels of erosion. The route along the river consists of thick unconsolidated transported sands. No rocky outcrops, siltstones or shales occur within the site specific study area.

4.7 HYDROLOGY

The project area falls within the T35D quaternary catchment within the Mzimvubu-Tsitsikama Water Management Area (WMA 7) and the South Eastern Uplands – Upper aquatic ecoregion. The watercourse associated with the proposed sand mining project is within the T35D-5721-iTsitsa Sub Quaternary Reach (SQR) of the Tsitsa River. According to SAIIAE dataset, a single wetland was identified as a river (Tsitsa River). There are also seepage wetlands to the south of the mining area (S1) and alternative sites (S2). The project area overlaps with CBA2 and ESA1 areas in terms of the Eastern Cape Biodiversity Conservation Plan (2019).

According to *in situ* water quality analysis, the water quality conditions within the Tsitsa River reach are not expected to be a notable limiting factor to aquatic biota. The IHIA indicated large modifications to the instream and to the riparian habitat within the assessed reach. The local aquatic macroinvertebrate community within the system was rated as seriously modified according to the biological bands. The average sensitivity scores within

the reach indicated that tolerant macroinvertebrate taxa were collected within the sampled Tsitsa River reach. No fish were sampled, and the assigned integrity of the fish community structure was determined to be seriously modified. The overall integrity of the riparian habitat was determined to be moderately modified. The ecological status of the sampled Tsitsa River was determined to be largely modified (class D).

4.8 TERRESTRIAL BIODIVERSITY, CONSERVATION AND GROUNDCOVER

When the footprint of the proposed area is layered over the Mining and Biodiversity Guideline Map it falls over an area of highest biodiversity importance with a corresponding rating of highest risk for mining.

Ground-truthing however, showed that the proposed footprint is highly disturbed due to the extensive proximal farming and informal sand mining, and erosion, with a high level of alien infestation. The ABSA (Aquatic Biodiversity Specialist Assessment) concluded that the ecological status of the sampled Tsitsa River (Freshwater: CBA) is largely modified (Class D) and considering this the impact of the proposed sand mining operation on the identified CBA is deeded to be of Low significance. No protected and/or sensitive plant species occur within the proposed mining footprint, and the specialist did not identify any wetland areas/vegetation of concern.

At the time of the inspection, invasive plant species such as Silver Wattle (*Acacia dealbata*) and Weeping Willow (*Salix babylonica*) were noted within the proposed footprint area that established due to the disturbance of the natural groundcover.

4.9 CULTURAL AND HERITAGE ENVIRONMENT

The Heritage Impact Assessment (HIA) notes that the area is of low heritage potential and finds were limited to a degraded farmstead situated more than 100 m south of the proposed project area. The farmstead will not be affected by the project.

The palaeontological assessment concluded that based on the fossil record and site visit there are no fossils of the Molteno *Dicroidium* flora even though fossils have been recorded from rocks of a similar age and type in South Africa. These plant fossils have been recorded from siltstones and mudstones, not from sandstones or sands.

4.10 LAND CAPABILITY AND SURROUNDING LAND USE

Niagara No 380 is situated in a rural setting. The Tsitsa River forms the northern boundary of the farm, with the R56 provincial road passing the property to the east. The land use of the property mainly comprises of subsistence farming and grazing of the uncultivated areas.

The main land use of the surrounding properties is communal, focussing on subsistence farming. The Mt Fletcher communal land borders the property to the north, with the Taung Communal lands to the east.

5. ANNUAL REHABILITATION PLAN

Appendix 3 to the Financial Provision Regulations, 2015 states that the objectives of the annual rehabilitation plan are to:

a) Review concurrent rehabilitation and remediation activities already implemented;
b) Establish rehabilitation and remediation goals and outcomes for the forthcoming 12 months, which contribute to the gradual achievement of the post-mining land use, closure vision and objectives identified the holder's final rehabilitation, decommissioning and mine closure plan;
c) Establish a plan, schedule, and budget for rehabilitation for the forthcoming 12 months;
d) Identify and address shortcomings experienced in the preceding 12 months of rehabilitation; and
e) Evaluate and update the cost of rehabilitation for the 12-month period and for closure, for purposes of supplementing the financial provision guarantee or other financial provision instrument

5.1 IMPLEMENTATION AND REVIEW OF TIMEFRAMES

The annual rehabilitation plan will be applicable for a 12-month period commencing from the date of approval thereof by the Department of Mineral Resources and Energy. The document will be reviewed during the 11th month of the operative period to ensure the timeous submission of the subsequent annual review.

5.2 MONITORING RESULTS

5.2.1 Control of Invasive Alien Vegetation

The permit holder will continuously monitor the mining footprint for the invasion of alien vegetation in accordance with the Invader Plant Species Management Plan of the site (Appendix K of the BAR & EMPR). Care will be taken to prevent the

establishment of species such as Silver Wattle (*Acacia dealbata*) and Weeping Willow (*Salix babylonica*). This practice will continue through-out the site establishment-, operational-, and decommissioning phases of the project.

5.2.2 Dust Monitoring

The permit holder will daily monitor the dust levels of the mining operations. The type of sand (heavy) to be mined will generate very little to no dust, however the dust levels of the gravel access road may increase (dry periods) because of mining related traffic. Dust suppression measures will be implemented should the dust levels increase because of the mining activities.

5.2.3 Waste Monitoring

Site management will be responsible to monitor the generation of all types of waste at the mining area, including general-, hazardous- and liquid waste. Solid (general) waste, generated during the operational phase, will be contained in a sealable refuse bin that will be transported to the Applicants workshop when it is full. A registered contractor will service the chemical toilets that will serve as ablution facilities to the employees.

Hazardous waste (such as spills) will be cleaned up immediately (within the first hour of the occurrence) and the contaminated soil will be contained in a designated hazardous waste container that will daily be removed to the Applicants workshop.

5.3 SHORTCOMINGS IDENTIFIED

This report is the first Annual Rehabilitation Plan in terms of the Financial Provision Regulations, 2015 that was compiled for the proposed mine. No shortcomings have therefore been identified.

5.4 REHABILITATION ACTIVITIES FOR THE FORTHCOMING 12 MONTHS

Not yet applicable as mining has not yet commenced. Upon approval of the mining permit application and receipt of the EA, the permit holder will annually report on the planned rehabilitation actions.

5.5 REVIEW OF THE PREVIOUS YEAR'S REHABILITATION ACTIONS

This report is the first Annual Rehabilitation Plan in terms of the Financial Provision Regulations, 2015 that was compiled for the proposed mine. In this circumstance no annual rehabilitation activities have been identified that can be reviewed.

5.6 COSTING

To be determined once the annual rehabilitation objectives were established.

6. REHABILITATION, DECOMMISSIONING AND MINE CLOSURE PLAN

The objective of the final rehabilitation, decommissioning and mine closure plan (According to MPRDA) is to identify a post-mining land use that is feasible through;

a) Providing the vision, objectives, targets, and criteria for final rehabilitation, decommissioning and closure of the project (as described above);
b) Outlining the design principles for closure;
c) Explaining the risk assessment approach and outcomes and link closure activities to risk rehabilitation;
d) Detailing the closure actions that clearly indicate the measures that will be taken to mitigate and/or manage identified risks and describes the nature of residual risks that will need to be monitored and managed post closure;
e) Committing to a schedule, budget, roles, and responsibilities for final rehabilitation, decommissioning and closure of each relevant activity or item of infrastructure;
f) Identifying knowledge gaps and how these will be addressed and filled;
g) Detailing the full closure costs for the life of project at increasing levels of accuracy as the project develops and approaches closure in line with the final land use; and
h) Outlining monitoring, auditing, and reporting requirements.
(Financial provision regulations, 2015 appendix 4)

The following objectives are leading closure indicators, which need to be applied across all the domains, and read in conjunction with the principles, which embody the strategic objectives. The closure plan must address all the areas associated with closing the operations, of which rehabilitation and re-vegetation forms part of a component. The first step in developing the overall mine closure strategy is to identify potential post mining land use options and establish key objectives for closure to be incorporated in the project design.

The preferred post mining land use for the proposed mine is to restore the natural vegetation and return the area to agricultural use (grazing). In this context, the primary objectives for the closure of the mining operations are:

- Remove all temporary infrastructure and waste from the mine as per the requirements of this EMPR and of the Provincial Department of Minerals and Resources and Energy.
- Shape and contour disturbed areas in compliance with the EMPR.
- Ensure that permanent changes in topography (due to mining) are sustainable and do not cause erosion or the uncontrolled damming of surface water.
- Use the topsoil effectively to promote the re-establishment of vegetation.
- Ensure that all rehabilitated areas are stable and self-sustaining in terms of vegetation cover.

ℑ Eradicate all weeds/invader plant species by intensive management of the mining area.

6.1 CLOSURE STRATEGY GUIDED BY THE ENVIRONMENTAL RISK ASSESSMENT

The overall objective of the closure plan is to minimize adverse environmental impacts associated with the mining activity whilst maximising the future utilisation of the property. The idea, therefore, is to leave the mined area in a condition that reduces all negative impacts associated with the activity. Significant aspects to be borne in mind in this regard is visibility of the mining scar, re-vegetation of the mining footprint, stability, and environmental risk in an old mine environment. The rehabilitated and immediate surroundings must also be free of weeds and alien vegetation.

Upon closure of the mine, rehabilitation will involve final landscaping of the site, the replacement of the topsoil on the disturbed area and the removal of the mining equipment prior to the submission of a closure application to the Department of Mineral Resources and Energy (DMRE). The permit holder will further be responsible for the seeding of the rehabilitated area.

6.2 DESIGN PRINCIPLES

The Applicant proposed the following regarding the rehabilitation of the mined areas:

- The mining plan will be such that topsoil is stockpiled for the minimum possible time through progressive rehabilitation of mined areas.
- To ensure minimum impact on drainage, the Applicant will take care not to leave any depressions in the mining floor. A surface slope (even if minimal) will be maintained across the mining floor in the drainage direction, so that all excavations are free draining.
- After mining, any steep slopes at the edges of excavations will be reduced to a minimum and profiled to blend with the surrounding topography.
- The stockpiled topsoil will then be evenly spread over the entire mining area, so that there is a depth of 300 mm of sandy topsoil above the underlying soil. The depth will be monitored during spreading to ensure that coverage is adequate and even.
- The Applicant will strive to (when possible) spread topsoil at a time of the year when vegetation cover can be established as quickly as possible afterwards, so that erosion of returned topsoil by both rain and wind, is minimized.

- ❖ A cover crop (indigenous grass) will be planted and established immediately after spreading of topsoil to stabilize the soil and protect it from erosion.

- ❖ The rehabilitated area as well as the land down slope of it will monthly be monitored for erosion, and appropriately stabilized if any erosion occurs.

- ❖ The Applicant will ensure monthly monitoring of weeds/invader plants that may germinated within the rehabilitated areas. An invasive plant species management plan will be implemented on site.

6.3 POST-MINING LAND USE

As mentioned earlier, the preferred post mining land use for the proposed mine is to restore the natural vegetation (where possible) and return the area to agricultural use (grazing).

6.4 CLOSURE ACTIONS

The closure goals and objectives are to ensure that post-use rehabilitation achieves a stable and functioning landform consistent with the surrounding landscape, other environmental values and agreed land use.

As mentioned earlier, rehabilitation of the mining area will largely fall within two categories namely, those that will occur within the medium term when an area is mined out, and those that will occur in the long term upon final closure of the site.

6.4.1 Medium Term Rehabilitation

In the medium term, progressive rehabilitation of mined areas will be done and will include the following closure objectives:

- ℑ Reduce any steep slopes at the edges of excavations to a minimum and profile it to blend with the surrounding topography;
- ℑ Replace the stockpiled topsoil evenly over the mined area to a depth of 300 mm;
- ℑ Maintain a surface slope across the mining area and out of it on the down-slope side to assist drainage;
- ℑ Seed the reinstated area with a seed mix of commercial- and native seeds including annuals and perennials to diversify rooting depths;
- ℑ Control invasive plant species for at least one growth season;
- ℑ Monitor the area for erosion until vegetation established.

6.4.2 Long Term / Final Rehabilitation

Upon closure of the mine, the Applicant will commence with the reinstatement of the final mined area and removal of the chemical toilet from site. The Applicant will also comply with the minimum closure objectives as prescribed by the DMRE and detailed below:

Rehabilitation of the excavated area:

- No waste may be permitted to be deposited in the mining area.
- The entrance into the river must be rehabilitated and landscaped to prevent erosion of the riverbank.
- The topsoil previously stored must be returned to its original depth over the area.
- The area must be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within six months from closure of the site.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager (DMRE) may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.

Final rehabilitation:

- Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation, seeding (if required), maintenance, and clearing of invasive plant species.
- All equipment, plant, and other items used during the mining period must be removed from the site (section 44 of the MPRDA).
- Waste material of any description, including receptacles, scrap, rubble and tyres, must be removed entirely from the mining area and disposed of at a recognized landfill facility. It will not be permitted to be buried or burned on the site.
- The management of invasive plant species must be done in a sporadic manner during the life of the mining activities. Species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto) need to be eradicated from the site.

- Final rehabilitation must be completed within a period specified by the Regional Manager (DMRE).

6.4.3 Revegetation of Rehabilitated Areas

When an area was mined, progressive rehabilitation must occur wherein a stable vegetation cover is established with a grass layer. It is imperative that any mined areas are re-vegetated as soon as possible. The goal of re-vegetation is:

- Preventing erosion and avoiding further soil loss;
- Restoring the affected area to the best possible condition compared to the original state or equivalent benchmark/pristine areas;
- Reduce, or ideally prevent, surface runoff and the carrying away of topsoil so that the sedimentation into rivers and/or wetlands is reduced;
- Restore a best possible ecosystem functioning, via plant succession, so that the local biodiversity can return, preferably to conditions as close to the original state as possible.

A suitable layer of topsoil, of the same type and quality as that of an equivalent benchmark site to that of the mined area, should immediately be applied to an area after it has been fully mined, and before revegetation of that area commences. The recommended depth of soil is 300 mm. The use of a commercial seed mix is recommended, and for dryland areas, the seed mix should be less than half the standard sowing rate and include annuals (e.g. wheat or rye) and perennials e.g. Couch Grass (*Cynodon dactylon*). The seed mix can be augmented by Love Grass (*Eragrostis curvula*) and Foxtain Buffalo Grass (*Cenchrus ciliaris*).

6.4.4 Maintenance and Monitoring

Rehabilitated areas need to be monitored and managed after the initial rehabilitation. The proposed mine's primary tool for maintenance of the rehabilitated area will be monitoring of the reinstated areas until the closure certificate was issued. The following aspects must closely and regularly be monitored:

- Topsoil Depth: it is crucial that a proper topsoil depth is maintained to 300 mm;
- Soil Erosion Status: any existing erosion must be controlled, and any new erosion that arises must be corrected immediately;

- Vegetation cover and Species Diversity: vegetation must regularly be assessed to determine whether target species have established and whether a sufficient vegetation cover has been obtained.

If areas are identified that are considered unsatisfactory then maintenance may include, but not be limited to:

- Replanting failed or unsatisfactory areas;
- Repairing any erosion problems; and
- Pest and weed control.

6.4.5 Success Criteria and Monitoring

To assess when the rehabilitation and re-vegetation process is complete, the mine will develop a set of completion criteria. These criteria will be reviewed by senior management before being submitted to the regulatory authorities (DMRE) for approval and sign off.

The approved set of completion criteria will be used as a basis for assessing the closure of the mining operations, with the mine required to comply with the specified criteria before the land management can be relinquished. The completion criteria will be reviewed every two years with the closure plan and updated to include findings of the mine rehabilitation research and development program as well as additional requirements of the regulatory authorities.

When selecting completion criteria, consideration must be given to the climatic conditions in the area. Using simple percentage species and percentage cover may not be appropriate, as this is dependent on when the samples are taken. If the baseline was established during a wet year and the assessment undertaken during drought, the criteria will not be met. The rehabilitated and re-vegetated areas will be monitored to determine the progress of the programme. Monitoring is likely to be a combination of methods and may include photographic monitoring, transects and standard plot areas.

6.4.6 Impact Specific Procedures

The table below provides a summary of the impact specific procedures associated with the closure of the mine.

Table 6: Summary of the impact specific procedures

CLOSURE MANAGEMENT OBJECTIVES	SPECIFIC PERFORMANCE CRITERIA	ACTION REQUIRED
SOCIO-ECONOMIC		
ℑ The retrenchment process will be followed as per requirements of the applicable legal process; and ℑ All existing social investments will be phased out over an agreed period with beneficiaries.	ℑ Progressive rehabilitation must be implemented as mining progress.	ℑ Any commitments made to I&AP'S will be attended to the relevant I&AP's satisfaction as agreed upon between the I&AP'S and the mine.
TOPOGRAPHY AND EROSION CONTROL		
ℑ The area will have contours constructed to prevent soil erosion.	ℑ All slopes which may incur erosion will be profiled in such a way that a preferential down drain can be installed; ℑ Rehabilitated profiles must ensure free drainage of water and should be contoured to fit in with the catchment dynamics; ℑ Erosion control measures such as contour banks and cut off berms should be constructed, and soil vegetated in rehabilitated areas. On gentle slopes, water will be encouraged to flow off the rehabilitated surface as surface flow, as quickly as possible without causing erosion.	ℑ Should it be noted that designs are not being followed, rehabilitation activities will cease, and corrective measures will be taken to ensure design specifications are achieved. Specialists will be consulted if necessary; ℑ Any pooling will be addressed by filling depression and / or grading areas and re-vegetating such sites; ℑ Any erosion will also be addressed utilising contour berms, gabion structures if necessary or a specialist will be consulted if necessary. Any eroded soils will be lifted and returned to the affected area; ℑ Any deficiencies will be corrected by placing material in these areas as per the closure plan; ℑ Any compacted soils will be ripped or disked and re-vegetated with indigenous flora. Vegetation will then be monitored in these areas; ℑ All recommendations made by the specialists will be implemented where deemed appropriate; ℑ An alien invasive management program will be implemented for the control and eradication of alien invasive species on site. This plan will give preference to mechanical control methods. Any chemicals utilised will be used responsibly. Where required DWS will be consulted with regards to the use of certain chemicals.

CLOSURE MANAGEMENT OBJECTIVES	SPECIFIC PERFORMANCE CRITERIA	ACTION REQUIRED
ECOLOGY		
ℑ The rehabilitated area will be protected from surface disturbance to allow vegetation to establish and stabilise.	ℑ Vegetation in rehabilitated areas will have equivalent values as surrounding natural ecosystems; ℑ The rehabilitated ecosystem will have equivalent functions and resilience as the target ecosystem; ℑ Soil properties will be appropriate to support the target ecosystem; ℑ The rehabilitated areas will provide appropriate habitat for fauna.	ℑ Should it be noted that designs are not being followed, rehabilitation activities will be amended to ensure corrective measures will be taken to ensure design specifications are achieved. Specialists will be consulted if necessary; ℑ An alien invasive management programme will be implemented for the control and eradication of alien invasive species on site. This plan will give preference to mechanical control methods. Any chemicals utilised must be used responsibly.
LAND USE		
ℑ To ensure that rehabilitation is done to such an extent that land use potential is regained for agricultural use and associated zoning.	ℑ Only after the shaped areas were inspected and approved by the Mine Manager/Site Manager will topsoil be placed to a depth of 300 mm. The topsoil layer must be as even as possible, i.e. it must be smooth, and the depth must remain consistent throughout; ℑ Once the topsoil has been replaced, vehicle movement will be restricted to prevent compaction of the topsoil; ℑ Rehabilitated areas will be vegetated within the same growing season (at the end of the rainy season). A suitable seedbed will be prepared to enhance the penetration and absorption of water, thereby giving the seed the best possible chance to germinate. The seeding depth should be very shallow to provide better germination. For most grass species seeding depth is approximately 5-15 mm; ℑ Rehabilitated areas will be re-vegetated with local indigenous flora as far as possible; and ℑ Once the seed mixture has been sown, the land must be rolled to ensure consolidation around the seeds and effective moisture retention.	ℑ N/A

6.5 CLOSURE SCHEDULE

As explained earlier the Applicant intends progressive rehabilitation of each mined area, thereby minimizing the denuded areas because of the mining activity.

At this stage it is proposed that the final rehabilitation of the mining area will take approximately four months to complete. Rehabilitation will, however, not be considered complete until the first grass layer is well established and therefore the rehabilitation phase will extend over at least a six-month period.

Control of invasive plant species is an important aspect after topsoil replacement and seeding has been completed in an area. Site management will implement an invasive plant species management plan during the 12-month aftercare period to address germination of problem plants in the area. Final rehabilitation shall be completed within a period specified by the Regional Manager.

According to the MPRDA Section 43 (4) refers to the issues of a closure certificate and stipulates the following:

"Section 43(4) Issuing of a closure certificate -

(4) An application for a closure certificate must be made to the Regional Manager in whose region the land in question is situated within 180 days of the occurrence of the lapsing, abandonment, cancellation, cessation, relinquishment, or completion contemplated in subsection (3) and must be accompanied by the prescribed environmental risk report.

Table 7: Closure schedule

CLOSURE SCHEDULE	
DECOMMISSIONING / CLOSURE ACTION	**TIMEFRAME**
EXCAVATION (MINED AREAS - OPERATIONAL PHASE)	
ℑ Landscape and level the area to prevent any depressions and allow for agricultural activities; ℑ Replace the stockpiled topsoil over the mined area; ℑ Seed reinstated area; ℑ Restrict driving over reinstated areas.	During the wet season to maximise seed germination and establishment
FINAL EXCAVATION AREA (DECOMMISSIONING PHASE)	
ℑ Landscape and level the area to prevent any depressions and allow for agricultural activities; ℑ Rehabilitate the entrance into the river; ℑ Replace the stockpiled topsoil over the mined area; ℑ Seed reinstated area or arrange for planting of relevant cover layer; ℑ Remove the TLB, excavator, and chemical toilet; ℑ Remove all stockpiled material; ℑ Rip any compacted area; ℑ Level and landscape entire footprint area; ℑ Cover with topsoil; and ℑ Seed reinstated area, or arrange for planting of relevant cover layer.	Week 1 - 12
MAINTENANCE AND AFTER CARE	
ℑ Erosion Monitoring ℑ Weeds and Invader Plant Control	12 months duration after final closure of the mining area

6.6 IMPLEMENTATION AND RESPONSIBILITY OF CLOSURE PLAN

Implementation of the closure plan is ultimately the responsibility of World Focus 1143 (Pty) Ltd. Upon commencement of the closure phase daily compliance monitoring will be the responsibility of the site manager. The site manager will be responsible for ensuring compliance with the guidelines as stipulated in the EMPR as well as the prevention and/or rectification of environmental incidents. The Applicant will appoint an Environmental Control Officer to oversee compliance of the rehabilitation/closure activities.

6.6.1 Site Management Responsibility List

- ℑ Inspect area for erosion, pooling and/or compaction;
- ℑ Floral surveys need to be conducted to monitor cover abundance, plant succession and community structure;
- ℑ Monitor any ecologically sensitive species should it be observed on site.

6.6.2 Management of Information and Data

The Closure Plan must include a description of the management strategies, and all information and data relevant to mine closures. These records are valuable during all phases of mining to provide:

- A history of closure and implementation at the site;
- A history of past developments;
- Information for incorporation into state and national natural resource databases; and
- The potential for improved future land use planning and/or site development.

6.7 IDENTIFIED GAPS IN THE PLAN

The assumptions made in this plan, which relate to the closure objectives and associated impact on the receiving environment, stem from site-specific information gathered by the project team. No gaps in the Rehabilitation, Decommissioning and Mine Closure Plan could be identified.

6.8 RELINQUISHMENT CRITERIA FOR CLOSURE ACTIVITIES

The specific rehabilitation outcomes against which the effectiveness of completed rehabilitation must be measured are:

1. that the topography has been sufficiently shaped without steep excavation edges;
2. that topsoil has been spread on the surface;
3. that there is a potential rooting depth of at least 300 mm, of non-compacted soil material, which is suitable for root growth, across the entire mining area;
4. that there are no non free-draining depressions across the surface;
5. that there is no visible erosion across the area, or down-slope of it because of mining, and that no part of the area has been left unacceptably vulnerable to erosion;
6. that a successful grass layer has been established across the entire area.

In addition to the above, the following relinquishment criteria is proposed for the closure activities of the mining area:

Table 8: Relinquishment criteria

RELINQUISHMENT CRITERIA FOR CLOSURE ACTIVITIES			
CATEGORY	**RELINQUISHMENT CRITERIA**	**INDICATORS**	**REPORTING REQUIREMENTS**
Removal of all equipment.	No visible man-made structures should remain.	Closeout inspection by site management upon end of decommissioning phase.	Photographic evidence that infrastructure has been removed.
Soil erosion	Implementation of erosion control measures or the establishment of vegetation in denuded areas.	Engineered structures to control water flow	Proof in final closure report that required structures are in place and functional.
Vegetation	Seeding of a grass layer after topsoiling.	Biodiversity monitoring	Monitoring report
Invader plant management	Continuous management of invader plants until the establishment of the first grass layer.	Biodiversity monitoring	Monitoring report
Land Use	Land capability and productivity like or better than that which existed prior to mining.	Land capability and productivity	Comparison to equivalent areas.

6.9 CLOSURE COST ESTIMATE

Financial provision (Regulation 54 of the MPRDA, 2002) is the amount needed for the rehabilitation of damage caused by the operation, both at sudden closure during the normal operation of the project and at final, planned closure. This amount reflects what it will cost the Department to rehabilitate the area disturbed in case of liquidation or abscondence. Financial provision for environmental rehabilitation and closure requirements of mining operations forms an integral part of the MPRDA. Section 41 of the MPRDA and Regulations 53 and 54 promulgated in terms of the MPRDA deal with financial provision for mine rehabilitation and closure.

Based on the extent of the current disturbance and by utilising the Department of Mineral Resources and Energy guideline document for calculating financial provision the proposed mine needs to provide a financial provision value of R 238 284.28 (calculated December 2022). Refer to *Part B(1)(f)(i)(e) Calculate and state the quantum of the financial provision required to manage and rehabilitate the environment in accordance with the applicable guideline* of the BAR & EMPR for an explanation as to how the financial provision amount was calculated.

6.10 MOTIVATION FOR AMENDMENTS MADE TO THE FINAL REHABILITATION, DECOMMISSIONING AND MINE CLOSURE PLAN.

Not applicable as no amendments were made to the Final Rehabilitation, Decommissioning and Mine Closure Plan.

7. MONITORING, AUDITING AND REPORTING

In compliance with applicable legislation, the Applicant will conduct monitoring of the mining activities for the duration of the decommissioning and closure phase. The compliance of the site will be audited, and reporting will be done to the relevant authorities. The table below stipulates the actions to be followed in this regard. Monitoring, auditing, and reporting needs to be conducted until mine closure has been approved by the DMRE and the closing certificate obtained.

Table 9: Monitoring, auditing, and reporting requirements

MONITORING, AUDITING AND REPORTING REQUIREMENTS			
AUDIT	**RESPONSIBLE PERSON**	**FREQUENCY OF AUDIT**	**CLOSE OUT APPROACH**
LEGISLATED AUDITING AND REPORTING			
Environmental Auditing	**Internal Review**		
	Site manager to ensure compliance with Environmental Management Programme and Closure Plan.	Daily compliance monitoring.	Any non-conformance must immediately be addressed by site management and weekly reported on.
	External Auditing		
	External Environmental Consultant	Annual auditing and reporting to the Department of Mineral Resources and Energy.	Depending on the significance of the findings, site management has a maximum of four weeks to address and close out auditing results.
Financial Provision Review	Financial Provision Review	Annual review of the financial provision, and reporting of the findings to the Department of Mineral Resources and Energy.	Should the review of the financial provision indicate a shortfall the holder of the permit would increase the financial provision to meet the audited financial provision within 90 days from the date of the signature.
MONITORING			
Dust Monitoring	Site Management	Daily Dust Monitoring	Site management has a maximum of two weeks to develop and implement a dust management plan should the dust levels increase, and such a plan is required by the DMRE or the municipality.
Invader Plant Monitoring	Site Management	Annual Monitoring	Site management has a maximum of two weeks to review and implement the invader plant control plan should Category 1a & b plants in terms of the National Environmental Management: Biodiversity Act, 2004 (Act 15 of 1973) and the Alien and Invasive Species Regulations, 2014 (amended 2016) germinate on-site.

MONITORING, AUDITING AND REPORTING REQUIREMENTS			
AUDIT	**RESPONSIBLE PERSON**	**FREQUENCY OF AUDIT**	**CLOSE OUT APPROACH**
Water Quality, and Biomonitoring	Hydrologist	Bi-Annual Monitoring	Any non-conformance with the water quality guidelines must be corrected in accordance with guidance from a hydrologist, or as directed by the DWS.
Noise Monitoring	Noise Monitoring Specialist	Quarterly Noise Monitoring	Site management has a maximum of one week to designate additional noise zone where applicable. Hearing protection equipment must always be available to employees.

7.1 SCHEDULE FOR REPORTING REQUIREMENTS

The following table stipulates the reporting requirements and how document updating will be handled:

Table 10: Reporting requirements

REPORTING REQUIREMENTS			
AUDIT	**LEGISLATION**	**REPORTING REQUIREMENTS**	**UPDATE DISCLOSURE**
Environmental Auditing	NEMA; EIA Regulations, 2014	Reporting on the environmental compliance of the mining area will be in accordance with Regulation 34 of the NEMA EIA Regulations, 2014. The environmental audit report will contain the information set out in Appendix 7 of the said Regulation.	The environmental audit report will indicate the ability of the EMPR and Closure Plan to adequately manage the activity. Should the reports not be sufficient, amendment will be proposed.
Financial Provision Review	NEMA Amendment Act, 2014 (Act No 25 of 2014) Financial Provision Regulations, 2015	Reporting on the financial provision for closure of the mining area will be in accordance with Section 24P of the NEMA Amendment Act, 2014 (Act No 25 of 2014) read with the Financial Provision Regulations 2015.	The auditor will report on the adequacy of the financial provision and any adjustments that need to be made to the financial provision.
Health and Safety Auditing	Occupational Health and Safety Act, 1993 Mine Health and Safety Act, 1996	Reporting on the health and safety compliance of the mining area will be in accordance with the Mine Health and Safety Act, 1996.	The safety manager will annually update the Code of Practices applicable to the site.

REPORTING REQUIREMENTS			
AUDIT	**LEGISLATION**	**REPORTING REQUIREMENTS**	**UPDATE DISCLOSURE**
Water Quality, and Biomonitoring	National Water Act, 1998 (Act No 36 of 1998) Water Use Licence Conditions	Reporting on the water quality and biomonitoring health of the mining area will be in accordance with the National Water Act, 1998.	The hydrologist will conduct the monitoring in accordance with the conditions of the water use licence and DWS requirements.

8. ENVIRONMENTAL RISK ASSESSMENT REPORT

The objective of the environmental risk assessment report is to:

a) ensure timeous risk reduction through appropriate interventions;
b) identify and quantify the potential latent environmental risks related to post closure;
c) detail the approach to managing the risks;
d) quantity the potential liabilities associated with the management of the risks; and
e) outline monitoring, auditing and reporting requirements.
(Financial Provision Regulations, 2015 Appendix 4)

8.1 ASSESSMENT PROCESS USED TO IDENTIFY AND QUANTIFY LATENT RISKS

8.1.1 Methodology

The methodology for the assessment of the potential latent risks entailed the use of the following:

DEFINITIONS AND CONCEPTS

Environmental significance:

The concept of significance is at the core of impact identification, evaluation and decision-making. The concept remains largely undefined and there is no international consensus on a single definition. The following common elements are recognised from the various interpretations:

- Environmental significance is a value judgement
- The degree of environmental significance depends on the nature of the risk
- The importance is rated in terms of both biophysical and socio-economic values
- Determining significance involves the amount of change to the environment perceived to be acceptable to affected communities.

Significance can be differentiated into risk magnitude and risk significance. Risk magnitude is the measurable change (i.e. intensity, duration and likelihood). Risk significance is the value placed on the change by different affected parties (i.e. level of acceptability)

The concept of risk has two dimensions, namely the consequence of an event or set of circumstances, and the likelihood of particular consequences being realised (Environment Australia (1999) Environmental Risk Management).

Impact:

The positive or negative effects on human well-being and / or the environment.

Consequence:

The intermediate or final outcome of an event or situation OR it is the result, on the environment, of an event.

Likelihood:

A qualitative term covering both probability and frequency.

Frequency:

The number of occurrences of a defined event in a given time or rate.

Probability:

The likelihood of a specific outcome measured by the ratio of a specific outcome to the total number of possible outcomes.

Environment:

Surroundings in which an organisation operates, including air, water, land, natural resources, flora, fauna, humans and their interrelation (ISO 14004, 1996).

Methodology to be used:

The environmental significance assessment methodology is based on the following determination:

Environmental Significance = Overall Consequence x Overall Likelihood

Determination of Overall Consequence:

Consequence analysis is a mixture of quantitative and qualitative information, and the outcome can be positive or negative. Several factors can be used to determine consequence. For determining the environmental significance in terms of consequence, the following factors were chosen Severity/Intensity, Duration and Extent/Spatial Scale. Each factor is assigned a rating of 1 to 5, as described in the tables below.

Determination of Severity / Intensity:

Severity relates to the nature of the event, aspect or impact to the environment and describes how severe the aspects affect the biophysical and socio-economic environment.

The following table will be used to obtain an overall rating for severity, taking into consideration the various criteria.

Table 11: Monitoring Programmes

Type of criteria	Rating				
	1	**2**	**3**	**4**	**5**
Quantitative	0-20%	21-40%	41-60%	61-80%	81-100%
Qualitative	Insignificant / Non-harmful	Small / Potentially harmful	Significant/ Harmful	Great/ Very harmful	Disastrous Extremely harmful
Social/ Community response	Acceptable / I&AP satisfied	Slightly tolerable / Possible objections	Intolerable/ Sporadic complaints	Unacceptable / Widespread complaints	Totally unacceptable / Possible legal action
Irreversibility	Very low cost to mitigate/ High potential to mitigate impacts to level of insignificance/ Easily reversible	Low cost to mitigate	Substantial cost to mitigate/ Potential to mitigate impacts/ Potential to reverse impact	High cost to mitigate	Prohibitive cost to mitigate/ Little or no mechanism to mitigate impact Irreversible
Biophysical (Air quality, water quantity and quality, waste production, fauna and flora)	Insignificant change / deterioration or disturbance	Moderate change / deterioration or disturbance	Significant change / deterioration or disturbance	Very significant change / deterioration or disturbance	Disastrous change / deterioration or disturbance

Determination of Duration

Duration refers to the amount of time that the environment will be affected by the event, risk or impact, if no intervention e.g. remedial action takes place.

Table 12: Rating of duration used in the assessment of potential latent risks

Rating	Description
1	Up to ONE MONTH
2	ONE MONTH to THREE MONTHS (QUARTER)
3	THREE MONTHS to ONE YEAR
4	ONE to TEN YEARS
5	Beyond TEN YEARS

Determination of Extent/Spatial Scale

Extent or spatial scale is the area affected by the event, aspect or impact.

Table 13: Rating of extent / spatial scale used in the assessment of potential latent risks

Rating	Description
1	Immediate, fully contained area
2	Surrounding area
3	Within Business Unit area of responsibility
4	Within the farm/neighboring farm area
5	Regional, National, International

Determination of Overall Consequence

Overall consequence is determined by adding the factors determined above and summarized below, and then dividing the sum by 3.

Table 14: Example of calculating overall consequence in the assessment of potential latent risks

Consequence	Rating
Severity	Example 4
Duration	Example 2

Consequence	Rating
Extent	Example 4
SUBTOTAL	**10**
TOTAL CONSEQUENCE: (Subtotal divided by 3)	**3.3**

Determination of Likelihood:

The determination of likelihood is a combination of Frequency and Probability. Each factor is assigned a rating of 1 to 5, as described below and in tables 6 and 7.

Determination of Frequency

Frequency refers to how often the specific activity, related to the event, aspect or impact, is undertaken.

Table 15: Rating of frequency used in the assessment of potential latent risks

Rating	Description
1	Once a year or once/more during operation
2	Once/more in 6 Months
3	Once/more a Month
4	Once/more a Week
5	Daily

Determination of Probability

Probability refers to how often the activity or aspect has an impact on the environment.

Table 16: Rating of probability used in the assessment of potential latent risks

Rating	Description
1	Almost never / almost impossible
2	Very seldom / highly unlikely
3	Infrequent / unlikely / seldom
4	Often / regularly / likely / possible

Rating	Description
5	Daily / highly likely / definitely

Overall Likelihood

Overall likelihood is calculated by adding the factors determined above and summarised below, and then dividing the sum by 2.

Table 17: Example of calculating overall likelihood in the assessment of potential latent risks

Consequence	Rating
Frequency	Example 4
Probability	Example 2
SUBTOTAL	**6**
TOTAL LIKELIHOOD **(**Subtotal divided by 2)	**3**

Determination of Overall Environmental Significance:

The multiplication of overall consequence with overall likelihood will provide the significance of the risk, which is a number that will then fall into a range of **insignificant risk, uncertain risk** or **Significant Risk**, as shown in the table below.

Table 18: Determination of overall significance in the assessment of potential latent risks

Significance or Risk	Insignificant risk (cc)	Uncertain risk (bb)	Potential significant risk (aa)
Overall Consequence X Overall Likelihood	1 - 4.9	5 - 9.9	10 – 19.9

Qualitative description or magnitude of Environmental Significance

This description is qualitative and is an indication of the nature or magnitude of the Environmental Significance. It also guides the prioritisations and decision-making process associated with this event, aspect or impact.

Table 19: Description of environmental significance and related action required in the assessment of potential latent risks

Significance	An insignificant risk (cc)	A uncertain risk (bb)	A potential significant risk (aa)
Impact Magnitude	Impact is of very low order and therefore likely to have very little real effect. Acceptable.	Impact is of low order and therefore likely to have little real effect. Acceptable.	Impact is real and substantial in relation to other impacts. Pose a risk to the company. Unacceptable
Action Required	Maintain current management measures. Where possible improve.	Maintain current management measures. Implement monitoring and evaluate to determine potential increase in risk. Where possible improve	Improve management measures to reduce risk.

Based on the above, the significance rating scale has been determined as follows:

A potential Risk (aa) — Risks of a substantial order. Mitigation and / or remedial activity would be feasible but difficult, expensive, time-consuming or some combination of these.

An uncertain risk (bb) — Risk would be negligible. Almost no mitigation and or remedial activity would be needed, and any minor steps, which might be needed, would be easy, cheap and simple.

An insignificant risk (cc) — There would be very small to no risk.

8.1.2 Description of Latent Risks

At this stage, no latent risks that will potentially arise during closure phase of the mining area were identified.

8.1.3 Results and Finding of Risk Assessment

Not applicable as no latent risks were identified.

8.1.4 Changes to the Risk Assessment Results

N/A

8.2 MANAGEMENT ACTIVITIES

No additional management activities are necessary as no latent risks were identified.

8.3 COST ESTIMATE

Not applicable as no latent risks were identified.

8.4 MONITORING, AUDITING AND REPORTING REQUIREMENTS

By reason of the fact that no latent risks regarding the management of the mine were identified, no additional monitoring, auditing or reporting requirements are required at this stage.

9. CONCLUSION

This Closure Plan needs to be followed together with the EMPR and its amendments when it is decided that the end of mining has been reached. This document gives the necessary information when planning the rehabilitation of the mine together with the cost associated with the rehabilitation.

World Focus 1143 (Pty) Ltd commits itself to providing all the necessary resources to ensure that the rehabilitation of the mine is done in such a way that will be acceptable to all parties involved.

10. SIGNATURE OF AUTHOR

NAME	SIGNATURE	DATE
Christine Fouche		08 December 2022

11. UNDERTAKING BY PERMIT HOLDER

I, ……., the undersigned and duly authorised thereto by ..... ……. that World Focus 1143 (Pty) Ltd will comply with the provisions of the MPRDA and its Regulations as set out in Government Gazette no. 26275 (23 April 2004), as well as NEMA.

I have studied and understand the contents of this document and duly undertake to adhere to the conditions as set out therein, unless specifically or otherwise agreed to in writing.

Signed at …….. on this ……day of ……20……

FINAL DOCUMENT TO BE SIGNED BY PERMIT HOLDER

_____

Name:

Designation:

12. REFERENCES

- Chamber of Mines of South Africa, 1981. Guidelines for the rehabilitation of land disturbed by surface product mining in South Africa, Johannesburg
- Department of Water Affairs and Forestry, 2003. Draft: A practical procedure for the identification and delineation of wetlands andarian areas, Pretoria
- Department of Environmental Affairs and Tourism: Integrated Environmental Management Information Series: Impacts Significance
- Department of Water Affairs and Forestry (DWAF) (2007b) Best Practice Guideline A4: Pollution control dams. The Government Printer, Pretoria