

Environmental Authorisation
Application for the demolition of
mining infrastructure, Buffels
Marine Mining Right, Kleinzee,
Northern Cape

DMR Ref: SNC520MRC
Application ID: 1251

**De Beers Demolition
Works Basic
Assessment Report
and Environmental
Management Plan**

Kleinzee Operation

July 2017

Declaration of Consultant Independence

This report has been prepared by EndemicVision Environmental Services (Pty) Limited, with all reasonable skill, care and diligence within the terms of the contract with the client. EndemicVision Environmental Services is a multidisciplinary environmental management and consulting company with more than 20 years of experience in field. The technical appointments for this project are detailed below.

Team Member	Qualifications	Experience	Project Role
Chrizette Neethling	MSc BSc Honors BA – EM ND Conservation NC Business Management	Over 20 years of broad based environmental experience with more than 35 projects completed in mining, biodiversity and development industries.	Project Manager and Ecologist
Elsche Cronje	BSc Honors Ecology BSc Botany & Zoology		Environmental Technician
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The author of this report, EndemicVision Environmental Services, does hereby declare that it is an independent consultant and has no business, financial, personal or other interest in the activity, application or appeal in respect of which it was appointed other than fair remuneration for work performed in connection with the activity, application or appeal. There are no circumstances that compromise the objectivity of the persons performing such work. All opinions expressed in this report are its own.



Signed: **C.D. Neethling**

Dated: **07 July 2017**

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Project Overview

Scope of Environmental Impact Assessment	
This impact assessment identifies and evaluates the actual and potential environmental consequences associated with the proposed activity. Furthermore, the potential for mitigation of negative impacts and enhancement of positive impacts (DEAT, 2014) are described.	
Project Name	De Beers Demolition, Environmental Authorisation Application
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Applicant Details	Anton Meyer TEL NO: +27 (0) 27 877 0048 / +27 (0) 83 977 0113 E-MAIL: Anton.Meyer@debeersgroup.com POSTAL ADDRESS: Private Bag X01, Kleinsee, 8282 PHYSICAL ADDRESS: 1 Fred Rich Drive, Kleinsee, 8282
Landowner	De Beers Consolidated Mines Limited - Namaqualand Mines
Landowner Details	De Beers Consolidated Mines Limited - Namaqualand Mines See above applicant details
Property reference	<ul style="list-style-type: none"> • Portion of the farm Oubeep No. 173; • Portion of Remaining extent & Portion 1 of the farm Kareedoornvlei No 177; • Portion of the farm Tweepad No 176; • Portion of the farm Dreyers Pan No 192; • Portion of portion 5 of Annex klein Zee No.193 • Remaining Extent and Portions 1, 2, and 3 of the farm Klein Zee No 194; • Portion of the farm Sandkop No 322; • Portion of the farm Goraap No 323; • Portion of Portion 3 & Portion of Portion 7 of the farm Dikgat No 195 and adjacent Sea Strips as now described as un-alienated state land.

<p>Surveyor General Property Code</p>	<ul style="list-style-type: none"> • Portion of the farm Oubeep No. 173: C05300000000017300000 • Portion of Remaining extent of the farm Kareedoornvlei No 177: C05300000000017700000 • Portion 1 of the farm Kareedoornvlei No 177: C05300000000017700001 • Portion of the farm Tweepad No 176: C05300000000017600000 • Portion of the farm Dreyers Pan No 192: C05300000000019200000 • Remaining Extent of the farm Klein Zee No 654: C05300000000065400000 • Portions 1 of the farm Klein Zee No 654: C05300000000065400001 • Portion of the farm Sandkop No 322: C05300000000032200000 • Portion of the farm Goraap No 323: C05300000000032300000 • Portion of Portion 3 of the farm Dikgat No 195: C05300000019500003 • Portion of Portion 1 of the farm Dikgat No 195: C05300000019500001 • Adjacent Sea Strips now described as un-alienated state land: C05300000000017400000 C05300000000017500000
<p>Local Municipality</p>	<p>Richtersveld Local Municipality and Nama Khoi Local Municipality</p>
<p>Magisterial district</p>	<p>Namaqualand [C053]</p>
<p>District Municipality</p>	<p>Namakwa District Municipality</p>
<p>Province</p>	<p>Northern Cape Province</p>

Table of Contents

Project Overview	2
BASIC ASSESSMENT REPORT and ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT.....	8
1. Important notice.....	9
2. Objective of the basic assessment process.....	10
PART A: SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT.....	11
3. Contact person and correspondence address	11
a) Details of EAP.....	11
b) Location of the overall Activity	11
c) Locality map.....	14
d) Description of the scope of the proposed overall activity	16
e) Policy and Legislative Context.....	60
f) Need and desirability of the proposed activities.....	60
g) Motivation for the overall preferred site, activities and technology alternative.....	60
h) Full description of the process followed to reach the proposed preferred alternatives within the site	60
i) Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site (In respect of the final site layout plan) through the life of the activity	90
i) Assessment of each identified potentially significant impact and risk	91
j) Summary of specialist reports	96
k) Environmental impact statement.....	96
l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr	98
m) Aspects for inclusion as conditions of Authorisation	98
n) Description of any assumptions, uncertainties and gaps in knowledge	98
o) Reasoned opinion as to whether the proposed activity should or should not be authorised	99
p) Period for which the Environmental Authorisation is required.....	99
q) Undertaking	99
r) Financial Provision	99
s) Specific Information required by the competent Authority	100
t) Other matters required in terms of sections 24(4)(a) and (b) of the Act.....	101
PART B: ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT	102
1. Draft environmental management programme	102
a) Details of the EAP,	102
b) Description of the Aspects of the Activity	102
c) Composite Map.....	102
d) Description of Impact management objectives including management statements	102
e) Impact Management Outcomes	110
f) Impact Management Actions	112
g) Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon, including	119
h) Indicate the frequency of the submission of the performance assessment/environmental audit report	120
i) Environmental Awareness Plan	120
j) Specific information required by the Competent Authority	120
2. UNDERTAKING	121
Bibliography	122

Appendix A..... 123
 Qualifications of EAP - CV 123
Appendix B..... 124
 Locality Map..... 124
Appendix C..... 125
 Site Plan 125
Appendix D 126
 Public Participation Record..... 126
Appendix E..... 127
 Composite Map 127

List of Tables

Table 1: Project locality details	11
Table 2: Development Scope of the Project	16
Table 3: Scope of project - Zone of influence.....	17
Table 4: Applicable Listed Activities for the Project	18
Table 5: Policy and Legislative Context	60
Table 6: Lists of Aspects	62
Table 7: Risk rating key	62
Table 8: List of alternative considerations.....	62
Table 9: Tweepad decision risk matrix	65
Table 10: Tweepad alternatives considered	65
Table 11: Bulk sample seawater intake jetty decision risk matrix	67
Table 12: Bulk sample seawater intake jetty alternatives considered	68
Table 13: Old recovery plant infrastructure decision risk matrix	72
Table 14: Old recovery plant infrastructure alternatives applied	73
Table 15: Issues Raised by Stakeholders.....	74
Table 16: Hydrological Parameters for the Area	76
Table 17: List of activities and environmental aspects to be assessed	85
Table 18: Impact Nature Rating	86
Table 19: Impact Probability Rating	87
Table 20: Impact Duration Rating	87
Table 21: Impact Scale/Extent Rating	87
Table 22: Impact Magnitude/Severity Rating	87
Table 23: Impact Significance Rating	88
Table 24: Terrestrial demolition impact assessment of positive impacts	91
Table 25: Terrestrial demolition impact assessment - Negative impacts	92
Table 26: Inter-tidal demolition impact assessment - positive impacts.....	94
Table 27: Inter-tidal demolition works impact assessment - negative impacts.....	95
Table 28: Summary of impact assessment	96
Table 29: Estimated closure costs for Buffels Marine Right	Error! Bookmark not defined.
Table 30: Detailed closure objectives for the Buffels Marine Mining Right	103
Table 31: Impact Management Outcomes and Actions for specific standards.....	113

List of Figures

Figure 1: Regional Location of the Mining Right.....	14
Figure 2: Local Setting of the Project Area in municipal boundary context	15
Figure 3: Public Participation Approach	73
Figure 4: Average Rainfall, Midday and Night Time Temperature for Kleinzee.....	76
Figure 5: Soil saturation map.....	77
Figure 6: Vegetation types	78
Figure 7: Ecological sensitivity map of project.....	81
Figure 8: Composite Map	84

List of Abbreviations

AIA	Archaeological Impact Assessment
ABP	Area Based Plans
DAFF	Department of Agriculture, Forestry & Fisheries
DMR	Department of Mineral Resources
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
HIA	Heritage Impact Assessment
I&APs	Interested and Affected Parties
IUCN	International Union of Conservation of Nature
LRAD	Land Redistribution for Agricultural Development
MPRDA	Mineral and Petroleum Resources Development Act
NEMA	National Environmental Management Act
NEM:AQA	National Environmental Management Air Quality Act
NEMPAA	National Environmental Management: Protected Areas Act
NEMBA	The National Environmental Management: Biodiversity Act
PIA	Palaeontological Impact Assessment
PPP	Public Participation Process
SAHRA	South African Heritage Resource Agency
SAHRIS	South African Heritage Resource Information System
SANBI	South African National Biodiversity Institute
SANBIS	South African National Biodiversity Information System



mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

BASIC ASSESSMENT REPORT and ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

SUBMITTED FOR ENVIRONMENTAL AUTHORIZATIONS IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 AND THE NATIONAL ENVIRONMENTAL MANAGEMENT WASTE ACT, 2008 IN RESPECT OF LISTED ACTIVITIES THAT HAVE BEEN TRIGGERED BY APPLICATIONS IN TERMS OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 (MPRDA) (AS AMENDED).

NAME OF APPLICANT: De Beers Consolidated Mines Limited - Namaqualand Mines

CONTACT PERSON: Anton Meyer

TEL NO: 027 877 0048

FAX NO: 011 374 5418

POSTAL ADDRESS: Private Bag X01, Kleinsee 8282

PHYSICAL ADDRESS: 1 Fred Rich Drive, Kleinsee, 8282

FILE REFERENCE NUMBER SAMRAD: NC-00075-MR/102

1. Important notice

In terms of the Mineral and Petroleum Resources Development Act (Act 28 of 2002 as amended), the Minister must grant a prospecting or mining right if among others the mining “will not result in unacceptable pollution, ecological degradation or damage to the environment”.

Unless an Environmental Authorisation can be granted following the evaluation of an Environmental Impact Assessment and an Environmental Management Programme report in terms of the National Environmental Management Act (Act 107 of 1998) (NEMA), it cannot be concluded that the said activities will not result in unacceptable pollution, ecological degradation or damage to the environment.

In terms of section 16(3) (b) of the EIA Regulations, 2014, any report submitted as part of an application must be prepared in a format that may be determined by the Competent Authority and in terms of section 17 (1) (c) the competent Authority must check whether the application has taken into account any minimum requirements applicable or instructions or guidance provided by the competent authority to the submission of applications.

It is therefore an instruction that the prescribed reports required in respect of applications for an environmental authorisation for listed activities triggered by an application for a right or a permit are submitted in the exact format of, and provide all the information required in terms of, this template. Furthermore, please be advised that failure to submit the information required in the format provided in this template will be regarded as a failure to meet the requirements of the Regulation and will lead to the Environmental Authorisation being refused.

It is furthermore an instruction that the Environmental Assessment Practitioner must process and interpret his/her research and analysis and use the findings thereof to compile the information required herein. (Unprocessed supporting information may be attached as appendices). The EAP must ensure that the information required is placed correctly in the relevant sections of the Report, in the order, and under the provided headings as set out below, and ensure that the report is not cluttered with un-interpreted information and that it unambiguously represents the interpretation of the applicant.

2. Objective of the basic assessment process

The objective of the basic assessment process is to, through a consultative process—

- (a) determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;
- (b) identify the alternatives considered, including the activity, location, and technology alternatives;
- (c) describe the need and desirability of the proposed alternatives,
- (d) through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on the aspects to determine:
 - (i) the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and
 - (ii) the degree to which these impacts—
 - (aa) can be reversed;
 - (bb) may cause irreplaceable loss of resources; and
 - (cc) can be managed, avoided or mitigated;
- (e) through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to—
 - (i) identify and motivate a preferred site, activity and technology alternative;
 - (ii) identify suitable measures to manage, avoid or mitigate identified impacts; and
 - (iii) Identify residual risks that need to be managed and monitored.

PART A: SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

3. Contact person and correspondence address

a) Details of EAP

i) Details of the EAP

Name of the Practitioner: EndemicVision Environmental Services (Pty) Ltd
Chrizette Neethling

Tel No.: +27 (0) 53 723 1206

Fax No. : +27 (86) 590 7261

E-mail address: cdn@endemicvision.co.za

ii) Expertise of the EAP

(1) The qualifications of the EAP

Please refer to the Appendix A for the Curriculum Vitae of Chrizette Neethling

(2) Summary of the EAP's past experience.

Please refer to the Appendix A for the Curriculum Vitae of Chrizette Neethling

b) Location of the overall Activity

The following table presents the location and associated cadastral details associated with the proposed project area.

Table 1: Project locality details

Property scope	De Beers Demolition, Environmental Authorisation Application
Total landholding size (Ha)	35 000ha
Application area (Ha)	3.33 ha
Project footprint as percentage of total landholding	0.1%
Project location description	The area stretches approximately 40 km north of Kleinzee to 9km south of Kleinzee, within the Administrative District of the Richtersveld Local Municipality and Nama Khoi Local Municipality within Namakwa District Municipality, Northern Cape Province.
Distance from nearest town boundary (km)	248.18m
Distance from nearest residential settlement (km)	358.848m
Distance from nearest neighbor (km)	317.873m

Project Central Location Coordinates (Decimal Degrees) South	Project Central Location Coordinates (Decimal Degrees) East
Tweepad Seawater Intake 29.466276°	16.979202°
Tweepad Processing Plant 29.459695	17.023079
Bulk Sample Seawater Intake 29.565917	17.002425
Bulk Sample Seawater Intake Makeup Dam 29.564496	17.004655
Dragline Workshop 29.558247	17.043455
Dreyers Pan 29.558889	17.044506
Bulk Sample Processing Plant 29.589310	17.042324
Dreyers Pan Reservoir 29.640842	17.070108
AK3 29.651641	17.042779
Old Recovery Plant 29.655830	17.040807
Earthmoving Workshop 29.653934	17.041479
BMR 29.661729	17.070892
E44 Workshop 29.665356	17.067976
Checkpoint 29.669147	17.068504
Field Services Workshop 29.655126	17.041269
Project Corner Coordinates (Decimal Degrees) South	Project Corner Coordinates (Decimal Degrees) East
Tweepad Seawater Intake 29.466057° 29.466178° 29.466486° 29.466391°	Tweepad Seawater Intake 16.978700° 16.978658 16.979719 16.979753
Tweepad Processing Plant 29.457824 29.457639 29.459534 29.458729 29.459287 29.460393 29.459723 29.459351	17.021819 17.022580 17.023533 17.026447 17.026613 17.021230 17.021027 17.022468
Bulk Sample Seawater Intake 29.565899 29.565925 29.565933 29.565909	17.002417 17.002443 17.002439 17.002410
Bulk Sample Seawater Intake Makeup Dam 29.564345 29.564432 29.564625 29.564620 29.564393	17.004662 17.004714 17.004686 17.004627 17.004574

Dragline Workshop 29.557824 29.557991 29.557686 29.557855 29.558659 29.558214	17.043297 17.043557 17.044010 17.044378 17.043540 17.042796
Dreyers Pan 29.558795 29.558579 29.558945 29.559143	17.044156 17.044361 17.044828 17.044587
Bulk Sample Processing Plant 29.588535 29.588342 29.589997 29.590169	17.041181 17.042983 17.043452 17.041752
Dreyers Pan Reservoir 29.640571 29.640846 29.641090 29.640794	17.069243 17.070893 17.070880 17.069204
AK3 29.651504 29.651474 29.651773 29.651801	17.042614 17.042823 17.042918 17.042753
Old Recovery Plant 29.655678 29.655521 29.656117 29.656235 29.656076 29.655978 29.655772 29.655587	17.040277 17.040799 17.041044 17.040728 17.040567 17.040759 17.040675 17.040400
Earthmoving Workshop 29.653750 29.653452 29.653792 29.654332 29.654435 29.653959	17.040764 17.040827 17.041733 17.041946 17.041556 17.041291
BMR 29.660754 29.660542 29.662095 29.662336 29.663163 29.663211	17.069480 17.071423 17.072666 17.071568 17.071590 17.070107
E44 Workshop 29.665173 29.665185 29.665504 29.665510	17.067853 17.068102 17.068094 17.067866
Checkpoint 29.668903 29.668588 29.669327 29.669958 29.669578 29.669273	17.067658 17.069294 17.069705 17.066977 17.066766 17.067740

Field Services Workshop' 29.654841 29.654823 29.655345 29.654512	17.041080 17.041242 17.041453 17.041258
--	--

c) Locality map

.....
 Show nearest town; scale not smaller than 1:250 000

The following figure illustrates the farms associated with the proposed demolition area, as well as the Regional Setting.

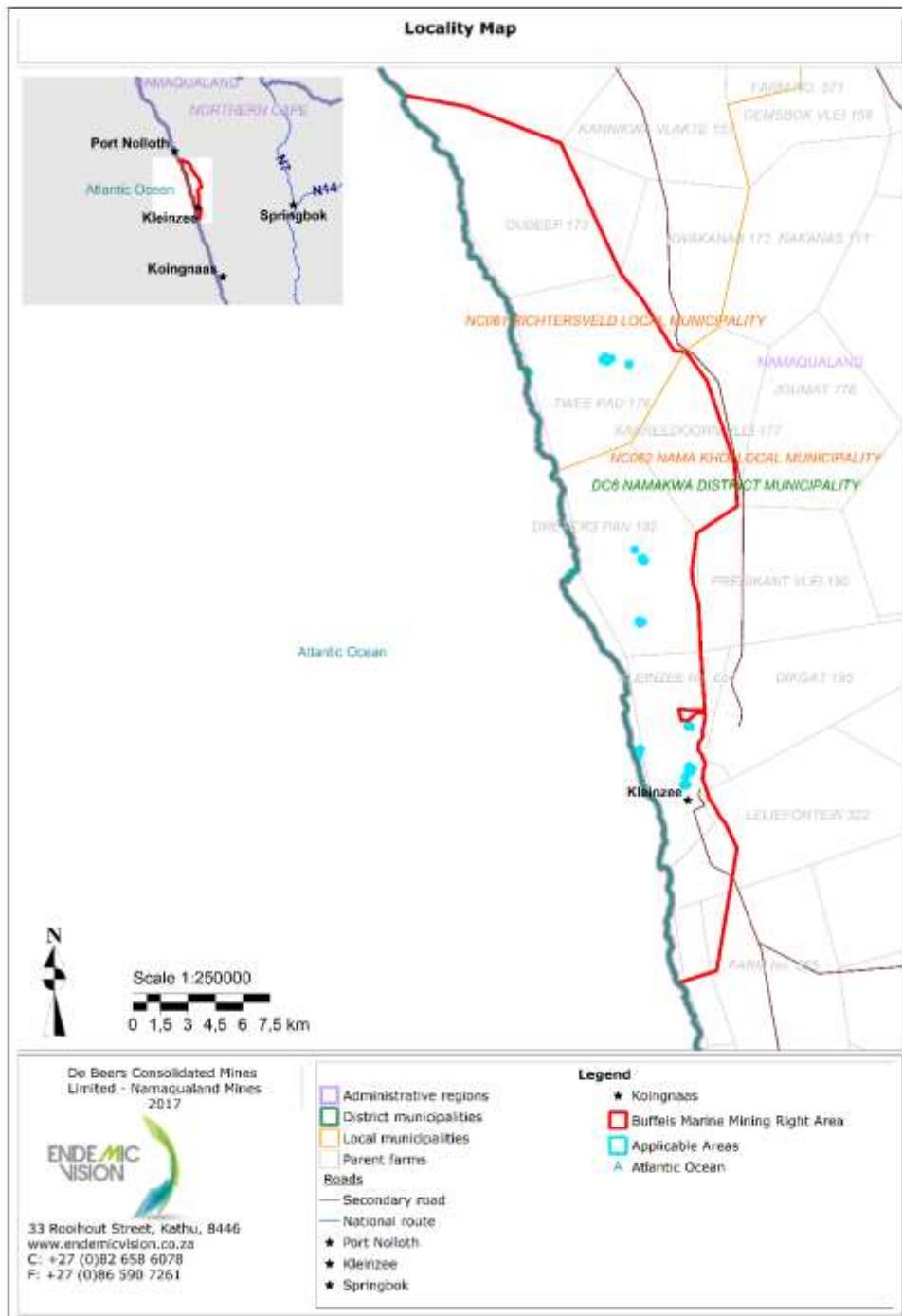


Figure 1: Regional Location of the Mining Right

The following figure illustrates the setting of the project area within the borders of the Local Municipality.

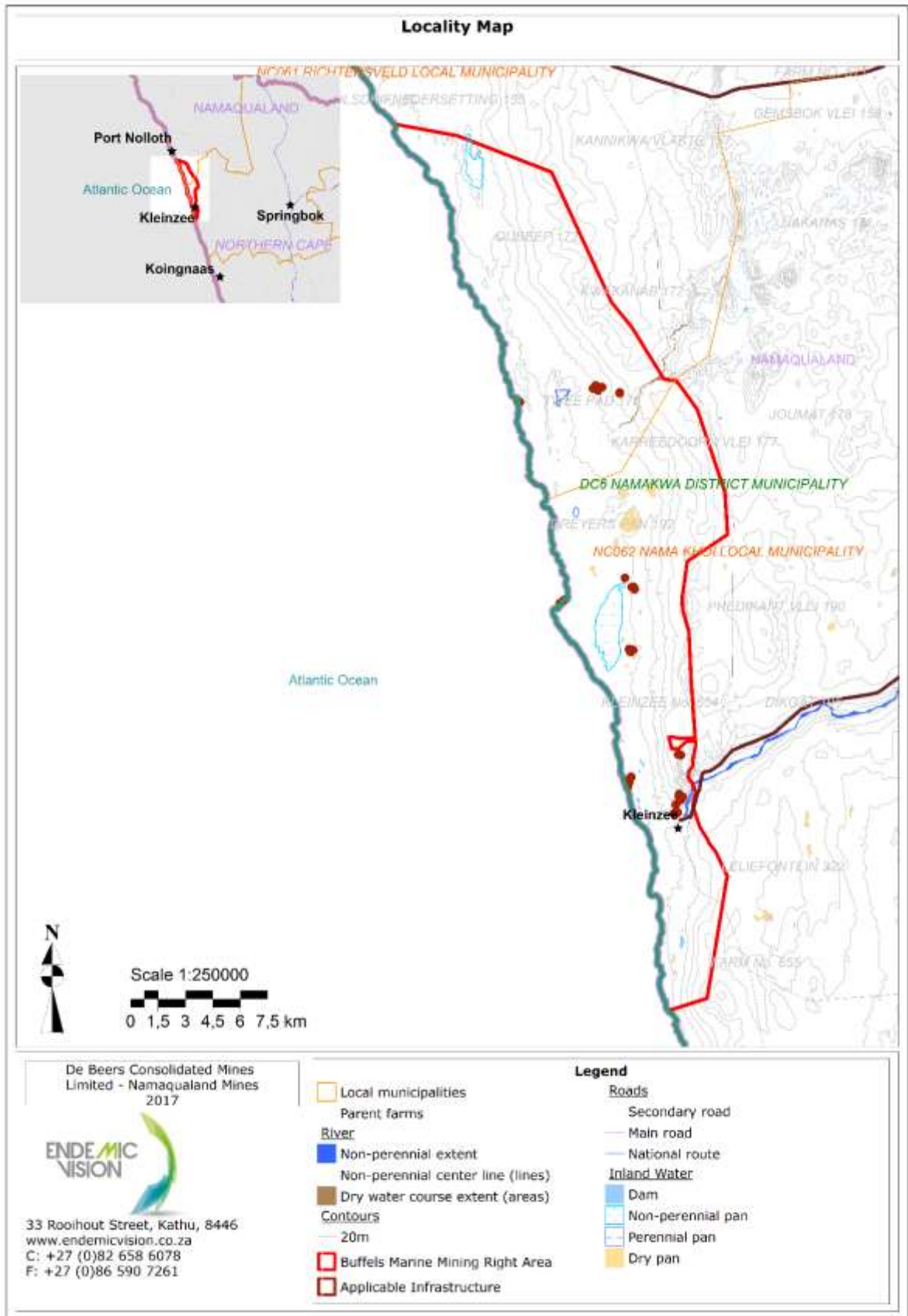


Figure 2: Local Setting of the Project Area in municipal boundary context

d) Description of the scope of the proposed overall activity

Provide a plan drawn to a scale acceptable to the competent authority but not less than 1: 10 000 that shows the location, and area (hectares) of all the aforesaid main and listed activities, and infrastructure to be placed on site

The scope of the proposed demolition area is provided in **Error! Reference source not found.** below:

Table 2: Development Scope of the Project

Development scope	De Beers Demolition, Environmental Authorisation Application
Development objective	The aim of the application is to demolish the remaining redundant infrastructure located inside the Buffels Marine Mining Right area legally and in the most efficient manner.
Type of impact (industry)	Mining Infrastructure Demolition
Impact Description	The proposed demolition project involves both non-invasive and invasive methods. Initially, activities will be non-invasive and restricted to a desktop study which will include a literature survey, aerial photograph and satellite image interpretation, ground validation of targets, geophysical surveys, interpretation and modelling of data. Subsequent phases will be of the invasive type, and entails the decommissioning and demolition of the remaining redundant infrastructure.
Impact Period	Three years
Total impact footprint	3.33044ha
Existing infrastructure	<ul style="list-style-type: none"> • Tweepad Seawater Intake: pump building with concrete platform, crane building, store building, powerline, and water pipes • Tweepad Processing Plant: change house, mechanical workshop, paint store, offices block 1&2, septic tank, oil separator, salvage yard, bioremediation slab, mining containers, mining change house & tearoom, powerlines, substation, • Bulk Sample Seawater Intake: pump, makeup dam with pump and slab, pipeline, powerline, substation • Bulk Sampling Processing Plant : Primary, secondary, tertiary crusher, apron feeder, hydraulic room, tailings conveyors, other conveyors, thickener, mud dam, DMS, scrubber, electric store, store room, mechanical workshop, oil & paint store, toilet facilities, garage, production offices, salvage yard, substation • Old Recovery Plant: dam, pump house, • Dreyers Pan: Store, Office 1 & 2, toilets, substation, • Dragline: Bucket store, DEMAG garage & store, offices, laydown areas, salvage yard, change house, • AK3: Office block, substation • Dreyers Pan Reservoir: White dam, old house & tower, battery charger room, telecom receptor & tower
Planned infrastructure	Demolition of existing infrastructure

Affected Vegetation Types	SKs 1 - Richtersveld Coastal Duneveld AZd 2 - Namaqualand Seashore Vegetation SKs 8 - Namaqualand Coastal Duneveld SKs 7- Namaqualand Strandveld
Affected Water Resources	Buffelsrivier riverbed 246 van BMR area Non-perineal centreline 172m van Dreyers pan reservoir Dry pan 46m from Bulk processing plant Non-perineal pan Karaspan 307m van Bulk sample seawater intake substation Dry water course- Kwaggarivier 814m van @pad processing plant substation Inter-tidal zones
Affected Sensitive Habitats	Inter-tidal zones of infrastructure
Affected Heritage Resources	The infrastructure of the mine that require demolition in terms of its closure and rehabilitation obligations are older than 60 years.

The scope of the properties and zone of influence of the project is limited to the property as held by De Beers Consolidated Mines Pty (Ltd). The property scope in this regard is detailed below:

Table 3: Scope of project - Zone of influence

Project Overview - Zone of Influence	
Formal land use zonation	Mining
Current land use	Mining
Existing Land Users	De Beers Consolidated Mines Limited - Namaqualand Mines
Adjacent land users	Oster Farm: Mr Ray Henderson Abalone Farm: Mr Q
Main stakeholder groups	Local Community Adjacent land users Local and District Municipalities Authorities: DWS, DENC, SAHRA, Land Affairs, DMR
Main organised forums	Oceans & Costal Services: Mr Jay Peter
Significant receptors	Kleinzee community & Adjacent land users
Main Government commenting authorities	
1	Department of Environmental Affairs
2	Department of Water Affairs
3	Department of Land Affairs

Authorizing and competent authorities	
1	Department of Mineral Resources
2	South African Heritage Resources Association

(i) Listed and specified activities

Section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No.28 of 2002) requires, upon request by the Minister that an Environmental Management Plan be submitted and that the applicant must notify and consult with Interested and Affected Parties (I&APs). Section 24 of the NEMA requires that activities, which may impact on the environment, must obtain an environmental authorisation from a relevant authority before commencing with the activities. Such activities are listed under Regulations Listing Notice 1 Government Notice (GN)983, Listing Notice 2 GN 984 and Listing Notice GN 985 (dated 4 December 2014) of NEMA. The proposed demolition activity triggers the following activities from NEMA Government Notice 983 (Listing Notice 1) and 985 (Listing Notice 3):

Table 4: Applicable Listed Activities for the Project

Listed Activities	
Applicable Listing Notice	Activity referenced in listing notice
NEMA Listing Notice 01 (GNR 983)	22. The decommissioning of any activity requiring a prospecting right, mining right, mining permit, production right or exploration right, where the throughput of the activity has reduced by 90% or more over a period of 5 years excluding where the competent authority has in writing agreed that such reduction in throughput does not constitute closure.

The activities (listed and not listed) that require environmental authorisation in terms of the EIA Regulations of December 2014 are indicated in the table below.


(ii) Description of the activities to be undertaken


Describe Methodology or technology to be employed, including the type of commodity to be prospected / mined and for a linear activity, a description of the route of the activity


The demolition project is expected to take place over three years. Demolition will be done by using recognized contractors for the work.


The details of each infrastructure item and scope of works related to each item that will be demolished are tabled below.

Intertidal Areas

Tweepad Seawater Intake: Pump, crane & store building	
	
Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, steel - Scale: 100m x 300m - Duration: 3 months
Plan of Works	<ul style="list-style-type: none"> - Infrastructure situated at coast and therefore should be seen as sensitive zone - Barriers required to prevent pollution of coast during demolition - Asbestos to be removed first while the rest of material is still stable - Building rubble to be disposed of at Tweepad processing plant - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used - Stabilization of bare areas to be completed as soon as possible - All metal fittings and infrastructure to be removed and cut off safely at the base. Where any unsafe items remain, this must be grinded flat - Final sign-off should be done by DEA- Oceans and coastal department

Tweepad Seawater Intake: Concrete Platform	
	
Scope of Works	<ul style="list-style-type: none"> - Heavily reinforced concrete - Scale: 9m x 9m - Duration: 3 months
Plan of Works	<ul style="list-style-type: none"> - Micro habitats formed inside seawater intake - Concrete platform must not be demolished because of the negative impact it will have on the micro habitats which formed - All metal fittings and infrastructure to be removed and cut off safely at the base. Where any unsafe items remain, this must be grinded flat. - Final sign-off should be done by DEA- Oceans and coastal department.

Bulk Sample Seawater Intake: Boulder Jetty	
	
Scope of Works	<ul style="list-style-type: none"> - Boulder jetty with overlain subsoil and signage - Scale: 480m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Cove not to be demolished completely - Technical evaluation of best practical option and stability evaluation should take environmental alternatives into consideration for final decision making.

Bulk Sample Seawater Intake: Pump	
	
Scope of Works	<ul style="list-style-type: none"> - Pump, steel works, rubber - Scale: 4.28m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Remove all pump parts and pipes - Technical assessment after pump removal must indicate if new unstable areas are created that must be backfilled, covered with rough gravel/boulders for stability - Building rubble to be disposed of at Tweepad processing plant - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used. - Any hydrocarbon residue must be removed and treated as hazardous waste

Bulk Sample Seawater Intake: Makeup dam with Pump



Scope of Works	<ul style="list-style-type: none"> - Concrete, steel - Scale: 55.92m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Remove all pump parts and pipes - Building rubble to be disposed of at Tweepad processing plant - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used. - Any hydrocarbon residue must be removed and treated as hazardous

Bulk Sample Seawater Intake: Makeup dam slab



Scope of Works	<ul style="list-style-type: none"> - Heavily reinforced concrete - Scale: 72.68m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Building rubble to be disposed of at Tweepad processing plant - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used. - Any hydrocarbon residue must be removed and treated as hazardous waste

Old Recovery Plant Dam



Scope of Works	<ul style="list-style-type: none"> - Asbestos pipes, concrete, steel - Scale: 237.52m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Infrastructure situated at coast and therefore should be seen as sensitive zone. - Barriers required to prevent pollution of coast during demolition. - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used.

Old Recovery Plant Pump house



Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, steel - Scale: 17.04m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Infrastructure situated at coast and therefore should be seen as sensitive zone. - Barriers required to prevent pollution of coast during demolition. - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used.

Old Recovery Plant Constructed Costal Berm



Scope of Works	- Sea sand
Plan of Works	- A detailed evaluation of the site and impacts of the existing berm and loss of the berm must be completed before final demolition commence

Inland Areas

Tweepad Seawater Intake: Powerline



Scope of Works	- Electrical wire, wood poles - Scale: 4.3km - Duration: Within six (6) months
Plan of Works	- No new road to be constructed to access powerline. Each powerline pole to be access perpendicular to existing road in order to minimize disturbance to vegetation.

Tweepad Seawater Intake: Water Pipes



Scope of Works	<ul style="list-style-type: none"> - Asbestos water pipes - Scale: 4.3km x 2 - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos water pipes to be buried 600mm. - All areas where pipes are exposed to surface it must be buried 600mm, including open joints.

Tweepad Processing Plant: Change house



Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, steel, glass - Scale: 218.10m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of at Tweepad processing plant - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used.

Tweepad Processing Plant: Mechanical Workshop



Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, steel - Scale: 1147.51n² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of at Tweepad processing plant - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used.

Tweepad Processing Plant: Area behind Mechanical Workshop Yard



Scope of Works	<ul style="list-style-type: none"> - Litter, scrap - Scale: 20m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Litter picking and land shaping to be done - Mechanical workshop yard build on a platform, landscape to be sloped 1:3

Tweepad Processing Plant: Paint Store



Scope of Works	<ul style="list-style-type: none"> - Concrete, steel, sink, wood - Scale: 28.77m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Building rubble to be disposed of at Tweepad processing plant - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used.

Tweepad Processing Plant: Offices block 1



Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, steel, glass - Scale: 333.78m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of at Tweepad processing plant - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used.

Tweepad Processing Plant: Offices block 2



Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, steel, glass - Scale: 216.17m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of at Tweepad processing plant - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used.

Tweepad Processing Plant: Septic Tank



Scope of Works	<ul style="list-style-type: none"> - Concrete, steel, PVC-Pipes - Scale: 1.44m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Completely fill with sand

Tweepad Processing Plant: Oil Separator



Scope of Works	<ul style="list-style-type: none"> - Concrete, steel, pipes - Scale: 4.5m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Oil already drained, no hazardous material evident - Building rubble to be disposed of at Tweepad processing plant

Tweepad Processing Plant: Salvage yard



Scope of Works	<ul style="list-style-type: none"> - Fencing, wood poles, steel structure, steel sign - Scale: 163.09m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Demolish wire fence and remove steel structure and sign as scrap metal - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used.

Tweepad Processing Plant: Salvage yard – Bioremediation slab



<p>Scope of Works</p>	<ul style="list-style-type: none"> - Concrete, contaminated soil - Scale: 10m² - Duration: Within six (6) months
<p>Plan of Works</p>	<ul style="list-style-type: none"> - Treat contaminated soil with super zorb, after treatment test for contamination and dispose at Tweepad processing plant with building rubble if test indicate treatment was successful OR - Place contaminated soil in empty 210L containers and take to Vissershok for disposable - Objective is safe disposal of contaminated soil - Concrete slab building rubble to be disposed of at Tweepad processing plant

Tweepad Processing Plant: Asbestos Structure



<p>Scope of Works</p>	<ul style="list-style-type: none"> - Asbestos, steel, wood, concrete - Scale: 35.33m² - Duration: Within six (6) months
<p>Plan of Works</p>	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of at Tweepad processing plant - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used.

Tweepad Processing Plant: Small Salvage Yard



Scope of Works	<ul style="list-style-type: none"> - Old tyres, litter, scrap - Scale: 8m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Old tyres EA - Litter picking to be done and land shaping - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used.

Tweepad Processing Plant: Mining Containers



Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, steel, glass - Scale: 20.9m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of at Tweepad processing plant - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used.

Tweepad Processing Plant: Mining Change house & Tearoom



Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, steel, glass - Scale: 63.95m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of at Tweepad processing plant - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used.

Tweepad Processing Plant: Powerlines from substation to plant



Scope of Works	<ul style="list-style-type: none"> - Electrical wire, wood poles, electrical fittings - Scale: 5.4km - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - No new road to be constructed to access powerline. Each powerline pole to be access perpendicular to existing road in order to minimize disturbance to vegetation.

Tweepad Processing Plant: Substation



Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, steel, glass - Scale: 3099.45m² - Duration: Within six (6) months -
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of at Tweepad processing plant - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used.

Bulk Sample Seawater Intake: Pipeline



Scope of Works	<ul style="list-style-type: none"> - Asbestos water pipes - Scale: +/- 4km x 2 - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos water pipes to be buried 600mm. - All areas where pipes are exposed to surface it must be buried 600mm, including open joints. OR - If pipes are more exposed than buried, pipes should be removed

Bulk Sample Seawater Intake: Powerline



Scope of Works	<ul style="list-style-type: none"> - Electrical wire, wood poles - Scale: +/- 4km x 2 - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - No new road to be constructed to access powerline. Each powerline pole to be access perpendicular to existing road in order to minimize disturbance to vegetation

Bulk Sample Seawater Intake: Substation



Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, steel - Scale: 24.71m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of at Tweepad processing plant - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used.

Dreyers Pan Store



Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, steel, glass - Scale: 46.90m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used.

Dreyers Pan Office 1



Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, steel, glass - Scale: 15.47m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used.

Dreyers Pan Office 2



Scope of Works

- Asbestos, concrete, steel, glass
- Scale: 10.47m²
- Duration: Within six (6) months

Plan of Works

- Asbestos to be removed first while the rest of material is still stable.
- Building rubble to be disposed of as backfill at approved mining pits
- Demolition contractor to provide own electricity
- No new roads to be constructed, only existing roads to be used.

Dreyers Pan Toilets





Scope of Works

- Asbestos, concrete, steel, glass
- Scale: 15.35m²
- Duration: Within six (6) months

Plan of Works

- Asbestos to be removed first while the rest of material is still stable.
- Building rubble to be disposed of as backfill at approved mining pits
- Demolition contractor to provide own electricity
- No new roads to be constructed, only existing roads to be used.

Dreyers Pan Substation	
	
Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, steel - Scale: 30.29m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used.

Dragline Bucket Store	
	
Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, steel - Scale: 208m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used.

Dragline: DEMAG Garage & Store



Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, steel - Scale: 525m² (Garage) & 52m² (Store) - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used.

Dragline Offices



Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, steel, glass - Scale: 128.15m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used.

Dragline Laydown Areas



<p>Scope of Works</p>	<ul style="list-style-type: none"> - Spare parts, concrete - Scale: 442.545m² - Duration: Within six (6) months
<p>Plan of Works</p>	<ul style="list-style-type: none"> - All items to be sorted and removed and concrete platform demolished - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used.

Dragline Salvage Yard



Scope of Works	<ul style="list-style-type: none"> - Fencing - Scale: 100m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Remove fencing and dispose of few scrap items inside salvage yard. - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used.

Dragline Change house



Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, steel, glass - Scale: 96.19m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used.

Bulk Sampling Processing Plant



<p>Scope of Works</p>	<ul style="list-style-type: none"> - Primary Crusher - Secondary Crusher - Tertiary Crusher - Apron Feeder - Hydraulic Room - Tailings Conveyors - Other Conveyors - Thickener - Mud Dam - DMS - Scrubber - Electric store - Store room - Mechanical Workshop - Oil & Paint store - Toilet facilities - Garage - Production Offices - Salvage yard - Scale: 5975.74m² - Duration: Within 1 year & 6 months
<p>Plan of Works</p>	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Demolishing of the steel structures and conveyors. - Demolishing of all concrete and other infrastructures on the site to a manageable level. - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used.

Bulk Sampling Processing Plant Substation



Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, steel, glass - Scale: 59.71m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used.

AK3 Office Block



Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, steel, glass, wood - Scale: 149.159m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used.

AK3 Substation





Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, steel, wood - Scale: 7.12m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used.

Dreyers Pan Reservoir – White Dam



Scope of Works	<ul style="list-style-type: none"> - Reinforced concrete, steel pipes - Scale: 252.75m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used.

Dreyers Pan Reservoir Infrastructure: Old house & tower	
	
Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, steel, wood - Scale: 20.66m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used.

Dreyers Pan Reservoir Infrastructure: Battery charger room	
	
Scope of Works	<ul style="list-style-type: none"> - Cement & Bricks, Concrete - Scale: 2.04m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used.

Dreyers Pan Reservoir Infrastructure: Telecom receptor & tower



<p>Scope of Works</p>	<ul style="list-style-type: none"> - Asbestos, concrete, steel, wood - Scale: 22.03m² - Duration: Within six (6) months
<p>Plan of Works</p>	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used.

Dreyers Pan Reservoir Infrastructure Area



<p>Scope of Works</p>	<ul style="list-style-type: none"> - Old tyres and conveyors, steel structure, empty 210l drums, wood & steel poles, litter, old tyres - Duration: Within six (6) months
<p>Plan of Works</p>	<ul style="list-style-type: none"> - Litter picking and land shaping - Old tyres EA - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used.

BMR Office Building



Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, glass, wood, steel - Scale: 412.88m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity if not available

BMR Clinic



Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, glass, wood, steel - Scale: 84.89m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity if not available

Bucket Shop



Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, wood, steel, sink - Scale: 299.65m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity if not available

Electrical workshops



Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, wood, steel, sink - Scale: 346.53m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity if not available

Electrical Workshops Laydown are



Scope of Works	<ul style="list-style-type: none"> - Litter, scrap - Scale: 75.66m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Litter picking to be done, scrap cut to manageable size and removed. - Land shaping - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity if not available

Fitter & Turner Workshop



Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, wood, steel, sink - Scale: 782.08m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity if not available

Hydro Comp Workshop



Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, wood, steel, sink, glass - Scale: 1753.03m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity if not available

Mechanical Construction Workshop



Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, wood, steel, sink, - Scale: 727.86m² - Duration: Within six (6) month
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity if not available

Main Stores



Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, wood, steel, sink, fencing, glass - Scale: 1088.54m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity if not available

Paint Store



Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, wood, steel, sink - Scale: 15.45m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity if not available

Stockpile Store



<p>Scope of Works</p>	<ul style="list-style-type: none"> - Asbestos, concrete, wood, steel, sink, old tyres - Scale: 256.49m² - Duration: Within six (6) months
<p>Plan of Works</p>	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Old tyres EA - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity if not available

Training Centre



<p>Scope of Works</p>	<ul style="list-style-type: none"> - Asbestos, concrete, wood, steel, sink, glass - Scale: 744.93m² - Duration: Within six (6) months
<p>Plan of Works</p>	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity if not available

Mechanic Workshop





Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, wood, steel, sink, glass, old tyres - Scale: 2970.01m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Old tyres EA - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity if not available

Topshop Laydown Area



Scope of Works	<ul style="list-style-type: none"> - Scrap metal, wood - Scale: 150.48m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Scrap metal to be removed as scrap - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity if not available

Checkpoint Garage	
	
Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, wood, steel - Scale: 128.87m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity if not available

Checkpoint parking back	
	
Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, wood, steel, sink, old tyres - Scale: 919.77m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Old tyres EA - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity if not available

Checkpoint wash bay



Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, wood, steel, sink - Scale: 45.78m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity if not available

E44 Workshop



Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, wood, steel, sink, glass - Scale: 867.81m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity if not available

Field Services Workshop



Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, wood, steel, sink, glass - Scale: 1150.62m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity if not available

Old Transport Office



Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, wood, steel, sink, glass, old tyres - Scale: 21.72m² - Duration: Within six (6) months -
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Old tyres EA - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity if not available

Restoration Store



Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, wood, steel, sink, glass - Scale: 30.37m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity if not available

Sandblasting



Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, wood, steel, sink, glass, old tyres - Scale: 513.72m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Old tyres AE - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity if not available

Checkpoint building



Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, wood, steel, sink, glass, tar - Scale: 2062.23m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity if not available

Checkpoint building parking front



Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, wood, steel, tar - Scale: 1124.97m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity if not available

Old Recovery Plant



Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, wood, steel, glass - Scale: 681.71m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity if not available

Asbestos pipeline between Old Recovery & Earthmoving Workshop



Scope of Works	<ul style="list-style-type: none"> - Asbestos water pipes - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Pipes to be removed

Earthmoving Workshop



Scope of Works	<ul style="list-style-type: none"> - Asbestos, concrete, wood, steel, glass, old tyres - Scale: 858.47m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Old tyres EA - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity if not available

Earthmoving Workshop Wash bay



Scope of Works	<ul style="list-style-type: none"> - Asbestos roof, concrete, steel, - Scale: 154.25m² - Duration: Within six (6) months
Plan of Works	<ul style="list-style-type: none"> - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity if not available

Earthmoving Workshop Refuelling Slab



<p>Scope of Works</p>	<p>Concrete, contaminated concrete, pipes, old fuel</p> <ul style="list-style-type: none"> - Scale: 147.15m² - Duration: Within six (6) months
<p>Plan of Works</p>	<ul style="list-style-type: none"> - Safe disposal of old fuel - Safe disposal of contaminated, not to be disposed with building rubble as backfill - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity if not available

e) Policy and Legislative Context

The applicable policy and legislation and context are indicated in the table below.

Table 5: Policy and Legislative Context

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT
Mineral and Petroleum Resources Development Act, 2002	Application for environmental authorisation to demolish mining infrastructure.	A mining right amendment according to section 102 has been submitted to incorporate the demolition of infrastructure.
National Environmental Management Act, 1998 and relevant EIA Regulations (2014)	The Basic Assessment Report and Environmental Management Programme for Environmental authorizations in terms of the National Environmental Management Act, 1998 in respect of listed activities that have been triggered by applications in terms of the Mineral and Petroleum Resources Development Act, 2002 (MPRDA) (as amended).	An Application for Environmental Authorisation was submitted to the DMR. The application was accepted by the DMR and requested the submission of the Basic BAR and EMP within 90 days of the letter. The Basic Assessment Report, Environmental Management Programme and the stakeholder consultation process has been conducted with consideration of the EIA regulations.
National Environmental Management: Integrated Coastal Management Act, 2008.	Impact on coastal resources	Inter-tidal zones are affected and evaluation is incorporated into the EMP.
National Heritage Resources Act, 1999	The activity may trigger the requirements under Section 38 of the NHRA. However, the requirements for permits are not known at this stage.	The South African Heritage Resources Agency (SAHRA) is contacted as part of the stakeholder engagement process.

f) Need and desirability of the proposed activities

Motivate the need and desirability of the proposed development including the need and desirability of the activity in the context of the preferred location

The proposed demolition works are targeted because the mining operation at Buffelsrivier, Keinzee has ceased.

g) Motivation for the overall preferred site, activities and technology alternative

The demolition areas are limited to where infrastructure is situated that must be demolished. The available, best practical methodologies and technology is applied to ensure safe demolition.

h) Full description of the process followed to reach the proposed preferred alternatives within the site

NB! – This section is about the determination of the specific site layout and the location of infrastructure and activities on site, having taken into consideration the issues raised by interested and affected parties, and the consideration of alternatives to the initially proposed site layout

The demolition areas are limited to where infrastructure is situated that must be demolished. The available, best practical methodologies and technology is applied to ensure safe demolition.

With reference to the site plan provided as Appendix C and the location of the individual activities on site, provide details of the alternatives considered with respect to:

-
- (a) *the property on which or location where it is proposed to undertake the activity;*
 - (b) *the type of activity to be undertaken;*
 - (c) *the design or layout of the activity;*
 - (d) *the technology to be used in the activity;*
 - (e) *the operational aspects of the activity; and*
 - (f) *the option of not implementing the activity.*
-

Details of each specific area are detailed in section 3(d) "Description of the scope of the activity". The following important alternatives are proposed for areas within the intertidal zones:

The evaluation of intertidal areas is presented in order to give effect to the current inter-tidal status and the planned post closure / post demolition status when mining infrastructure of more than 60 years old is removed.

The results indicate that the following alternatives should be applied for the three key areas and associated infrastructure that is assessed:

	Tweepad Seawater Intake: Pump, crane & store building and Platform	Bulk Sample Seawater Intake Jetty	Old Recovery Plant Infrastructure
Description of infrastructure	Asbestos, concrete, steel sheds and platforms	Boulder jetty and cove	Sea water berm, pump and dam
(a) the property on which, or location where, it is proposed to undertake the activity;	Demolition can only take place where infrastructure exist. No alternative property considered.	Demolition can only take place where infrastructure exist. No alternative property considered.	Demolition can only take place where infrastructure exist. No alternative property considered.
(b) the type of activity to be undertaken;	Type of activity reduced from total destruction and removal to retaining the intertidal slab	Three alternatives are considered: total destruction; retain as is and forced failure.	Retention of the sea berm or removal of the sea berm is considered
(c) the design or layout of the activity;	Final design will be safe, stable and without any metal works	It is expected that final design will have less steep side slopes and be more stable than current situation	Final deposition of berm material and water flow regime must be determined by specialist input
(d) the technology to be used in the activity;	No alternatives are considered for technology, standard equipment will be used to demolish works	Technology considered are mechanical pressure by machine to settle steep slopes and place boulder cover or fine blasting to settle cavities in jetty.	Standard mechanical equipment will be used for the works
(e) the operational aspects of the activity; and	Demolition will be done in phases, first removing asbestos materials, then unsafe metal and finally concrete works	Operational aspects must be determined by mine technical staff as to what is practical and feasible	Operationally, coastal tides, low and high water must be considered during construction and impact should completed as quickly as possible

(f) The option of not implementing the activity	Not demolishing the platform is considered the best alternative	Not demolishing the jetty is considered the best alternative	Retaining or removing the sea water berm should be left to coastal specialist
<p>The No-Go Option - The assessment of alternatives must at all times include the "no-go" option as a baseline against which all other alternatives must be measured. The option of not implementing the activity must always be assessed and to the same level of detail as the other feasible and reasonable alternatives. The "no-go" option is taken to be the existing rights on the property and this includes all the duty of care and other legal responsibilities that apply to the owner of the property. For example, one cannot state that the "no-go" option for a vacant piece of land will result in further degradation or alien plant invasion, as the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) requires that the landowner keeps their land clear of alien invasive plants, and Section 28 of the NEMA, "Duty of Care", states that reasonable measures must be taken to prevent pollution or degradation from occurring, continuing or reoccurring. All the applicable permits must be in place for a land use to be an existing right (the no-go/default) e.g. the zoning of Agriculture does not mean land can be cultivated as the no-go option, as other approvals must first be obtained.</p>			

Methodology

The DEA guideline 2006 for alternative assessment is applied evaluating different risks of executing alternatives that are considered.

A risk management approach is used to compare different aspects to alternative demolition outcomes of three of the main areas affecting the intertidal zone.

Table 6: Lists of Aspects

Heritage & Social acceptability	Ecological	Stability (erosion and siltation)	Safety (Human and animal)
--	-------------------	--	----------------------------------

The following rating scale is subjectively applied during the assessment by the different stakeholders.

Table 7: Risk rating key

RATING KEY	
■	Not significant
■	Marginal
■	Positive
■	Negative

After the risk assessment, the following application of location, technology and operational procedures are considered:

Table 8: List of alternative considerations

(a) the property on which, or location where, it is proposed to undertake the activity;
(b) the type of activity to be undertaken;
(c) the design or layout of the activity;
(d) the technology to be used in the activity;
(e) the operational aspects of the activity; and
(f) The option of not implementing the activity

Tweepad seawater intake

Tweepad Seawater Intake: Pump, crane & store building





<p>Scope of Works</p>	<ul style="list-style-type: none"> - Asbestos, concrete, steel - Duration: 3 months - Scale: 100m x 300m - Reinforced concrete platform 9m x 9m
<p>Best alternative Plan of Works</p>	<ul style="list-style-type: none"> - Infrastructure situated at coast and therefore should be seen as sensitive zone - Micro habitats formed inside seawater intake. - Concrete platform must not be demolished because of the negative impact it will have on the micro habitats which formed - Barriers required to prevent pollution of coast during demolition. - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of at Tweepad processing plant - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used - Stabilization of bare areas to be completed as soon as possible - All metal fittings and infrastructure to be removed and cut off safely at the base. Where any unsafe items remain, this must be grinded flat. - Final sign-off should be done by DEA- Oceans and coastal department. -

Table 9: Tweepad decision risk matrix

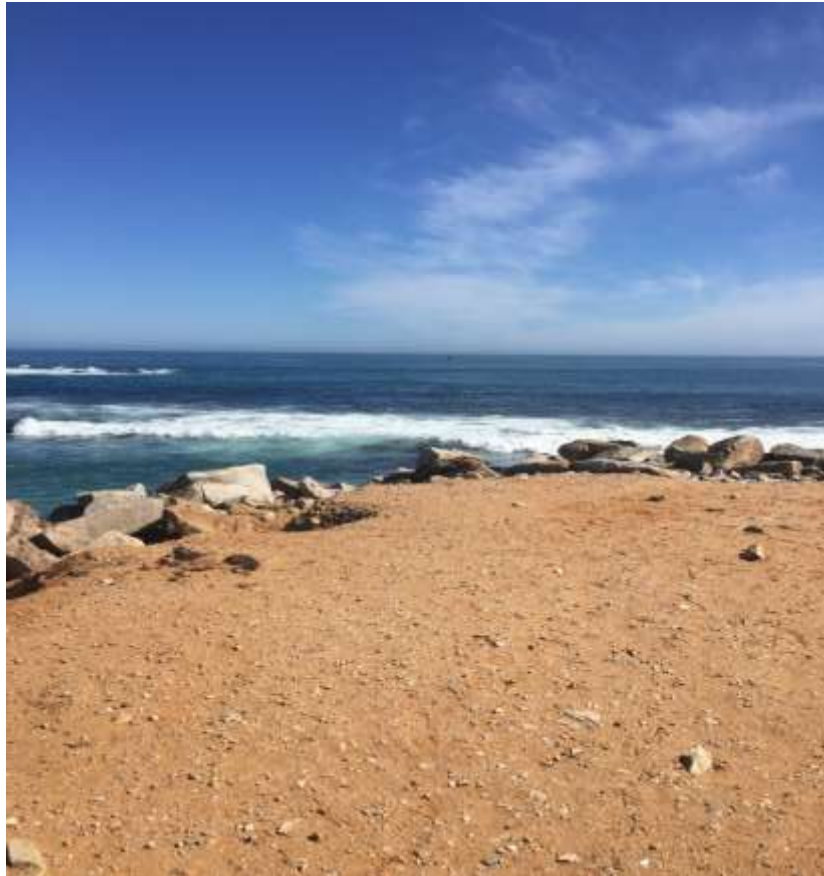
Tweepad Seawater Intake: Pump, crane & store building and Platform	Heritage & Social acceptability	Ecological	Stability (erosion and siltation)	Safety (Human and animal)
Demolition buildings, leave intake with all metal removed	Infrastructure has low cultural value. Far from nearest community No historic community use, only industrial	The intake has developed a mature intertidal flow and fauna regime with the existing infrastructure	Area is very stable with slight wear and tear over time. The current low rate of deterioration is expected to continue	The inside wall of the intake is a vertical barrier, but natural overflow has developed towards the north. Metal fittings could pose a safety hazard and must be removed
Demolish and remove all infrastructure	Infrastructure has low cultural value. Far from nearest community No historic community use, only industrial	Ecological interference during demolition will be significant at site level, but short term. A natural outflow from the take-in has developed that provide safe areas along the rocky shores. This will be altered with demolition	Demolishing all the infrastructure will result in significant short-term disturbance and long-term instability with a high probability that siltation of the intertidal area will occur	The unstable area created from the demolition works may be marginally unsafe for human and animal use

Table 10: Tweepad alternatives considered

	Tweepad Seawater Intake: Pump, crane & store building and Platform
Description of infrastructure	Asbestos, concrete, steel sheds and platforms
(a) the property on which, or location where, it is proposed to undertake the activity;	Demolition can only take place where infrastructure exist. No alternative property considered.
(b) the type of activity to be undertaken;	Type of activity reduced from total destruction and removal to retaining the intertidal slab
(c) the design or layout of the activity;	Final design will be safe, stable and without any metal works
(d) the technology to be used in the activity;	No alternatives are considered for technology, standard equipment will be used to demolish works
(e) the operational aspects of the activity; and	Demolition will be done in phases, first removing asbestos materials, then unsafe metal and finally concrete works
(f) The option of not implementing the activity	Not demolishing the platform is considered the best alternative

Bulk sample seawater intake jetty

Bulk Sample Seawater Intake



<p>Scope of Works</p>	<p>Boulder jetty with overlain subsoil and signage Scale - Boulder jetty of approximately Duration – approximately six months</p>
<p>Best Alternative Plan of Works</p>	<ul style="list-style-type: none"> - Cove not to be demolished completely - Technical evaluation of best practical option and stability evaluation should take environmental alternatives into consideration for final decision making.

Table 11: Bulk sample seawater intake jetty decision risk matrix

Bulk Sample Seawater Intake	Heritage & Social acceptability	Ecological	Stability (erosion and siltation)	Safety (Human and animal)
Remove jetty to a state before construction	Jetty cove has bird and seal watching historic and current use that will be lost if destroyed	Seal colony established locally for breeding Cove provide safe area for numerous species along coastline with few natural coves. Removal of jetty will destroy this micro-habitat	Excessive siltation and sedimentation of the cove and surrounding intertidal area is expected with the removal of the jetty.	Removal of whole jetty does not secure safe area with changes in water flow regime, unstable soils subsurface in the short term. Stability is expected to be reached over the long term.
Retain jetty as is to self-collapse over time	Jetty cove has bird and seal watching historic and current use that will be retained if left to self-collapse	Jetty cove has bird and seal populations as well as intertidal species that will be retained Cove provide safe area for numerous species along coastline with few natural coves	Slow release soils along steep sides and cavities of boulders will continue over time	Self-collapsing jetty will have to be demarcated as the structure is currently unsafe
Force failure of jetty and retain on site	Jetty cove has bird and seal watching historic and current use that will be retained with some adjustment in landscape profile (sides will be flatter and may ingress into sea over time)	Jetty cove has bird and seal populations as well as intertidal species that will be retained with some adjustment in landscape profile (sides will be flatter and may ingress into sea over time)	Forced failure will result in collapse of unsafe areas so that gravity and wave impact has less eroding and cavity forming impact over the short term. There will be increased siltation from the forced failure, but not as much as when complete removal will take place. Area that has been stabilized by forced failure can be covered with boulders to enhance stability. Forced failure area will have to be monitored for stability over the long term.	Forced failure will result in collapse of unsafe areas. It is anticipated that site will be more stable for animal use, but should remain demarcated as unsafe for human use.

Table 12: Bulk sample seawater intake jetty alternatives considered

	Bulk Sample Seawater Intake Jetty
Description of infrastructure	Boulder jetty and cove
(a) the property on which, or location where, it is proposed to undertake the activity;	Demolition can only take place where infrastructure exist. No alternative property considered.
(b) the type of activity to be undertaken;	Three alternatives are considered: total destruction; retain as is and forced failure.
(c) the design or layout of the activity;	It is expected that final design will have less steep side slopes and be more stable than current situation
(d) the technology to be used in the activity;	Technology considered are mechanical pressure by machine to settle steep slopes and place boulder cover or fine blasting to settle cavities in jetty.
(e) the operational aspects of the activity; and	Operational aspects must be determined by mine technical staff as to what is practical and feasible
(f) The option of not implementing the activity	Not demolishing the jetty is considered the best alternative

Bulk sample seawater intake infrastructure

Bulk Sample Seawater Intake: Pump, Pump and Dam, Platform





<p>Scope of Works</p>	<ul style="list-style-type: none"> - Bulk sample sea water intake infrastructure: Pump; Steel works; Dam and Pump; Make up water dam slab, Platform, rubber - Duration: - Scale:
<p>Plan of Works</p>	<ul style="list-style-type: none"> - Remove all pump parts and pipes - Technical assessment after pump removal must indicate if new unstable areas are created that must be backfilled, covered with rough gravel/boulders for stability - Building rubble to be disposed of at Tweepad processing plant - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used - Any hydrocarbon residue must be removed and treated as hazardous waste

Only one alternative is considered for the Bulk Sample Seawater Intake and associated infrastructure: Complete removal.

The main driver is that current infrastructure has no ecological benefit and is considered unsafe in the long term.

Old recovery plant infrastructure

Old Recovery Plant Dam





Scope of Works	<ul style="list-style-type: none"> - Old Recovery Plant Dam, coastal berm and pump house, Reservoir, Steel works, Asbestos pipes, concrete, steel - Duration: - Scale:
Plan of Works	<ul style="list-style-type: none"> - Infrastructure situated at coast and therefore should be seen as sensitive zone. - Barriers required to prevent pollution of coast during demolition. - Asbestos to be removed first while the rest of material is still stable. - Building rubble to be disposed of as backfill at approved mining pits - Demolition contractor to provide own electricity - No new roads to be constructed, only existing roads to be used - A detailed evaluation of the site and impacts of the existing berm and loss of the berm must be completed before final demolition commence

All infrastructure at the old recovery plant should be demolished and removed. The evaluation of alternatives specifically considers the removal of the coastal berm.

The opinion is that a specialist will have to be called in as prescribed by the department to assist in the assessment of the alternatives. A detailed evaluation of the site and impacts of the existing berm and loss of the berm must be completed before final demolition commence.

Table 13: Old recovery plant infrastructure decision risk matrix

Old Recovery Plant Infrastructure	Heritage & Social acceptability	Ecological	Stability (erosion and siltation)	Safety (Human and animal)
Remove sea water berm	Infrastructure has low cultural value. Far from nearest community No historic community use, only industrial	The sea water berm removal will result in short term siltation and sedimentation as well as salt level increase in adjacent waters that will affect sea life	The sea water berm removal will result in short term siltation and sedimentation locally. This can be reduced by taking material inland.	Human and animal safety is reduced with removal of the berm because of high salt level water and dam structure that remains in place a long time
Retain sea water berm	Infrastructure has low cultural value. Far from nearest community No historic community use, only industrial	Sea water berm has limited ecological value with no vegetation establishment and high salt level water retained behind berm. Retaining the sea berm will allow for long term evaporation or retainment of the water body and ultimately infilling of the waterbody with wind blown sand. Specialist opinion should be sought regarding hydrological gains from removing or retaining the sea water berm	It is foreseen that retaining the berm will reduce brine and instability impacts to adjacent systems	Human and animal safety remains in the form of high salt level water and dam structure

Table 14: Old recovery plant infrastructure alternatives applied

	Old Recovery Plant Infrastructure
Description of infrastructure	Sea water berm, pump and dam
(a) the property on which, or location where, it is proposed to undertake the activity;	Demolition can only take place where infrastructure exist. No alternative property considered.
(b) the type of activity to be undertaken;	Retainment of the sea berm or removal of the sea berm is considered
(c) the design or layout of the activity;	Final deposition of berm material and water flow regime must be determined by specialist input
(d) the technology to be used in the activity;	Standard mechanical equipment will be used for the works
(e) the operational aspects of the activity; and	Operationally, coastal tides, low and high water must be considered during construction and impact should be completed as quickly as possible
(f) The option of not implementing the activity	Retaining or removing the sea water berm should be left to coastal specialist

ii) Details of the Public Participation Process Followed

Describe the process undertaken to consult interested and affected parties including public meetings and one on one consultation. NB the affected parties must be specifically consulted regardless of whether or not they attended public meetings. (Information to be provided to affected parties must include sufficient detail of the intended operation to enable them to assess what impact the activities will have on them or on the use of their land)

The diagram below sets out the approach for the engagement process for the proposed project:

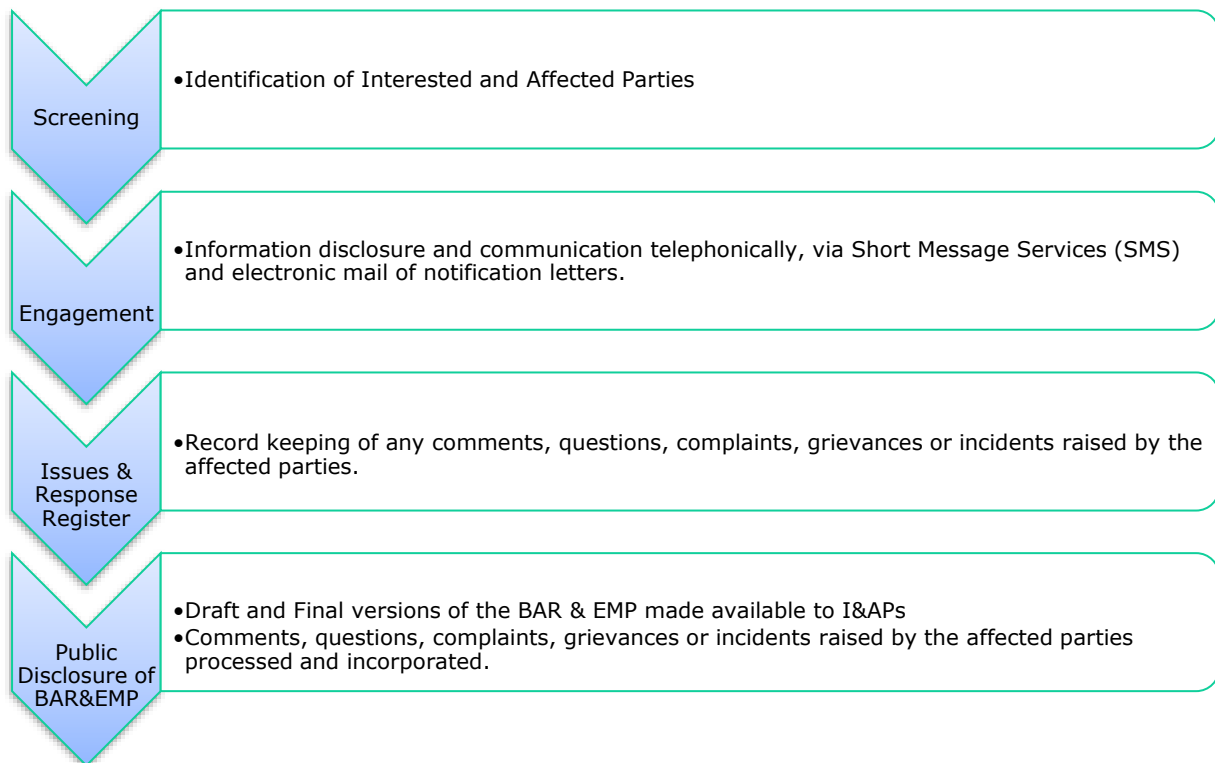


Figure 3: Public Participation Approach

Details of the stakeholder engagement process are attached in Appendix D of this application.

iii) Summary of issues raised by I&As

.....
Complete the table summarising comments and issues raised, and reaction to those responses

Comments and issues received from Interested and Affected Parties are provided in the table below.

Table 15: Issues Raised by Stakeholders

Interested and Affected Parties	Consulted	Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Consultation Status
AFFECTED PARTIES					
Mrs. J.W. Botha	15/05/2017	15/05/2017	Request of background information on what is being demolished, where the waste will be dumped, what kind of waste will be dumped and what the specific areas of demolition are.	The BID was provided as well as a timeframe of the process. The DBAR will be made available with requested information.	Continues as project develops
Mr. Glenn Ashton	15/05/2017	15/05/2017	Request of background information, parameters of the project and the full DBAR with accompanying documents.	The BID was provided as well as a timeframe of the process. The DBAR will be made available with accompanying documents.	Continues as project develops
Diamond Coast Aquaculture	16/05/2017	15/05/2017	Request for registration as an Interested party.	The BID was provided as well as a timeframe of the process. The DBAR will be made available and continues correspondence will be provided.	Continues as project develops

iv) The Environmental attributes associated with the alternatives

The environmental attributed described must include socio-economic, social, heritage, cultural, geographical, physical and biological aspects

The project area is transformed, mining areas and infrastructure with limited ecological functioning in these areas. Environmental attributes and ecological functioning may improve after demolition, rehabilitation and closure.

(1) Baseline Environment

(a) Type of environment affected by the proposed activity

Its current geographical, physical, biological, socio-economic, and cultural character

Climatic Context

Most biogeography studies recognize three coastal regions in South Africa: (1) a cool temperate west coast, (2) a warm temperate south coast and (3) a subtropical east coast region (Bolton JJ, 2004). The Buffels Marine Mining Area falls within the cool temperate west coast Namaqua Bioregion (Lombard, 2004).

According to Tainton (1981), climate in the broad sense is a major determinant of the geographical distribution of species and vegetation types. According to Chambers, the definition of climate is as follows: "the average weather conditions of a particular region of the world over a long period of time, with regard to temperature, rainfall, air pressure, etc. (Chambers Dictionary, 2012)." Within areas, the local conditions of temperature, light, humidity and moisture vary greatly and these factors which play an important role in the production and survival of plants. In terrestrial environments, limitations related to water availability are always important to plants and plant communities. The spatial and temporal distribution of rainfall is very complex and has great effects on the productivity, distribution and life forms of the major terrestrial biomes (Barbour, Diamond, & Yoder, 1996). Furthermore, aspects like topography, slope and altitude may further result in differences in precipitation and water availability to plants within the study area.

This region is often regarded as the southern part of the Namib Desert due to its low rainfall of about 50 mm per year. Rainfall in the area varies between 20 and 290 mm per year, with an average of 100 mm per year (SAexplorer, 2011) and falls during the autumn and winter months (i.e. from May to August) with summer aridity being extreme. The west coast is regularly frequented by a thick fog bank rolling in from the cold ocean (Wikipedia, 2013).

Evaporation rates are highest during the summer months, becoming progressively less during spring, autumn and winter, corresponding with variations in wind and solar radiation. The occurrence of coastal fog drastically reduces evaporation. The gross annual average evaporation rate ranges between 1 800 and 2 500 mm. Thus, with an annual average rainfall of 111 mm, the net evaporation may be calculated to be between 1689 and 2 389 mm, which denotes extremely dry conditions.

Coastal air temperatures are cool throughout the year but increase markedly during Berg Wind conditions. The cold waters of the Benguela current cool and stabilise the near surface air mass thereby moderating air temperature and reducing the potential for rainfall along the coast. Minimum temperatures are particularly stable with the average being 8°C. The average maximum temperature is approximately 15.9°C.

Wind is one of the most marked features of the West Coast. The prevailing winds are determined by the South Atlantic high pressure system, the atmospheric pressure over the subcontinent and east moving low pressure systems associated with the west-wind belt south of Africa (Golder Associates, 2009).

The chart below gives an indication of the monthly variation of average rainfall, midday and minimum temperatures (SAexplorer, Kleinzee Climate, 2000-2014).

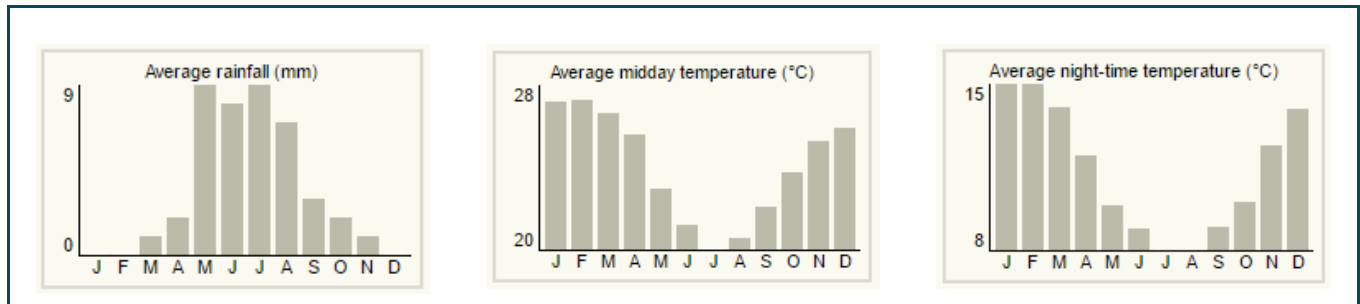


Figure 4: Average Rainfall, Midday and Night Time Temperature for Kleinzee

Relevant hydrological parameters are set out in Table 16 below.

Table 16: Hydrological Parameters for the Area

Parameter	Value	Source
Mean annual precipitation (MAP)	111 mm	Mine's recorded data
Mean annual evaporation – S Pan (MAE)	1800-2500 mm	(Golder Associates, 2009)
Wet season average rainfall (April-Sept)	77 mm	Mine's recorded data
Dry season average rainfall (Oct-March)	34 mm	Mine's recorded data

Geology and Soils

Aeolian sands with a marine origin of various ages cover most of the Namaqualand coastal plain. Near the coast, the sands are white in colour and range from mobile dunes through to vegetated hillocks. The interior is characterised by reddish consolidated sands that are much older and less mobile.

The reddish colour of the sand is a result of iron oxidation in the older sands. Mobile dune fields are present in various inland areas of the coastal plain.

Deeper sediments include yellowish Pleistocene deposits of terrigenous feldspathic sands which grade upwards into reddish or brownish silty sands. A calcrete layer usually separates these deeper sands from surface Aeolian Pleistocene sediments. Near the coast, recent dune sands often overlie the Pleistocene sands.

Water Catchment Characteristics

The NamaKhoi transfer project area of Kleinzee is located in the coastal catchment of the Lower Orange WMA. The WMA is the lowest WMA in the Orange River Basin and is therefore affected by upstream activities. There are no large storage dams in the WMA, with only a few smaller dams on some of the main tributaries, including: Smartt Syndicate Dam on the Ongers River & VanWyksvlei on the Camarvonleegte. Several diversion weirs exist of which Boegoeberg is the largest. Groundwater plays a major role in meeting the water requirements of the towns and rural settlements along the tributaries of the Orange (DWA, 2009). The river within the project area is the Buffels River.

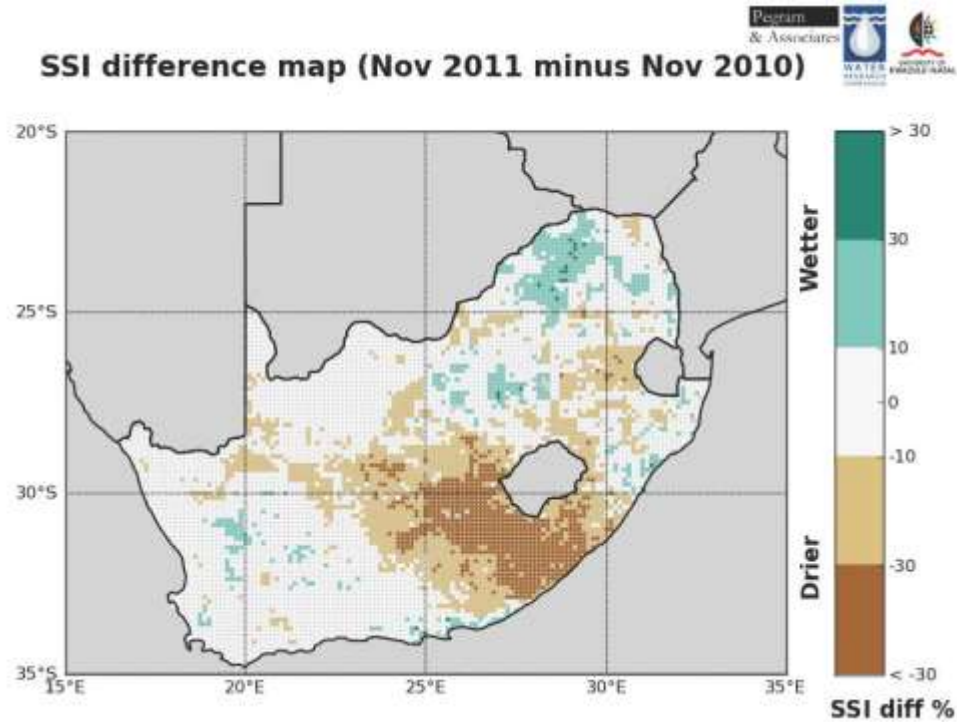


Figure 5: Soil saturation map

Flora Context

The project falls within the Succulent Karoo Biome in Northern Cape.

The Succulent Karoo Biome is characterized by unparalleled species diversity, endemism and limited formally conserved areas. The Succulent Karoo is predominated by low, succulent-leaved shrubs, few grasses and a scarcity of tall shrubs and trees.

Vegetation Types

According to Mucina and Rutherford (2006), the project falls primarily within vegetation units namely: Richtersveld Coastal Duneveld (SKs1); Namaqualand Seashore Vegetation (AZd2); Namaqualand Coastal Duneveld (SKs8); and Namaqualand Strandveld (SKs7);

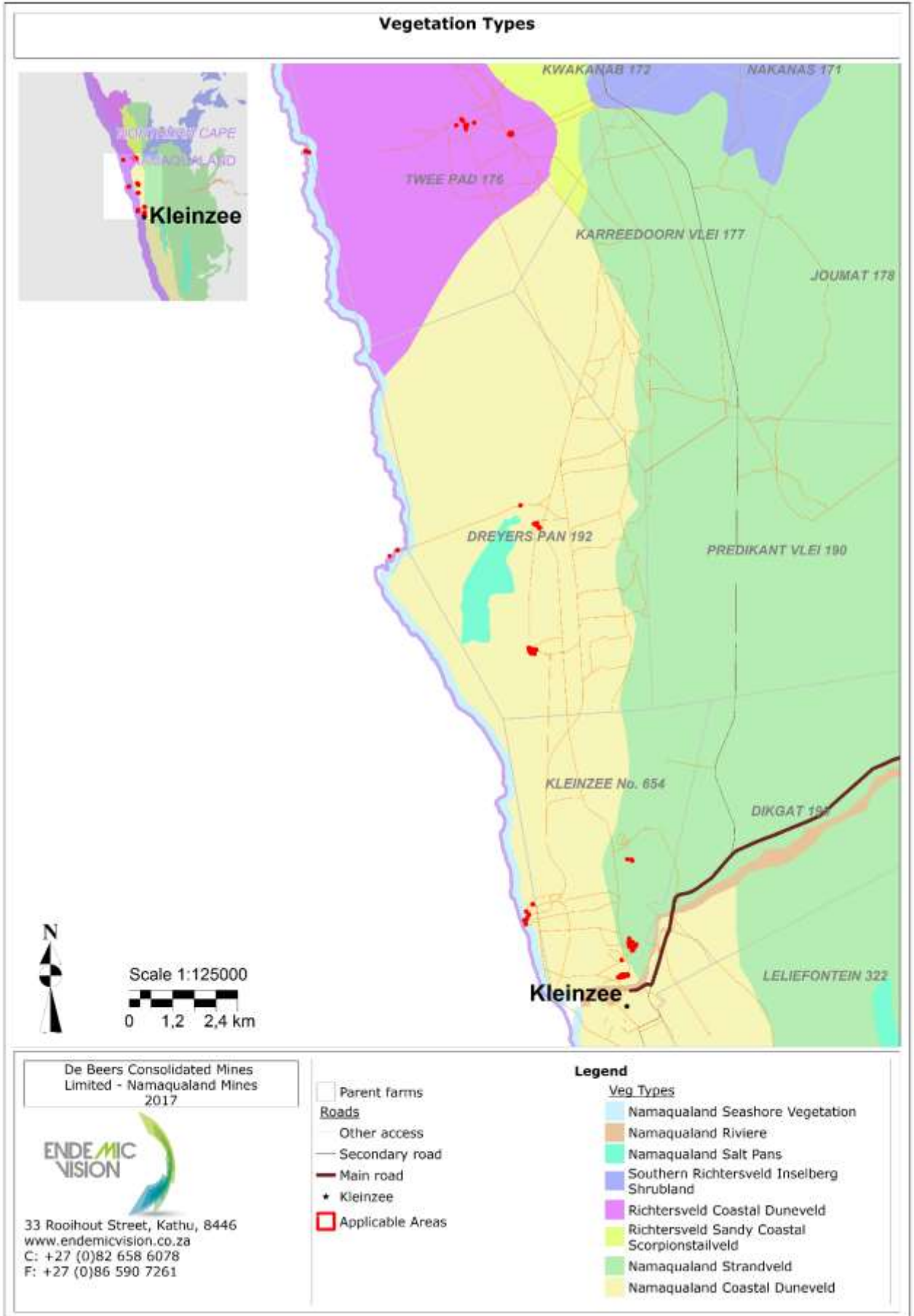


Figure 6: Vegetation types

Fauna Context

Steenbok, duiker and meerkat are commonly encountered within the mining areas. Other animals occasionally encountered are the African wild cat, black backed jackal, bat-eared fox and yellow-tailed mongoose (Amended EMP for Buffels Marine Right, 2012).

The amended EMP (2012) lists the following avifaunal species to be encountered:

- Terrestrials such as Kori and Ludwig's bustards and Southern Black Korhaan;
- Raptors such as Southern Pale Chanting Goshawk and Jackal Buzzard;
- Insect-eaters such as Karoo Scrub-Robin and Karoo Prinia; and
- Nectar-feeders such as Southern Double-collared and Malachite sunbirds.

Other key birds occurring in the area include Barlow's Lark, Cape Eagle-Owl, Black-necked Grebe, Cape Penduline-Tit, Cape Long-billed Lark, Chat, Flycatcher, Tractrac Chat, Black-headed Canary, Lesser Swamp Warbler, Little Rush Warbler, Grey-backed Cisticola, Bokmakierie, Large-billed Lark, Layard's Tit-Babbler, Dusky Sunbird, Pale-winged Starling and Lark-like Bunting.

The largest proportion of endemic animals in the Succulent Karoo biome is represented by reptiles. Forty five species of reptiles occur in the biome of which one tortoise, two snakes, seven legless skinks, seven lizards, one gecko and one chameleon species are endemic. The Namaqua dwarf adder (*Bitits Schneider*) and the desert rain frog (*Breviceps macrops*) are Red Data listed species.

There is no permanent fresh surface water in the region, thus no freshwater fish species occur in the area. Surf angling catches along the coast from Groen River to Port Nolloth are known to be very poor. The West Coast rock lobster (*Jasus lalandi*), the primary species of commercial rock lobster industry of South Africa, occurs here. Various invertebrate species also occur on the Namaqualand Coast (Amended EMP of Buffels Marine Right, 2012).

Red Data Species occurring in the area include:

- Mammals for example Grant's golden mole (*Eremitalpa grantii*) and the African wild cat (*Felis silvestris lybica*)
- Avifauna such as the Ludwig's bustard (*Neotis ludwigii*), Martial eagle (*Polemaetus bellicosus*) and Damara terns (*Sterna balaenarum*);
- Reptiles like the Namaqua Dwarf adder (*Bitits schneideri*); and
- Amphibians such as the Desert Rain frog (*Breviceps macrops*)

Insect fauna in the area are poorly known.

Ecological Sensitive Area Context


The ecological status, considering the biotic and abiotic elements and the way they interact are presented as LOW ecological sensitivity for all infrastructure that must be demolished. The two sites where intertidal zones are affected are considered as having MODERATE ecological sensitivity.

Specific habitats that affect flora and fauna interactions with the environment are found only in the inter-tidal zones. Recolonization of existing infrastructure by fauna or flora is not applicable.

Ecological sensitive areas are investigated and presented spatially to assist in the evaluation of the baseline area and possible impacts. Information is integrated by focusing on the following aspects:

- Catchment areas and catchment streams supplying important ecological functions
- Location of important habitats (pans)
- Protected species that will affect legal compliance (*Boscia albitrunca* species location)

The map depicts areas according to categories Low (for low biodiversity impact), Medium or High (for high biodiversity impact)

 Low Sensitivity Rating

- Low ecological sensitivity
- Previously disturbed areas
- Negligible impact on ecological processes and terrestrial biodiversity
- Extent of impact is little, temporal and insignificant in context of the extend of biodiversity

 Medium Sensitivity Rating

- Moderate ecological sensitivity
- Relatively undisturbed sites showing signs of extensive indirect disturbance (over grazing, excessive fires, trampling)
- Little ecological impact provided that all mitigation measures are fully complied with
- Secondary impacts of development will be low (like erosion, ground water plumes)

 High Sensitivity Rating

- High ecological sensitivity and high biodiversity value
- Undisturbed, intact areas
- Development is undesirable here and should only proceed with caution where all other alternatives have been investigated and failed
- Ecological impact will be high with little possibility of recovering the area to its original state

 Critical Sensitivity Rating

- Conservation priority or species priority area with unique habitat types or critical ecological services provided
- Undisturbed, intact areas of high biodiversity importance beyond the local scale
- Development should be avoided and area is essentially a no-go area

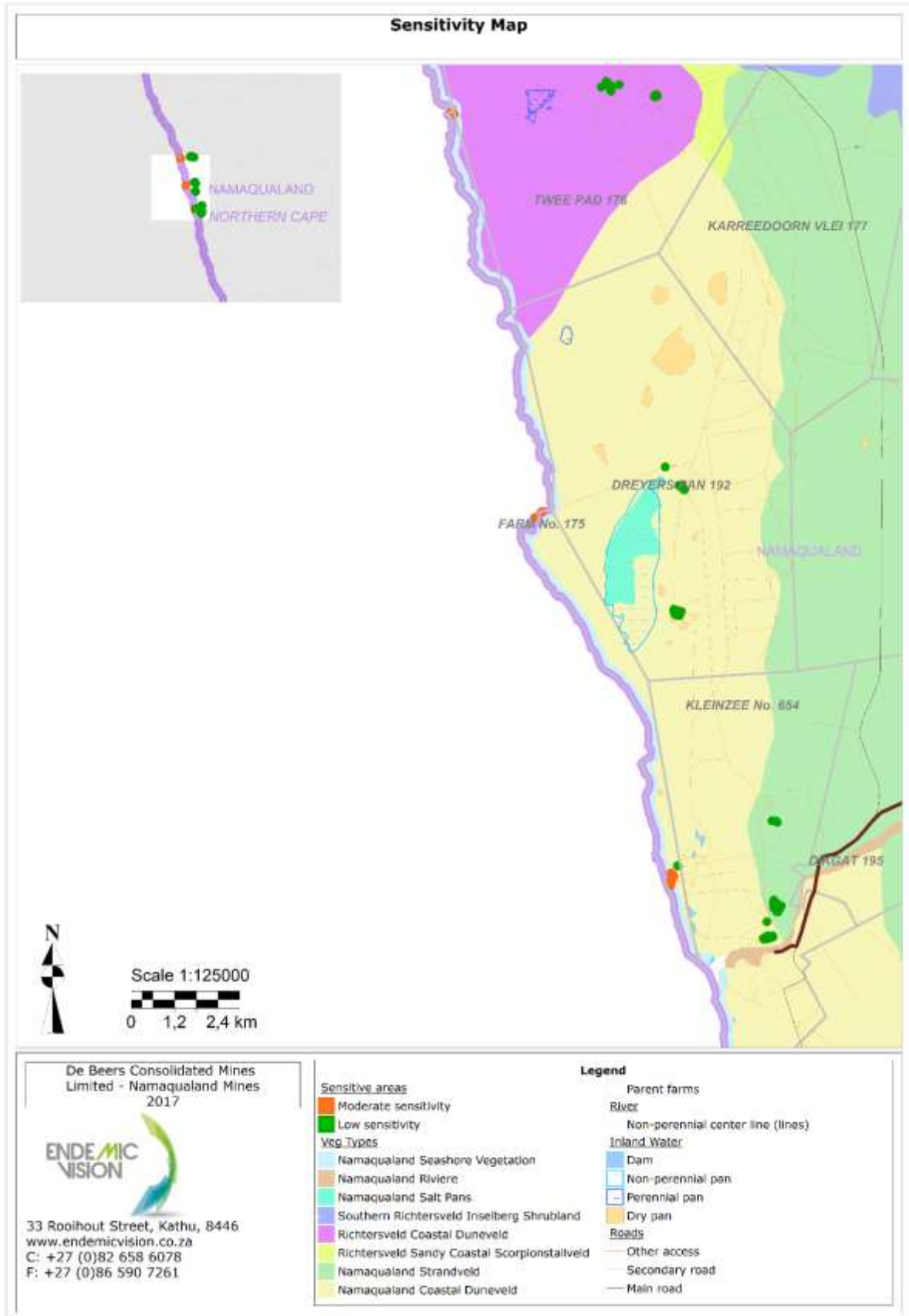


Figure 7: Ecological sensitivity map of project

Heritage Resources

Cultural Heritage Resources Cultural Resources are all non-physical and physical man-made occurrences, as well as natural occurrences associated with human activity. These include all sites, structure and artefacts of importance, either individually or in groups, in the history, architecture and archaeology of human (cultural) development. All cultural resources, older than 60 years, are regarded as potential places of cultural and heritage interest. Graves and cemeteries are included.

The infrastructure that will be demolished are all older than 60years. No specialist determination was undertaken to evaluate heritage value for these areas. The infrastructure is required to be demolished in terms of the closure and financial liability carried by De Beers Consolidated Mines Pty (Ltd). Where infrastructure is deemed as a priority to be retained in terms of SAHRA, liability transfer for maintenance and care needs to be secured.

Regional socio-economic environment

The socio-economic baseline section provides a demographic, cultural and economic overview of the Project Area and also describes the physical infrastructure and services available in the communities visited. The purpose of collecting this information is to provide a basis upon which the impact assessment can be conducted, and to enable the monitoring and measurement of changes over time.

This socio-economic baseline is primarily based on the Namakwa District Municipality's Annual Report (2011-2012), the Integrated Development Planning document (2013-2014) from the Richtersveld Local Municipality (LM) as well as the Namakwa District Municipality, and various statistical sources from Statistics South Africa.

The Northern Cape Province is geographically the largest of South Africa's nine provinces with a landmass of 362,591.41km², and covering 30% of South Africa. The province consists of five (5) district municipalities and twenty-six (26) local municipalities (SwiftPrint, 2014).

The province is characterized by wide widespread poverty throughout the province with the smallest and most dispersed population (with a population density of 0.9 people per/km² compared to South Africa's 3.91p/p/km² and the Northern Cape's 2.62p/p/km²) (Municipality, Namakwa District Municipality Annual Report 2011-2012, 2012). Data indicates that about 44% of the population lives in poverty (Municipality, Namakwa District Municipality Integrated Development Plan 2012-2016, 2012).

The education level in the District also indicates that there is an urgent need to develop the human capital in the District. The highest portion of the total population falls in the grade 7-9 band whilst post matric qualifications are minimal. This is an indication that qualified people are migrating to other provinces, most possibly due to a lack of employment opportunities as well as the closure of various mines.

The majority of the population in Namakwa were from the Coloured population (87,54) followed by 8.97% which were White, 2,95% of this district's population were black and the remaining 0,54% were Indian or Asian in 2007.

Almost a quarter of the population in Namakwa (24,63%) were under the age of 15 years, i.e. 31 150 people consisting of slightly more males (53,40%) than females. The economically active people (i.e. 15-64 years) accounted for just more than two thirds (67,99%) of the total population in the Namakwa District. Therefore, the dependency ratio in 2007 was 47,08%, which means that there were 47 people of working age (not necessarily participating/active in the labour force) for every 100 of the population. The elderly (65 years and older) accounted for seven percent (7,38%) of the total population in Namakwa District.

Data indicates that there is a distortion in the population composition in the lower age groups as well as in the economic active groups. This situation is applicable for both genders. There could have been several reasons for this situation e.g. declining mining activities (Municipality, Namakwa District Municipality Integrated Development Plan 2012-2016, 2012).

Economically, the province contributes R33-billion to the national gross domestic product (GDP), which is about 2.2% of the national total. The dominant economic sectors of the province are mining, agriculture and tourism (SwiftPrint, 2014).

The Namakwa District Municipality is the largest district geographically in South Africa, but has a small and dispersed population (with a population density of 0.9 people per/km² compared to South Africa's 3.91p/p/km² and the Northern Cape's 2.62p/p/km²).

(b) Description of the current land uses.

The land use in the application area is mining and surrounding area is agricultural with the main activity as extensive grazing (sheep, cattle and goats).

(c) Description of specific environmental features and infrastructure on the site.

Infrastructure present are detailed in section 3 of this report.

(d) Environmental and current land use map

.....
Show all environmental and current land use features
.....

Please refer to the water and infrastructure; the vegetation types map and the site map (Topo cadastral map) indicating services infrastructure indicating the environmental and land use features associated with the area. Below is the environmental and current land use map supporting the above maps.

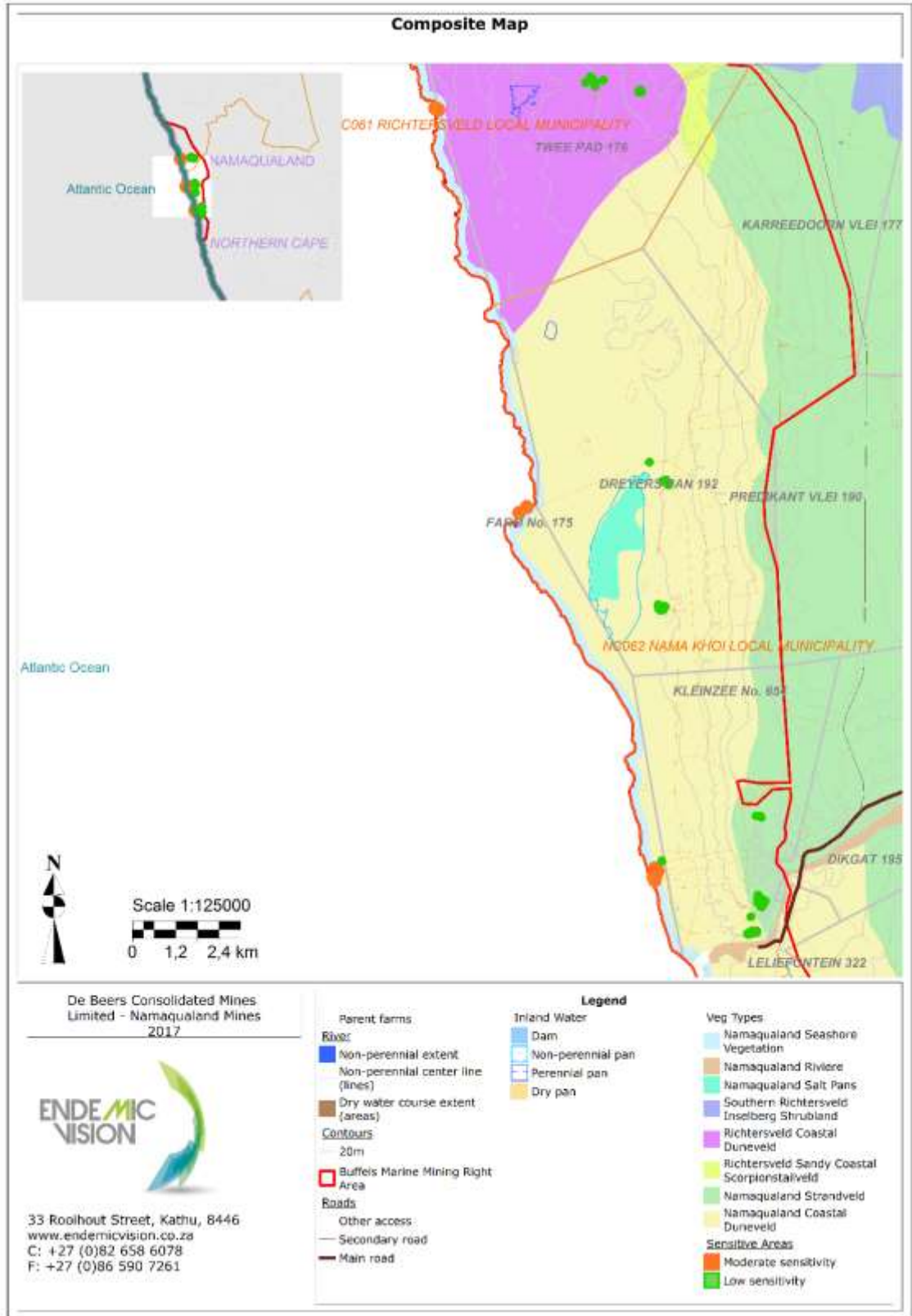


Figure 8: Composite Map

v) Impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts can be reversed

Provide a list of the potential impacts identified of the activities described in the initial site layout that will be undertaken, as informed by both the typical known impacts of such activities, and as informed by the consultations with affected parties together with the significance, probability, and duration of the impacts. Please indicate the extent to which they can be reversed, the extent to which they may cause irreplaceable loss of resources, and can be avoided, managed or mitigated

This section identifies and evaluates the actual and potential environmental consequences associated with the proposed demolition activity. The potential for mitigation of negative impacts and enhancement of positive impacts (DEAT, 2003) to enable sustainable development principles are adhered to.

Activities to be undertaken in by the project and its respective demolition, rehabilitation and closure phases, give rise to certain impacts. For the purpose of assessing these impacts, the activities involved with the demolition of the site is identified as:

Table 17: List of activities and environmental aspects to be assessed

Main Activities and Infrastructure	
1	Demolition of Infrastructure
2	Disturbance: Noise
3	Construction: earth works
4	Generation and accumulation of hazardous waste
5	Generation and accumulation of construction related waste
6	Generation and accumulation of general waste
7	Generation of Dust
8	Disturbance: Traffic
Aspects and Activities	
Potentially significant aspects	Activities
Waste Management	Generation and accumulation of hazardous waste Generation and accumulation of construction related waste Generation and accumulation of general waste
Biodiversity Disturbance	Disturbance: Traffic Disturbance: Noise
Air Emission	Generation of Dust
Water Pollution	Construction: earth works at inter-tidal zones. Restoration of natural hydrological flow of impacted systems.
Socio Economic Changes	Change in land use potential
Summary of Aspects and potential impacts	

Potentially significant aspects	Potential impacts and risks
Waste Management	Accumulation of mineral waste on site
Biodiversity Disturbance	Disturbance of fauna engagement patterns
Air Emission	Changes in air quality - dust
Water Pollution	Changes in surface water quality runoff
Socio Economic Changes	Changes in sense of place

vi) Methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks

Describe how the significance, probability, and duration of the aforesaid identified impacts that were identified through the consultation process was determined in order to decide the extent to which the initial site layout needs revision

Standard evaluation methods are applied as defined below.

An impact can be defined as any change in the physical-chemical, biological, cultural and/or socio-economic environmental system that can be attributed to human activities related to alternatives under study for meeting a project need. Assessment of impacts will be based on DEAT's (2014) Guideline Document: EIA Regulations. The various environmental impacts and benefits of this project are discussed in terms of impact status, probability, duration, scale/extent and magnitude/severity.

The significance of the aspects/impacts of the process will be rated by using a matrix derived from Plomp (2004) and adapted to some extent to fit this process. These matrixes use the consequence and the likelihood of the different aspects and associated impacts to determine the significance of the impacts.

The significance of the potential impacts will be determined through a synthesis of the criteria below:

 **Impact Status**

The nature or status of the impact is determined by the conditions of the environment prior to construction and operation. A discussion on the nature of the impact will include a description of the cause of the effect, the aspect that will be affected and how it will be affected. The nature of the impact can be described as negative, positive or neutral.

Table 18: Impact Nature Rating

RATING	DESCRIPTION	RATING
Positive	A benefit to the receiving environment	P
Negative	A cost to the receiving environment	N

 **Impact Probability**

The probability of the impact describes the likelihood of the impact actually occurring.

Table 19: Impact Probability Rating

RATING	DESCRIPTION	WEIGHT
Improbable	The possibility of the impact occurring is very low, due to the circumstances, design or experience.	1
Probable	There is a probability that the impact will occur to the extent that provision must be made therefore.	2
Highly Probable	It is most likely that the impact will occur at some stage of the development.	4
Definite	The impact will take place regardless of any prevention plans.	5

Impact Duration

The duration of the impact refers to the time scale of the impact or benefit.

Table 20: Impact Duration Rating

RATING	DESCRIPTION	WEIGHT
Short term	The impact will either disappear with mitigation or will be mitigated through natural processes in a time span shorter than any of the phases.	1
Medium term	The impact will last up to the end of the phases, where after it will be negated.	3
Long term	The impact will last for the entire operational phase of the project but will be mitigated by direct human action or by natural processes thereafter.	4
Permanent	Impact that will be non-transitory. Mitigation either by man or natural processes will not occur in such a way or in such a time span that the impact can be considered transient.	5

Impact Scale/Extent

The scale/extent of the impact is considered as the physical and spatial size of the impact. Impact scale/extent can be site specific (within the boundaries of the development area), local and/or regional.

Table 21: Impact Scale/Extent Rating

RATING	DESCRIPTION	WEIGHT
Site	The impacted area extends only as far as the activity, e.g. footprint	1
Local	The impact could affect the whole, or a measurable portion of the above mentioned properties and adjacent properties.	2
Regional	The impact could affect the area including the neighbouring residential areas.	3

Impact Magnitude/Severity

The magnitude/severity of the impact is determined to quantify the magnitude of the impacts and benefits associated with the proposed project (Does the impact destroy the environment, or alter its function).

Table 22: Impact Magnitude/Severity Rating

RATING	DESCRIPTION	WEIGHT
Low	The impact alters the affected environment in such a way that natural processes are not affected.	2
Medium	The affected environment is altered, but functions and processes continue in a modified way.	6

High	Function or process of the affected environment is disturbed to the extent where it temporarily or permanently ceases.	8
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Impact Significance

The impact significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The significance rating is utilised to rate each identified impact in terms of its overall magnitude and significance.

Table 23: Impact Significance Rating

RATING	DESCRIPTION	WEIGHT
Sum (Duration, Scale, Magnitude) x Probability		
Negligible	The impact is non-existent or unsubstantial and is of no or little importance to any stakeholder and can be ignored.	<20
Low	The impact is limited in extent, has low to medium intensity; whatever its probability of occurrence is, the impact will not have a material effect on the decision and is likely to require management intervention with increased costs.	<40
Moderate	The impact is of importance to one or more stakeholders, and its intensity will be medium or high; therefore, the impact may materially affect the decision, and management intervention will be required.	<60
High	The impact could render development options controversial or the project unacceptable if it cannot be reduced to acceptable levels; and/or the cost of management intervention will be a significant factor in mitigation.	>60

vii) The positive and negative impacts that the proposed activity (in terms of the initial site layout) and alternatives will have on the environment and the community that may be affected

Provide a discussion in terms of advantages and disadvantages of the initial site layout compared to alternative layout options to accommodate concerns raised by affected parties

As discussed in the previous section, the proposed demolition occurs where mining infrastructure is situated.

This site is therefore regarded as the preferred site and alternative sites are not considered.

Potential positive and negative impacts of the proposed activity include the following:

Potential impact on heritage resources

Even though the mine infrastructure is older than 60 years, none of the mine infrastructure is declared of national heritage importance. No other heritage resources beyond the demolition of the remaining mining infrastructure will be affected.

This draft basic assessment report is submitted to SAHRA to ensure adequate guidance is obtained regarding potential impacts of the list of infrastructures as logged in section 3 of this report.

Impacts on communities, individuals or land uses in close proximity

Job loss is not applicable as mining has ceased before commencement of this project. Short term job creation will be evident from this project. Change in land use and sense of place will occur as the area is reverted towards its natural state.

 **Biophysical impacts**

Dust impacts from the demolition works, traffic on existing roads affecting resident fauna and flora will occur on small scale. Noise to fauna will occur on temporary basis.




 **Waste impacts**

Accumulation of waste on site in terms of building rubble is unlikely as demarcated infilling of approved burrow pits are used for permanent deposition of building rubble. Building rubble is further reduced by removing all salvageable items and reworking / re-using this.

Accumulation of hazardous waste from asbestos and/or hydrocarbon waste is limited due to removal and final deposition at a registered hazardous waste site.

Accumulation of general waste from demolition works are limited and taken to the registered municipal waste site.

 **Positive impacts**

-  Reduced visual impacts from existing infrastructure
-  Return of hydrological patterns where infrastructure interfered with this
-  Rehabilitation of impacted areas.

viii) The possible mitigation measures that could be applied and the level of risk

With regard to the issues and concerns raised by affected parties provide a list of the issues raised and an assessment/ discussion of the mitigations or site layout alternatives available to accommodate or address their concerns, together with an assessment of the impacts or risks associated with the mitigation or alternatives considered

This section provides a summary of the key management measures associated with the impacts identified in the previous section. The detailed rating and management plan is presented below.

 **Measures to manage rehabilitation (positive impact)**

- Rehabilitation in itself can result in additional impacts.
- Rehabilitation should be done according to similar vegetation diversity, vegetation cover constituency as described by the baseline.
- Rehabilitation should be monitored using Landscape Functional Analysis to ensure the rehabilitation efforts can be quantified as successful.
- Rehabilitation maintenance is required until the rehabilitation is self-sufficient.
- It is required that palatable grazing seed is re-established on impacted areas where rehabilitation takes place.

ix) Motivation where no alternative sites were considered

As discussed in the previous section, the proposed area is targeted due to existing infrastructure and its location. This site is therefore regarded as the only preferred site and alternative sites are not considered. Full assessment of alternatives is presented above for other considerations.

x) Statement motivating the alternative development location within the overall site

.....
Provide a statement motivating the final site layout that is proposed

The proposed area is targeted due to existing infrastructure and its location.

This site is therefore regarded as the only preferred site and alternative sites are not considered.

i) Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site (In respect of the final site layout plan) through the life of the activity

.....
Including (i) a description of all environmental issues and risks that were identified during the environmental impact assessment process and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures

In order to identify the potential impacts associated with the demolition activities the following steps were undertaken:

During the consultation process attempts baseline evaluation of the area was undertaken by site assessment; client interview, mapping and photo logging.

For the environmental issues and risks identified an environmental impact assessment conducted a high level desktop assessment to determine the environmental setting in which the demolition project is located. The various resources used to determine the significance and sensitivity of the environmental considerations include:

- 📄 Geographic Information System maps
- 📄 South African National Biodiversity Institute (SANBI) Biodiversity Geographic Database LUDS system;
- 📄 Department of Water Affairs information documents; etc.

The site visit was undertaken on May 2017 to ensure that the information gathered as part of the desktop investigation reflects the current status of the land.

The baseline studies and impact findings, with strong focus on the views of the stakeholders were incorporated into the assessment of impacts and ranking of these.

The ratings of the identified impacts were undertaken in a quantitative manner as provided from section (vi) above. A risk matrix will be used to determine the significance of the impacts. The magnitude of the impact, the extent of the impact, the reversibility of the impact, the duration of the impact and the probability of the impact occurring were taken into consideration. The assessment has been conducted without implementing any mitigation or management measures and then with the implementation of management and mitigation measures. During the process, a score was determined to divide the significance of the impacts into negligible, low, moderate and high.

The identification of management measures and impact management objectives were developed to ensure that adverse socio-economic impacts are minimised and socio-economic benefits are maximised. Measures were further defined to avoid, prevent, limit or manage any impacts. Closure objectives were further measured against Section 28 of the National Environmental Management Act (Act 107 of 1998) and Regulation 52(2)(f) of the MPRDA regulations.

i) Assessment of each identified potentially significant impact and risk

.....

This section of the report must consider all the known typical impacts of each of the activities (including those that could or should have been identified by knowledgeable persons) and not only those that were raised by registered interested and affected parties

This section identifies and evaluates the actual and potential environmental consequences associated with the proposed demolition activity. The potential for mitigation of negative impacts and enhancement of positive impacts (DEAT, 2003) to enable sustainable development principles are adhered to.

The impact assessment was done considering terrestrial and inter-tidal zones. The inter-tidal zones have also undergone an assessment of alternatives (inserted above) that must be consulted.

Most of the impacts are positive and in each zone, these are listed first.

Table 24: Terrestrial demolition impact assessment of positive impacts

Please note scoring indicate high (red) scores as highly positive.

Impact Description	Impact Type Degree of loss	Details	Duration	Scale	Severity	Initial Probability	Initial Score Before mitigation
Changes in topography: visual quality	Direct Positive Moderate	Visual impacts from infrastructure will be removed	Permanent	Regional	Medium	Definite	70
Changes in sense of place	Direct Positive Moderate	Sense of place will change from mining / industrial to rehabilitated area	Permanent	Regional	Medium	Definite	70
Changes to landscape: transformation	Direct Positive High	Landscape will be reshaped to allow for natural hydrological regimes where infrastructure is removed	Permanent	Regional	High	Definite	80
Generation and accumulation of general waste	Direct Positive Moderate	Existing general waste will be removed from site. General waste will be taken to registered waste site	Permanent	Local	Medium	Definite	65

Generation and accumulation of hazardous waste	Direct Positive High	Existing hazardous materials on site will be removed	Permanent	Local	High	Definite	75
Ecological system impacts: Ecological process & function restoration	Direct Positive High	Return to natural system will be able to return to functional ecosystems with full implementation of rehabilitation after demolition works	Permanent	Site	High	Definite	70
Changes in social interaction with environment	Indirect Positive High	Social interaction will be low intensity and rehabilitation after demolition	Long term	Local	High	Definite	70
Changes in surface water quality runoff	Direct Positive High	Landscape will be reshaped to allow for natural hydrological regimes where infrastructure is removed	Permanent	Site	High	Definite	70

Table 25: Terrestrial demolition impact assessment - Negative impacts

Impact Description	Impact Type Degree of loss	Details	Duration	Scale	Severity	Initial Probability	Initial Score Before mitigation
Costs: Change in land use value	Indirect Negative Moderate	Potential future land-use is of lower economic production value than existing value	Permanent	Regional	Medium	Definite	70
Disturbance: noise	Indirect Negative Low	Noise from machines used for demolition and earth works	Permanent	Site	Low	Definite	40

Generation and accumulation of hazardous waste	Direct Negative Moderate	Asbestos and hydrocarbon related waste will be removed to registered hazardous waste site	Permanent	Local	Medium	Definite	65
Generation and accumulation of construction related waste	Direct Negative Low	Concrete works will be backfilled to old mine workings and covered with subsoil / topsoil	Permanent	Local	Low	Definite	45
Generation of Dust	Indirect Negative Low	Dust from machines used for demolition and earth works	Permanent	Site	Low	Definite	40
Loss of heritage artefacts or archaeological resources	Direct Negative Moderate	The mine infrastructure is old and part of the landscape. It can be seen as a loss to cultural heritage of the area.	Permanent	Regional	Medium	Definite	70
Socio-economic: impact on tourism potential	Indirect Negative High	The potential to use the old mining infrastructure as leverage for tourism is lost	Permanent	Regional	High	Definite	80
Socio-economic: change in public infrastructure availability	Direct Negative Moderate	Use of access roads and any amenities associated with the infrastructure will be lost with demolition	Permanent	Local	Medium	Definite	65
Persecution of fauna - road kills	Indirect Negative Low	Traffic during demolition could result in road kills of animals on site	Permanent	Site	Low	Definite	40

Table 26: Inter-tidal demolition impact assessment - positive impacts
Please note scoring indicate high (red) scores as highly positive.

Impact Description	Impact Type Degree of loss	Details	Duration	Scale	Severity	Initial Probability	Initial Score Before mitigation
Changes in topography: visual quality	Direct Positive Moderate	Visual impacts from infrastructure will be removed	Permanent	Regional	Medium	Definite	70
Changes in sense of place	Direct Positive Moderate	Sense of place will change from mining / industrial to rehabilitated area	Permanent	Regional	Medium	Definite	70
Changes to landscape: transformation	Indirect Positive Low	Stable landscape features will be retained	Permanent	Regional	Low	Definite	50
Costs: Change in land use value	Indirect Positive Low	Natural Land-use will be retained. Seal, bird and intertidal organisms using the area will be retained as far as possible	Permanent	Regional	Low	Definite	50
Generation and accumulation of hazardous waste	Direct Positive High	Existing hazardous materials on site will be removed	Permanent	Local	High	Definite	75
Generation and accumulation of general waste	Direct Positive Moderate	Existing general waste will be removed from site. General waste will be taken to registered waste site	Permanent	Local	Medium	Definite	65
Socio-economic: impact on tourism potential	Direct Positive Moderate	Functional coastal zone will encourage tourism use in future	Permanent	Regional	Medium	Definite	70

Changes in social interaction with environment	Indirect Positive High	Social interaction will be low intensity and rehabilitation after demolition	Long term	Regional	High	Definite	75
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Table 27: Inter-tidal demolition works impact assessment - negative impacts

Impact Description	Impact Type Degree of loss	Details	Duration	Scale	Severity	Initial Probability	Initial Score Before mitigation
Costs: Change in land use value	Indirect Negative Moderate	Potential future land-use is of lower economic production value than existing value	Permanent	Regional	Medium	Definite	70
Disturbance: noise	Indirect Negative Low	Noise from machines used for demolition and earth works	Permanent	Site	Low	Definite	40
Generation and accumulation of hazardous waste	Direct Negative Moderate	Asbestos and hydrocarbon related waste will be removed to registered hazardous waste site	Permanent	Local	Medium	Definite	65
Generation and accumulation of construction related waste	Direct Negative Low	Concrete works will be backfilled to old mine workings and covered with subsoil / topsoil	Permanent	Local	Low	Definite	45
Generation of Dust	Indirect Negative Low	Dust from machines used for demolition and earth works	Permanent	Site	Low	Definite	40
Changes in surface water quality runoff	Indirect Negative High	Where demolition of works in inter-tidal zone takes place, ingress of soil/sand is expected.	Short term	Site	High	Definite	50
Loss of heritage artefacts or archaeological resources	Direct Negative Moderate	The mine infrastructure is old and part of the landscape. It can be seen as a loss to cultural heritage of the area.	Permanent	Regional	Medium	Definite	70
Persecution of fauna - road kills	Indirect Negative Low	Traffic during demolition could result in road kills of animals on site	Permanent	Site	Low	Definite	40
Ecological system impacts: Ecological process & function restoration	Indirect Negative High	Ecological restoration (timeframes and quality) after demolition in inter-tidal zone is uncertain	Long term	Site	High	Definite	65

j) Summary of specialist reports

This summary must be completed if any specialist reports informed the impact assessment and final site layout process and must be in the following tabular form:

No specialists' studies were undertaken for this assessment. Numerous historic specialist studies of the area are however available on request.

Marine ecology specialist input and heritage input is required as part of the EIA process.

k) Environmental impact statement**(i) Summary of the key findings of the environmental impact assessment;**

The summary table only present negative impacts, taking all mitigation measures into consideration.

Table 28: Summary of impact assessment

Impact Description	Impact Type Degree of loss	Details	Final Score Residual
Costs: Change in land use value	Indirect Negative Moderate	Potential future land-use is of lower economic production value than existing value	70
Disturbance: noise	Indirect Negative Low	Noise from machines used for demolition and earth works	16
Generation and accumulation of hazardous waste	Direct Negative Moderate	Asbestos and hydrocarbon related waste will be removed to registered hazardous waste site	13
Generation and accumulation of construction related waste	Direct Negative Low	Concrete works will be backfilled to old mine workings and covered with subsoil / topsoil	9
Generation of Dust	Indirect Negative Low	Dust from machines used for demolition and earth works	16
Loss of heritage artefacts or archaeological resources	Direct Negative Moderate	The mine infrastructure is old and part of the landscape. It can be seen as a loss to cultural heritage of the area.	70
Socio-economic: impact on tourism potential	Indirect Negative High	The potential to use the old mining infrastructure as leverage for tourism is lost	80
Socio-economic: change in public infrastructure availability	Direct Negative Moderate	Use of access roads and any amenities associated with the infrastructure will be lost with demolition	65
Persecution of fauna - road kills	Indirect Negative Low	Traffic during demolition could result in road kills of animals on site	16

Costs: Change in land use value	Indirect Negative Moderate	Potential future land-use is of lower economic production value than existing value	70
Disturbance: noise	Indirect Negative Low	Noise from machines used for demolition and earth works	16
Generation and accumulation of hazardous waste	Direct Negative Moderate	Asbestos and hydrocarbon related waste will be removed to registered hazardous waste site	13
Generation and accumulation of construction related waste	Direct Negative Low	Concrete works will be backfilled to old mine workings and covered with subsoil / topsoil	9
Generation of Dust	Indirect Negative Low	Dust from machines used for demolition and earth works	16
Changes in surface water quality runoff	Indirect Negative High	Where demolition of works in inter-tidal zone takes place, ingress of soil/sand is expected.	40
Loss of heritage artefacts or archaeological resources	Direct Negative Moderate	The mine infrastructure is old and part of the landscape. It can be seen as a loss to cultural heritage of the area.	70
Persecution of fauna - road kills	Indirect Negative Low	Traffic during demolition could result in road kills of animals on site	40
Ecological system impacts: Ecological process & function restoration	Indirect Negative High	Ecological restoration (timeframes and quality) after demolition in inter-tidal zone is uncertain	26

(ii) Final Site Map

.....
Provide a map at an appropriate scale which superimposes the proposed overall activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers. Attach as Appendix C

A final site map is attached as the outline and detailed maps for the demolition works as attached in Appendix C.

(iii) Summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;

Not replacing the impacts identified above, the summary of highlighted potential impacts includes positive impacts in terms of hazardous materials being removed and areas made safe.

The impact assessment indicates permanent changes to the potential land-use, loss of heritage and associated potential use for tourism on a regional scale. Land capability from mining to natural is seen as a socio-economic negative impact considering that the infrastructure is already on site.

l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr

Based on the assessment and where applicable the recommendations from specialist reports, the recording of proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorization

Impact management objectives will be developed to ensure that adverse socio-economic impacts and minimised and socio-economic benefits are maximised. Measures will further be defined to avoid, prevent, limit or manage any impacts.

The objectives of the EMPr will be to:

- Provide sufficient information and guidance to plan demolition activities in a manner that would reduce both social and environmental impacts as far as possible.
- Provide sufficient information to assist in presenting a demolition scope of works that considered environmental impacts.
- Ensure an approach that will provide the necessary confidence in terms of environmental compliance.

Through the implementation of the mitigation and management measures it is expected that:

- Dust and noise impacts will be reduced
- Impact on fauna because of traffic and possible road kills will be reduced
- Accumulation of waste outside registered waste sites will be eliminated
- The positive impacts of the demolition works will be retained.

m) Aspects for inclusion as conditions of Authorisation

Any aspects which must be made conditions of the Environmental Authorisation

The following conditions should be considered for inclusion in the Authorisation:

- The final comment from SAHRA will be binding on this application.
- Input from the Department of Environmental Affairs – Marine and Coastal Resources must be obtained for final selection of alternatives and implementation as part of this authorisation.

n) Description of any assumptions, uncertainties and gaps in knowledge

Which relate to the assessment and mitigation measures proposed

The following assumptions, uncertainties and gaps are applicable to this project:

- Final comment from SAHRA is not yet available.
- Final response from the Department of Environmental Affairs – Marine and Coastal Resources is not yet available.

o) Reasoned opinion as to whether the proposed activity should or should not be authorised**i) Reasons why the activity should be authorized or not.**

The proposed demolition activities that are known from within the larger region and some of this work has been approved and completed on site. It is anticipated that similar conditions will prevail for this project. With the implementation of the recommended management measures the potential impacts can be managed.

The option of not authorizing the activities will result in a significant closure liability retained by De Beers Consolidated Mines Pty (Ltd) while future use of the area is prevented until such a time.

ii) Conditions that must be included in the authorisation

The following conditions should be considered for inclusion in the Authorisation:

- The final comment from SAHRA will be binding on this application.
- Final response from the Department of Environmental Affairs – Marine and Coastal Resources is not yet available.

p) Period for which the Environmental Authorisation is required

The entire demolition programme will take place over a 60 month (5 year) period.

q) Undertaking

.....
Confirm that the undertaking required to meet the requirements of this section is provided at the end of the EMP and is applicable to both the Basic assessment report and the Environmental Management Programme report.
.....

An undertaking by the EAP is provided for in Section 2 of the EMP (Part B) and is applicable to both the Basic Assessment Report and the Environmental Management Programme report.

r) Financial Provision

.....
State the amount that is required to both manage and rehabilitate the environment in respect of rehabilitation.
.....

The financial provision is set out in the Amended EMP for the Buffels Marine Right, 2012.

i) Explain how the aforesaid amount was derived.

The following section details the methodologies adopted to calculate the quantities, associated rehabilitation (clean closure) rates and eventually the final (clean) closure cost estimate

Components of the Namaqualand Mines 2009 Closure Cost Model, as provided by Golder and Associates, was used. This model was the first of its kind for a mine in Namaqualand West Coast. This environment has no standard since it differs significantly from the majority of mining environments. Some components were impractical but the cost values were still used due to a lack of alternatives. The model was developed taking the philosophies and standards of the time in to account. The 2009 Closure Cost Model accommodates rehabilitation principles and methods in line with the environmental conditions of the Namaqualand West Coast (Amended EMP of Buffels marine Right, 2012).

ii) Confirm that this amount can be provided for from operating expenditure.

Confirm that the amount, is anticipated to be an operating cost and is provided for as such in the Mining work programme, Financial and Technical Competence Report or Prospecting Work Programme as the case may be.

Namaqualand Mines raises provision for closure over the life-of-mine through the use of bank guaranteed cheques (Amended EMP for the Buffels Marine Right, 2012).

s) Specific Information required by the competent Authority**i) Compliance with the provisions of sections 24(4)(a) and (b) read with section 24 (3) (a) and (7) of the National Environmental Management Act (Act 107 of 1998). the EIA report must include the:****(1) Impact on the socio-economic conditions of any directly affected person.**

Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any directly affected person including the landowner, lawful occupier, or, where applicable, potential beneficiaries of any land restitution claim, attach the investigation report as an Appendix

The landowner is the extended directly affected party.

(2) Impact on any national estate referred to in section 3(2) of the National Heritage Resources Act.

*Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any national estate referred to in section 3(2) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) with the exception of the national estate contemplated in section 3(2)(i)(vi) and (vii) of that Act, attach the investigation report as **Appendix 2.19.2** and confirm that the applicable mitigation is reflected in 2.5.3; 2.11.6. and 2.12. herein.*

Even though the mine infrastructure is older than 60 years, none of the mine infrastructure is declared of national heritage importance. No other heritage resources beyond the demolition of the remaining mining infrastructure will be affected.

This draft basic assessment report is submitted to SAHRA to ensure adequate guidance is obtained regarding potential impacts of the list of infrastructures as logged in section 3 of this report.

t) Other matters required in terms of sections 24(4)(a) and (b) of the Act

.....
The EAP managing the application must provide the competent authority with detailed, written proof of an investigation as required by section 24(4)(b)(i) of the Act and motivation if no reasonable or feasible alternatives, as contemplated in sub-regulation 22(2)(h), exist. The EAP must attach such motivation as Appendix Z
.....

Existing and historical mining and demolition activities are known from within the larger region and it is anticipated that similar conditions will prevail for this project.

PART B: ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

1. Draft environmental management programme

a) Details of the EAP,

.....
Confirm that the requirement for the provision of the details and expertise of the EAP are already included in PART A, section 1(a) herein as required.

The requirement for the provision of the details and expertise of the EAP are included in Part A, Section (1)(a).

b) Description of the Aspects of the Activity

.....
Confirm that the requirement to describe the aspects of the activity that are covered by the draft environmental management programme is already included in PART A, section (1)(h) herein as required.

The requirement to describe the aspects of the activity that are covered by the draft environmental management programme is included in Part A, Section (1)(h).

c) Composite Map

.....
*Provide a map (**Attached as an Appendix E**) at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers.*

Please refer to **Appendix E** for the composite map.

d) Description of Impact management objectives including management statements

i) Determination of closure objectives.

.....
Ensure that the closure objectives are informed by the type of environment described.

The overall goal for the closure of Namaqualand Mines is to create a mixture of land uses, especially wilderness and small stock farming area together with other land uses which could support sustainable development where possible. The following table contains the detailed performance objectives and associated measures as describe in the Amended EMP of Buffels Marine Right (2012).

Table 29: Detailed closure objectives for the Buffels Marine Mining Right

Topic	Objective	Measure
Upfront planning	To provide overall guidance and direction to closure planning and eventual site relinquishment.	
Closure plan, field trials and progressive closure.		<ul style="list-style-type: none"> ■ Compile an initial reclamation and closure plan to identify the key aspects that need to be addressed for closure; ■ Conduct full scale field trials to inform reclamation targets and the required measures to achieve these targets related to the identified aspects; ■ Obtain further information from field trials, work sessions and other reclamation work to inform and finalise closure planning; and ■ Set the framework for progressive closure of reclaimed areas, both technically and regulatory, to facilitate site relinquishment and /or transfer to third parties as these areas become available after successful reclamation.
Physical stabilisation	To remove and/or stabilise surface infrastructure and mining residue and/or disturbances that remain on the site after closure to allow for the planned final land use.	
Surface infrastructure	To demolish buildings, plant and related surface infrastructure with no post-closure beneficial use to facilitate the implementation of the planned land use.	<ul style="list-style-type: none"> ■ Demolish non-usable buildings, plant and related surface infrastructure and dispose of the demolition waste in accordance with disposal options. As a contingency measure, institute a process to investigate possible suitable sites for safe on-site disposal of demolition waste; ■ Clean machinery, equipment, and storage tanks and dispose as above; ■ Remove concrete structures, foundations and slabs to 1 m below final ground level; ■ Dismantle power transmission lines, pipelines, and remove from the site; ■ Decommission and remove buried support infrastructures (tanks, pipes, underground services etc.) in a safe, acceptable manner. Buried infrastructure remaining on site will be identified on site closure maps; ■ Fill decommissioned septic tanks with inert material and cover;
Topic	Objective	Measure
		<ul style="list-style-type: none"> ■ Decontaminate steel and scrap metal for salvage and recycling, if valuable; ■ Encapsulate or dispose off-site of hazardous material; ■ Conduct assessments of contaminated soils and amelioration and/or dispose; and ■ Shape and re-vegetate the disturbed areas from which infrastructure have been removed.
Coarse residue deposit (CRD)	CRD included as part of the NM mineral resource and will be retreated.	<ul style="list-style-type: none"> ■ Profile portions of the CRD to reduce visual impact.
Fine residue deposit (FRD)	FRD is considered to be a potential source of alternative commodities (for example heavy minerals).	<ul style="list-style-type: none"> ■ Shape the outer walls of the FRD ■ Preparation of the upper surfaces of all FRDs ■ FRDs are to be capped with CRD material. ■ The seaward wall of the AK3 FRD (the western wall of which is adjacent to the beach) is to be armoured with oversize material. ■ Erect netting only as required to eliminate possible dust plumes.
Haul and access roads	To reclaim salt treated primary haul and access roads to the planned final land use for the mine site.	<ul style="list-style-type: none"> ■ Deep rip the road surface and related areas; ■ Load and haul the ripped material for disposal in available mining voids. If possible, the material will be dozed into nearby voids; ■ Shape the cleared areas to emulate the natural surface topography as far as possible; ■ Shape cuttings and embankment suitably to ensure safety and decrease erosion potential; ■ Breach earth embankments associated with access roads and haul roads that could

Topic	Objective	Measure
		<p>impede long term surface drainage and shape as above;</p> <ul style="list-style-type: none"> ■ Ameliorate and vegetate disturbed areas. Ensuring that the surface soil is a suitable growth medium, and has a rough surface topography. This can be topsoil, topsoil mixed with subsoil, or where such soil is limited, patches of topsoil/subsoil and CRD. Growth medium should cover a minimum depth of approximately 150 to 300 mm depending on type; ■ Address possible wind effects on vegetation establishment as follows: <ul style="list-style-type: none"> ■ If the width of the disturbed area > 50 m, or exposed to wind erosion, erect wind netting as per specifications for the region; ■ If the width of the disturbed area < 50 m and adjacent to natural vegetation, natural dispersal and succession is sufficient for reclamation; and ■ If the width of the disturbed area > 50 m or not adjacent to natural vegetation, seeds, seedlings and transplants of indigenous species, and soil ameliorates are to be added in a manner that benefits from ecological dynamics. Specifications to be determined by soil type and habitat.
Secondary haul and access roads	To reclaim historically or sporadically salt treated secondary haul and access roads to the planned final land use of the mine site.	<ul style="list-style-type: none"> ■ Conduct salinity, compaction and related testing of the material from the road surface and related areas to determine the suitability of the material for re-vegetation; ■ Based on the test results, determine whether the material: <ul style="list-style-type: none"> ■ needs to be addressed similarly as the material from the primary haul and access roads ; and ■ can be ameliorated in situ if the surface soil provides a suitable growth medium. Ensure that the surface soil is a suitable growth medium, and has a rough surface topography. A suitable growth medium need to have some biological activity, not have too high a clay content, and will have some primary nutrients (relative to agricultural soils, only very small amounts are necessary). This can be topsoil, topsoil mixed with subsoil, or where such soil is limited, patches of topsoil/subsoil and CRD. Growth medium should cover a minimum depth of approximately 150 to
Topic	Objective	Measure
		<p>300 mm depending on type.</p> <ul style="list-style-type: none"> ■ Ameliorate and vegetate disturbed areas: <ul style="list-style-type: none"> ■ If the width of the disturbed area > 50 m, or exposed to wind erosion. erect wind netting as per specifications for the region; ■ If the width of the disturbed area < 50 m and adjacent to natural vegetation, natural dispersal and succession is sufficient for restoration; and ■ If the width of the disturbed area > 50 m or not adjacent to natural vegetation, seeds, seedlings and transplants of indigenous species, and soil ameliorates are to be added in a manner that benefits from ecological dynamics. Specifications to be determined by soil type and habitat.
Gravel roads and paths	To reclaim untreated (salt water) gravel roads and paths to the planned final land use for the mine site	<ul style="list-style-type: none"> ■ Deep rip the road surface and related areas. If road surface does not consist of natural surface soils, apply a suitable growth medium as above; ■ If roads are not compacted and consist of natural surface soils, deep ripping is not necessary, only roughen the surface topography; ■ Ameliorate and vegetate the disturbed/ripped areas: <ul style="list-style-type: none"> ■ If the width of the disturbed area > 50 m, or exposed to wind erosion. erect wind netting as per specifications for the region; ■ If the width of the disturbed area < 50 m and adjacent to natural vegetation, natural dispersal and succession is sufficient for restoration; and ■ If the width of the disturbed area > 50 m or not adjacent to natural vegetation, seeds, seedlings and transplants of indigenous species, and soil ameliorates are to be added in a manner that benefits from ecological dynamics. Specifications to be determined by soil type and habitat.
Fugitive tracks	To reclaim fugitive tracks to the planned final land use for the mine	<ul style="list-style-type: none"> ■ Erect barriers to prevent access by vehicles; and ■ Allow road to colonise naturally, if the width of the disturbed area < 50 m and adjacent to

Topic	Objective	Measure
	site.	natural vegetation, natural dispersal and succession is sufficient for restoration.
Overburden and spoils	To render the overburden and spoils stable in the long-term and aligned to the planned final land use of the mine site.	<ul style="list-style-type: none"> ■ Doze and/or load and haul spoils into available voids; ■ Profile the remaining spoils to suitable outer slopes and integrate the shaped outer slopes with the shaped upper surface; ■ Re-vegetate the shaped outer slopes and upper surface; ■ Erect wind netting as per specifications for the region; and ■ Add seeds, seedlings and transplants of indigenous species and soil ameliorates in a manner that benefit from ecological dynamics. Specifications to be determined by soil type and habitat.
Vegetation	To ensure that the established vegetation on reclaimed areas becomes self-sustaining and is integrated into the overall vegetation community.	<ul style="list-style-type: none"> ■ Maintain wind netting, i.e. repair or replace as necessary; ■ Conduct in-fill vegetation as required to ensure that predetermined basal cover and species mix are achieved; and ■ Hand-pull woody weeds/exotic/alien vegetation if present and dispose of this in a manner that would not result in secondary infestation.
Environmental quality	To ensure that local environmental quality is not adversely affected by possible physical and chemical effects arising from the mine site after closure.	
Dust	To limit the potential for dust generation on the reclaimed mine site that could cause nuisance and/or health effects.	<ul style="list-style-type: none"> ■ Conduct surface reclamation as stipulated above; ■ Establish vegetation as stipulated above; and ■ Conduct monitoring and maintenance as stipulated.
Surface erosion	To prevent surface erosion on disturbed/reclaimed areas to curb sediment wash-off and/or the creation of condition that could impede site re-	<ul style="list-style-type: none"> ■ Stabilise slopes by shaping and contouring emulating local stable land forms providing suitable conditions for sustaining vegetation; ■ Avoid the creation of conditions that could create gullies and/or rills on shaped slopes;

Topic	Objective	Measure
	vegetation,	<ul style="list-style-type: none"> ■ Provide diversion berms/trenches to direct excess/concentrated surface runoff from shaped slopes; and ■ Create suitable conditions (growth medium, vegetation mix, etc) for sustainable vegetation cover to contribute/assist with the prevention of surface erosion.
Surface water	To prevent the impairment of local surface water sources.	<ul style="list-style-type: none"> ■ Re-instate local drainage lines as far as possible as part of site reclamation as stated in the initial reclamation and closure plan and/ or subsequent plans; and ■ Implement the stipulated measures in terms of prevention of erosion and sediment mobilization, assessment of salinisation as well as the re-vegetation of disturbed areas to protect local surface water sources.
Soil clean- up	To conduct soil clean-up/reclamation to ensure that the planned land use can be implemented.	<ul style="list-style-type: none"> ■ Conduct site inspections at mine decommissioning to determine possible sources of soil contamination; ■ Conduct soil tests to identify the possible nature of contamination, (i.e., organic or inorganic contamination); ■ If the contamination is primarily of an organic nature, the following will be done; ■ Collect composite soil samples within the identified contaminated area and analyze for total petroleum hydrocarbons (TPH). If the TPH concentrations are below 500 milligrams per kilogram, no decontamination is required. If the TPH concentrations are above 500 milligrams per kilogram, the contaminated soil will be removed if it is in manageable volumes. The collected soil will be deposited onto a dedicated on-site bioremediation facility. The reclamation of the soil will be successful if the TPH analyses of three composite samples indicate that the average TPH concentration is below 500 milligrams per kilogram; ■ In the cases of large volumes of organically contaminated soils a suitably qualified person will conduct an assessment and prepare appropriate reclamation strategy; ■ In the cases where the TPH standard of 500 milligrams per kilogram is not applicable, other appropriate standards such as United States Environmental Protection Agency

Topic	Objective	Measure
		<p>(US EPA) risk-based concentrations or action levels for industrial soil remedial goals for direct contact exposure pathways will be used;</p> <ul style="list-style-type: none"> ■ If the contamination is primarily of an inorganic nature, the following will be done: <ul style="list-style-type: none"> ■ Collect composite soil samples in the identified contaminated areas and analyze for total concentrations of the appropriate chemicals of concern (COC). The selection of COCs will be dictated by the historical activities that were conducted within or nearby the contaminated area(s); ■ Compare the results of the chemical analyses with the USEPA Preliminary Remediation Goals (PRGs) for industrial sites. If the values are not exceeded, no reclamation is required. If the values are exceeded, a suitably qualified specialist will assess the situation and devise an appropriate reclamation strategy for implementation including the recycling of these soils to recover any copper and/or cobalt metals.
Health and safety	To limit the health and safety threats due to possible terrain hazards to humans and domestic animals utilising the reclaimed mine site after mine closure.	
Organic contaminated soils	To demonstrate upfront through soil testing that the remaining organic contaminated soils on site are acceptable	<ul style="list-style-type: none"> ■ Identify areas that during the operation of the mine could have exposed to organic contamination. These could include: <ul style="list-style-type: none"> ■ Transformer areas; ■ Workshop areas; ■ Conduct sampling at two horizons (0-150 mm and greater than 150 mm); ■ Conduct shake-flask or other appropriate tests and analyse for Total Petroleum Hydrocarbons (TPH). In the cases where the TPH standard of 1 000 mg/kg is not applicable, other appropriate standards such as the Dutch Intervention Values for Soil Contaminants or US EPA Risk Based Concentrations or action levels for Industrial Soil Remedial Goals (PRGs) for Direct Contact Exposure Pathways or other procedures considered as best practice at the time of closure must be applied;
Topic	Objective	Measure
		<ul style="list-style-type: none"> ■ Interpret chemical analysis results and assess the potential for contamination; and ■ If the TPH concentrations are below 1 000 mg/kg, no remediation is required. If the TPH concentrations are above 1 000 mg/kg, the contaminated soil will be removed if it is in manageable volumes. The collected soil will be taken to a bioremediation facility for reclamation. Reclamation will continue until the TPH analyses of three composite samples indicate that the average TPH concentration is below 1 000 mg/kg. <p><i>Note: If large volumes of organically contaminated soil and/or small areas with organic contamination other than normal petroleum products such as diesel, petrol (gasoline), and lubrication oil are found, the area will be assessed by a suitably qualified person and an appropriate remediation strategy devised.</i></p>
Chemical related contaminants	To ensure that no potential contaminants such as hydrocarbons, chemicals and associated waste remain on the site after closure.	<ul style="list-style-type: none"> ■ Consume remaining chemicals, reagents and hydrocarbon products during mine decommissioning and/or return the remaining chemicals, reagents and hydrocarbon products to their respective suppliers; and ■ Ensure that no product of the above nature is disposed of on the mine site.
Slopes	To shape embankments and trenches to safe slopes as required.	<ul style="list-style-type: none"> ■ Stabilisation of slopes rendering them safe.
Environmental quality	To ensure that the environmental quality as reflected above is achieved.	<ul style="list-style-type: none"> ■ Environmental quality that should ensure that the local environment after closure should not be exposed to health and safety threats.
Land capability/land use	To ensure that the required land capability is achieved at mine closure to facilitate the implementation of the planned land use.	
Soil clean-up	To identify and assess potentially contaminated soils associated with the workshop and related areas to ensure that these areas are not potential sources of contamination to both local surface and groundwater, as well to ensure they may be re-	<ul style="list-style-type: none"> ■ Delineate areas that could have been potentially contaminated by organic substances; ■ Select sampling points based on a predetermined geo-statistical grid over the delineated areas; ■ Conduct sampling at two horizons (0-150 mm and greater than 150 mm);

Topic	Objective	Measure
	instated as grazing areas	<ul style="list-style-type: none"> ■ Conduct shake-flask or other appropriate tests and analyse for Total Petroleum Hydrocarbons (TPH). In the cases where the TPH standard of 1 000 mg/kg is not applicable, other appropriate standards such as the Dutch Intervention Values for Soil Contaminants or US EPA Risk Based Concentrations or action levels for Industrial Soil Remedial Goals (PRGs) for Direct Contact Exposure Pathways or other procedures considered as best practice at the time of closure must be applied; ■ Interpret chemical analysis results and assess the potential for contamination; and ■ If the TPH concentrations are below 1 000 mg/kg, no remediation is required. If the TPH concentrations are above 1 000 mg/kg, the contaminated soil will be removed if it is in manageable volumes. The collected soil will be taken to a bioremediation facility for reclamation. Reclamation will continue until the TPH analyses of three composite samples indicate that the average TPH concentration is below 1 000 mg/kg. <p><i>Note: If large volumes of organically contaminated soil and/or small areas with organic contamination other than normal petroleum products such as diesel, petrol (gasoline), and lubrication oil are found, the area will be assessed by a suitably qualified person and an appropriate remediation strategy devised.</i></p>
Stockpiled soils	To ameliorate disturbed stockpiled soils to alleviate shortcomings related to low fertility, low organic matter content and possible compaction.	<ul style="list-style-type: none"> ■ Clean-up and trim areas from which surface infrastructure has been removed and/or those that were disturbed due to mining activities; ■ Ensuring that the soil is a suitable growth medium, and has a rough surface topography. This can be topsoil, topsoil mixed with subsoil, or where such soil is limited, patches of topsoil/subsoil; ■ Conduct relevant testing of the material from the stockpiles to determine the suitability of the material for re-vegetation; ■ Based on the test results, determine whether the material can be ameliorated in situ. A suitable growth medium will have some biological activity, not have too high a clay content, and will have some primary nutrients (relative to agricultural soils, only very small amounts are necessary);
Topic	Objective	Measure
		<ul style="list-style-type: none"> ■ Apply the stockpiled topsoil to the areas to a depth matching the original topsoil depth; and ■ Shape and level the top-soiled areas with a single pass of earth moving equipment, after surface infrastructure has been removed and the area cleaned-up, aligned with sustainable development initiatives.
Demolition of surface infrastructure	To demolish non-useable surface infrastructure and reclaim disturbed areas for re-use.	<ul style="list-style-type: none"> ■ Clean-up areas from which buildings and surface infrastructure have been removed; ■ Identify and remove any hazardous material that accumulated on components of the buildings, machinery and equipment for safe off-site disposal; ■ Demolish remaining buildings and other infrastructure and dispose of the resultant demolition waste and any other inert non-hazardous materials that cannot be reused or recycled as stipulated in the initial reclamation and closure plan and/or subsequent plans; ■ Check the areas from which surface infrastructure has been removed for organic contamination and remediate; ■ Shape the areas from which buildings, plant and surface infrastructure have been removed to roughly emulate the natural surface topography, especially terrace and hard stand areas; ■ Ensure that the reclaimed sites are free draining and that, where possible, local drainage lines are re-instated; and ■ Prepare the shaped areas for re-vegetation and vegetate.
Transfer of surface infrastructure	To transfer mining-related surface infrastructure to third parties for beneficial use as part of progressive closure and/or at final closure.	<ul style="list-style-type: none"> ■ Select suitable surface infrastructure for beneficial reuse, based on predetermined criteria below; ■ Develop the criteria for the selection of infrastructure for reuse, taking cognisance of the following:

Topic	Objective	Measure
		<ul style="list-style-type: none"> ■ Possible heritage sites; ■ Suite of final land uses as these are evolving; ■ Mine areas suitable for the transfer to responsible/ suitable third parties; ■ Suitable third parties for transfer; ■ Long-term health and safety considerations; ■ Ongoing regulatory requirements; ■ Commercial value to Namaqualand Mines; ■ Re-zoning requirements; and ■ Develop a business case for each cluster of surface infrastructure identified for beneficial reuse for decision-making and if feasible implement.
Shallow bedrock areas	To reclaim shallow exposed bedrock areas to the planned final land use for the mine site.	<ul style="list-style-type: none"> ■ Shape the perimeter of the shallow bedrock areas to a suitable gradient; ■ In-fill with available/suitable material "deep" cavities that could pose a safety risk; and ■ Create randomly spaced clusters of vegetation using a different suite of plants, adapted to rocky outcrops.
Deep bedrock areas	To reclaim deep exposed bedrock areas to the planned final land use for the mine site.	<ul style="list-style-type: none"> ■ In-fill the void areas with available material to emulate the surrounding surface topography as far as possible; and ■ Ensure that the surface soil is a suitable growth medium, and has a rough surface topography.
	To render shallow (less than 3 m high) benches safe and aligned to the planned final land use of the mine site.	<ul style="list-style-type: none"> ■ Shape shallow high walls to a suitable gradient; and ■ Re-vegetate the shaped areas.
Topic	Objective	Measure
	To reclaim deep exposed bedrock areas to the planned final land use for the mine site.	<ul style="list-style-type: none"> ■ Shape high walls to a suitable gradient; and ■ Re-vegetate the shaped areas.
	To render high walls (exceeding 3 m in height) safe and aligned to the planned final land use of the mine site.	
	To render the spoils stable in the long-term and aligned to the planned final land use of the mine site	<ul style="list-style-type: none"> ■ Doze and/or load and haul spoils into available voids; ■ Profile the remaining spoils to suitable outer slopes and integrate the shaped outer slopes with the shaped upper surface; ■ Apply growth medium from stockpiled areas to a thickness of approximately 300 mm; and ■ Re-vegetate the shaped outer slopes and upper surface.
Aesthetic quality	To ensure that the reclaimed mine site will display, at a minimum, an acceptable aesthetic appearance that would not detract from the planned land use.	
Biodiversity		
Vegetation	To re-instate native species to create self-sustaining vegetation cover to stabilise disturbed/reclaimed areas against surface erosion and associated sediment mobilisation	<p>Disturbed areas < 50 m</p> <p>If the width of the disturbed area < 50 m and adjacent to natural vegetation, natural dispersal and succession is sufficient for restoration.</p> <p>Width of disturbed areas < 50 m but not adjacent to natural vegetation</p> <p>Seeds, seedlings and transplants of indigenous species, and soil ameliorates are to be added in a manner that benefits from ecological dynamics.</p> <p>Specifications to be determined by soil type and habitat.</p> <p>Indigenous shrubs include;</p>

Topic	Objective	Measure
		<ul style="list-style-type: none"> ■ <i>Drosanemum hispidum</i>; ■ <i>Lycium tetlandrum</i>; ■ <i>Artiplex cinerea</i>; ■ <i>Artiplex lindleyi</i>; ■ <i>Psilocaulon</i> spp; and ■ <i>Mesembryanternu</i> spp.
Animal life	To facilitate the re-introduction of animal life to the reclaimed site area	<ul style="list-style-type: none"> ■ To conduct surface reclamation and related work as required.
Progressive closure	To consider areas of the mine as these become available after reclamation for relinquishment and/or transfer to third parties if feasible to implement.	
Delineation/ selection of area	To select suitable reclaimed areas for progressive closure	<ul style="list-style-type: none"> ■ Confirm that the area under consideration is suitably reclaimed; ■ Confirm the planned land use and alignment with regional developmental initiatives; ■ Confirm aligned with sustainable development initiatives; ■ Compile business plan to confirm feasibility in transferred to third party, especially if to be used for commercial farming; and ■ Compile progressive closure plan, obtain approval and implement.
Stakeholder engagement	To establish and maintain a stakeholder forum to maintain communication between the mine and surrounding landowners as well as other key stakeholders on the mine's closure related initiatives.	<ul style="list-style-type: none"> ■ Establish a stakeholder forum for Namaqualand Mines initially based on the key stakeholders (communities and landowners) consulted with closure planning ■ Maintain the forum as required to provide input to at least the following: <ul style="list-style-type: none"> ■ Land use planning; ■ Sustainable development;

Topic	Objective	Measure
		<ul style="list-style-type: none"> ■ Re-use of surface infrastructure; ■ Mine closure planning; ■ Leasing of property/land and the eventual purchase of mine property; ■ Property values; and ■ Augment the above stakeholder engagement with proactive contributions/interaction with the district municipality on IDP formulation and sustainable development planning.
Transfer of surface infrastructure and land.	To transfer surface infrastructure and/or land to contribute to the socio economic stability and sustainable development of the region.	<ul style="list-style-type: none"> ■ Identify mine related surface infrastructure and or land becoming available as part of progressive closure that could be transferred to third parties; ■ Ensure that sale of land and/or the transfer of surface infrastructure is preferably to parties who are empowered towards efficient farming, chosen land use practices as well as capable to utilise and maintain transferred infrastructure; ■ In the event that the above could not be achieved, the fall back situation would be the following: <ul style="list-style-type: none"> ■ Disturbed areas would be reclaimed to grazing; and ■ Where possible, key biodiversity areas would be re-instated.
Land management	To ensure that land management is continued in a manner which is appropriate and takes into account principles of sustainable development.	<ul style="list-style-type: none"> ■ Ensure that sale of land is only granted to parties who are empowered towards efficient farming and/or chosen land use practices; ■ Ensure integration with regional land use practices; ■ Reclamation is continued towards ecological integrity; and ■ Ensuring the area is safe for animals and humans.

ii) Volumes and rate of water use required for the operation.

Not applicable for this specific project

iii) Has a water use licence been applied for?

Not applicable for this specific project

iv) Impacts to be mitigated in their respective phases

Only one phase – demolition is applicable and mitigation measures aim to address the following impacts where it is practically feasible:

- › Costs: Change in land use value
- › Disturbance: noise
- › Generation and accumulation of hazardous waste
- › Generation and accumulation of construction related waste
- › Generation of Dust
- › Loss of heritage artefacts or archaeological resources
- › Socio-economic: impact on tourism potential
- › Socio-economic: change in public infrastructure availability
- › Persecution of fauna - road kills
- › Costs: Change in land use value
- › Disturbance: noise
- › Generation and accumulation of hazardous waste
- › Generation and accumulation of construction related waste
- › Generation of Dust
- › Changes in surface water quality runoff
- › Loss of heritage artefacts or archaeological resources
- › Persecution of fauna - road kills
- › Ecological system impacts: Ecological process & function restoration

e) Impact Management Outcomes

A description of impact management outcomes, identifying the standard of impact management required for the aspects contemplated in paragraph ();

The following impact management outcomes are aimed for in the below impact management action plan.

1. Ensure vegetation establishment as soon as possible after clearing.
2. Limit dust impacts from traffic
3. Limit ecological impacts because of traffic
4. Prevent and manage soil contamination
5. Reduce noise impacts
6. Ensure safe removal of hazardous waste
7. Ensure safe and stable environments after demolition
8. Implement the best possible option of demolishing inter tidal infrastructure

Environmental Management Objective	Avoidance Measures	Reduction Measures	Remedial Measures	Monitoring Measures
Ensure vegetation establishment as soon as possible after clearing.	Demarcate all areas to prevent unnecessary vegetation clearance and peripheral damage		Establish vegetation on bare areas as soon as possible after demolition	
Limit dust impacts from traffic	Travel on demarcated roads only and apply dust suppressant or wetting agent to seal road surfaces	Maintain speed limits to reduce dust on site and in area.	Dust impacts cannot be remediated.	
Limit ecological impacts because of traffic	Ensure that construction activities are staggered and vehicular activities are kept to a minimum, during daylight hours only.	Vehicle speed should be limited to 40km per hour in areas with indigenous vegetation to reduce probability of road kills.	Where more than one roadkill is encountered, the area should be investigated for fauna breeding or migration and an alternative route considered.	
Prevent and manage soil contamination	Re-fuelling must take place on a sealed surface area to prevent ingress of hydrocarbons into topsoil.	It must be ensured that all hazardous storage containers in transport or storage comply with the relevant SABS standards to prevent leakage and pollution on site.	Any parking areas, refuelling areas or storage areas where soil is contaminated needs to be cleaned up and soil despatched to registered hazardous waste site or bio-remedial plant. Evidence of final disposal must be kept on site.	
Reduce noise impacts	Working hours to be agreed upon with Project anager, so as to minimize disturbance to landowners and community members. The noise generating construction phase	Adjacent landowners to the proposed activity will be notified of commencement of activities that would result in significant noise generation		

	activities shall be restricted to normal working hours, between 08h00 and 17h00			
Ensure safe removal of hazardous waste	Where asbestos materials are underground pipelilnes in a stable state, it is proposed that these not be dug up to become unstable and increase disturbance footprint of these areas	Follow standard operating procedures and method statements when removing asbestos materials All asbestos material will be removed to a registered hazardous waste site	Hydrocarbon waste and/or hydrocarbon polluted materials must be taken to bioremediation site or removed to registered hazardous waste site	Final photo evidence of areas where hazardous materials were removed should be kept
Ensure safe and stable environments after demolition	All fittings, metal works, littering must be removed from site	Areas should be assessed as clean and stable by a suitable person before contractor work is terminated.		Final photo evidence of areas demolished should be kept
Implement the best possible option of demolishing inter tidal infrastructure	The assessment of alternatives must be used as a basis for decision making when removing infrastructure affecting the inter-tidal zone	A marine ecologist, or alternative specialist as determined by the department, should be consulted regarding the implementation of the final alternative option for infrastructure at inter-tidal zones		Monitoring of inter-tidal areas should take place at least quarterly for one year after demolition to determine if any additional works are required to make area safe and stable

f) Impact Management Actions

A description of impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated in paragraphs (c) and (d) will be achieved

Table 30: Impact Management Outcomes and Actions for specific standards

ACTIVITIES	POTENTIAL IMPACT	ASPECT	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
Site access/roads	Destruction and/or disturbance of on-site fauna, flora and sensitive areas	Loss of fauna, flora & sensitive habitat	Construction		<ul style="list-style-type: none"> - Section 2 of the National Environmental Management Act 107 of 1998 - The conditions of the Environmental Authorisation and approved Environmental Management Programme - Section 21 of the National Water Act 36 of 1998 - Heritage Resources Act 25 of 1999 - Mine Health and Safety Act 29 of 1996 - Occupational Health and Safety Act 85 of 1993 - National Environmental Management Act 107 of 1998 as it relates to any listed activities. - National Environmental Management Waste Act 59 of 2008 - Noise Regulation Standards for Rural Areas - National Environmental Management: Air Quality Act, 2004 Dust Regulation guidelines for rural communities - Achieve rehabilitation objectives

ACTIVITIES	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	STANDARD TO BE ACHIEVED
Site access/roads	Potential destruction of heritage resources	Control through the clear delineation of the area.	Concurrently with the completion of demolition activities in the area.	<ul style="list-style-type: none"> - Section 2 of the National Environmental Management Act 107 of 1998 - The conditions of the Environmental Authorisation and approved Environmental Management Programme - Section 21 of the National Water Act 36 of 1998 - Heritage Resources Act 25 of 1999
Site access/roads	Poor access control resulting in un-authorised people entering the site	Control through the limiting of the activities to the day time and the implementation of an open and transparent channel of communication.	Concurrently with the completion of demolition activities in the area.	<ul style="list-style-type: none"> - Mine Health and Safety Act 29 of 1996 - Occupational Health and Safety Act 85 of 1993 - National Environmental Management Act 107 of 1998 as it relates to any listed activities.
Site access/roads	Activities within the watercourse could result in disturbance to the natural geomorphology and safety hazards during rainy periods	Control through the clear delineation of the demolition area.	Concurrently with the completion of demolition activities in the area.	<ul style="list-style-type: none"> - National Environmental Management Waste Act 59 of 2008 - Noise Regulation Standards for Rural Areas - National Environmental Management: Air Quality Act, 2004
Site access/roads	Useable infrastructure for future use	Mitigation through rehabilitation	Concurrently with the completion of demolition activities in the area.	<ul style="list-style-type: none"> Dust Regulation guidelines for rural communities
Site access/roads	Rehabilitation of access roads	Mitigation through rehabilitation	Concurrently with the completion of demolition activities in the area.	<ul style="list-style-type: none"> - Achieve rehabilitation objectives

ACTIVITIES	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	STANDARD TO BE ACHIEVED
Excavation of earth works / infrastructure	Destruction or disturbance of onsite fauna / livestock / wildlife	Control through the clear delineation of the area.	Concurrently with the completion of demolition activities in the area.	- Section 2 of the National Environmental Management Act 107 of 1998
Excavation of earth works / infrastructure	Water and soil pollution resulting from disposal of materials	Control through the clear delineation of the area. Control through the implementation of a soil management programme in terms of the correct topsoil removal, stockpiling and rehabilitation practices as discussed in the EMP. Control through the implementation of environmental induction and toolbox talks. Control through the implementation of the NWA GN704 water management principles.	Concurrently with the completion of demolition activities in the area.	- The conditions of the Environmental Authorisation and approved Environmental Management Programme - Section 21 of the National Water Act 36 of 1998 - Mine Health and Safety Act 29 of 1996 - Occupational Health and Safety Act 85 of 1993
Excavation of earth works / infrastructure	Rehabilitation of excavations	Mitigation through rehabilitation	Concurrently with the completion of demolition activities in the area.	- National Environmental Management Act 107 of 1998 as it relates to any listed activities. - National Environmental Management Waste Act 59 of 2008 - Achieve rehabilitation objectives

ACTIVITIES	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	STANDARD TO BE ACHIEVED
Ablution facilities	Potential water and soil pollution resulting from waste spills resulting from improper maintenance	<p>Control through the clear delineation of the demolition area.</p> <p>Control through the implementation of a soil management programme in terms of the correct topsoil removal, stockpiling and rehabilitation practices as discussed in the EMP.</p> <p>Control through the implementation of environmental induction and toolbox talks.</p> <p>Control through the implementation of the NWA GN704 water management principles.</p>	Concurrently with the completion of demolition activities in the area.	<ul style="list-style-type: none"> - Section 2 of the National Environmental Management Act 107 of 1998 - The conditions of the Environmental Authorisation and approved Environmental Management Programme - Section 21 of the National Water Act 36 of 1998 - Mine Health and Safety Act 29 of 1996 - Occupational Health and Safety Act 85 of 1993 - National Environmental Management Act 107 of 1998 as it relates to any listed activities. - National Environmental Management Waste Act 59 of 2008
Waste management	Potential water and soil pollution resulting from improper waste storage and	<p>Control through the clear delineation of the area.</p> <p>Control through the implementation of a soil</p>	Concurrently with the completion of demolition activities in the area.	<ul style="list-style-type: none"> - Section 2 of the National Environmental Management Act 107 of 1998

	<p>management</p>	<p>management programme in terms of the correct topsoil removal, stockpiling and rehabilitation practices as discussed in the EMP.</p> <p>Control through the implementation of environmental induction and toolbox talks.</p> <p>Control through the implementation of the NWA GN704 water management principles.</p>		<ul style="list-style-type: none"> - The conditions of the Environmental Authorisation and approved Environmental Management Programme - Section 21 of the National Water Act 36 of 1998 - Mine Health and Safety Act 29 of 1996 - Occupational Health and Safety Act 85 of 1993 - National Environmental Management Act 107 of 1998 as it relates to any listed activities. - National Environmental Management Waste Act 59 of 2008
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ACTIVITIES	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	STANDARD TO BE ACHIEVED
Re-Fuelling and maintenance	Potential water and soil pollution resulting from hydrocarbon spills and hazardous waste storage	<p>Control through the clear delineation of re-fuel and maintenance areas.</p> <p>Control through the implementation of a soil management programme in terms of the correct topsoil removal, stockpiling and rehabilitation practices as discussed in the EMP.</p> <p>Control through the implementation of environmental induction and toolbox talks.</p> <p>Control through the implementation of the NWA GN704 water management principles.</p>	Concurrently with the completion of demolition activities in the area.	<ul style="list-style-type: none"> - Section 2 of the National Environmental Management Act 107 of 1998 - The conditions of the Environmental Authorisation and approved Environmental Management Programme - Section 21 of the National Water Act 36 of 1998 - Mine Health and Safety Act 29 of 1996 - Occupational Health and Safety Act 85 of 1993 - National Environmental Management Act 107 of 1998 as it relates to any listed activities. - National Environmental Management Waste Act 59 of 2008

i) Financial Provision**(1) Determination of the amount of Financial Provision.*****(a) Describe the closure objectives and the extent to which they have been aligned to the baseline environment described under the Regulation.***

Please refer to table 19 for details of the closure objectives.

(b) Confirm specifically that the environmental objectives in relation to closure have been consulted with landowner and interested and affected parties.

The Basic Assessment Report and Environmental Management Plan are now made available to each registered stakeholder for review and comment. All comments will be recorded in the issues and response section and will be included into the final report. The existing closure plan has undergone a detailed environmental impact assessment public participation process of its own and was shared during that process as well.

(c) Provide a rehabilitation plan that describes and shows the scale and aerial extent of the main mining activities, including the anticipated mining area at the time of closure.

The existing closure and rehabilitation plan is appended to this application.

(d) Explain why it can be confirmed that the rehabilitation plan is compatible with the closure objectives.

The rehabilitation plan has been developed on the basis that the rehabilitated areas are safe, stable, and non-polluting and are able to support an ecosystem similar to the surrounding natural environment. Due to the nature of the activities, the impacts will be limited and of short duration. The closure objectives are achieved through these activities and the demolition works are seen as the initial phase of the rehabilitation works.

(e) Calculate and state the quantum of the financial provision required to manage and rehabilitate the environment in accordance with the applicable guideline.

Complete calculations are stated in Appendix G.

(f) Confirm that the financial provision will be provided as determined.

Namaqualand Mines raises provision for closure over the life-of-mine through the use of bank guaranteed cheques (Amended EMP for the Buffels Marine Right, 2012).

g) Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon, including

- a) Monitoring of Impact Management Actions**
- b) Monitoring and reporting frequency**
- c) Responsible persons**
- d) Time period for implementing impact management actions**
- e) Mechanism for monitoring compliance**

h) Indicate the frequency of the submission of the performance assessment/environmental audit report

Internal and external inspections will be conducted on a regular basis to confirm the compliance to this EMP.

EMP performance results and quantum update from these inspections will be reported to the relevant regulator according to the prescribed manner annually.

i) Environmental Awareness Plan**(1) Manner in which the applicant intends to inform his or her employees of any environmental risk which may result from their work.**

All employees and subcontractor staff involved with the project will undergo Safety-Health-Environmental Induction that is updated on a regular basis to adhere to changes in compliance requirements.

A Safety-Health-Environmental (SHE) representative is appointed for the working teams to assist in highlighting operational SHE issues while demolition takes place.

The reporting hierarchy for operational performance is also used to ensure environmental communication and awareness. Competent contractors are appointed with supervisors that can translate SHE risks to foremen and operating staff.

(2) Manner in which risks will be dealt with in order to avoid pollution or the degradation of the environment.

De Beers Consolidated Mines Pty (Ltd) will aim to apply a risk management system where risks are identified and rated.

Site inspections in terms of EMP compliance take place and will serve as a training opportunity.

Emergency procedures of risks are practiced at least annually and improvements made to ensure emergency preparedness and response is adequate to address environmental incidents.

Recommendations and Incident reporting of events takes place during site inspections and are addressed to ensure continual improvement of the environmental management on site.

j) Specific information required by the Competent Authority

.....
Among others, confirm that the financial provision will be reviewed annually
.....

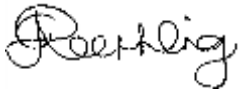
No specific information has been required by the Competent Authority.

2. UNDERTAKING

The EAP herewith confirms

- (a) the correctness of the information provided in the reports
- (b) the inclusion of comments and inputs from stakeholders and I&APs ;
- (c) the inclusion of inputs and recommendations from the specialist reports where relevant; and
- (d) that the information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected. parties are correctly reflected herein

Signature of the environmental assessment practitioner:



Name of company:
EndemicVision Environmental Services

Date:
07 February 2017

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ENDEMICVISION ENVIRONMENTAL SERVICES

Appendix A

QUALIFICATIONS OF EAP - CV

For the De Beers Demolition Works Basic Assessment Report and Environmental Management Plan

July 2017

ENDEMICVISION ENVIRONMENTAL SERVICES

Appendix B

LOCALITY MAP

For the De Beers Demolition Works Basic Assessment Report and Environmental Management Plan

July 2017

ENDEMICVISION ENVIRONMENTAL SERVICES

Appendix C

SITE PLAN

For the De Beers Demolition Works Basic Assessment Report and Environmental Management Plan

July 2017

ENDEMICVISION ENVIRONMENTAL SERVICES

Appendix D

PUBLIC PARTICIPATION RECORD

For the De Beers Demolition Works Basic Assessment Report and Environmental Management Plan

July 2017

ENDEMICVISION ENVIRONMENTAL SERVICES

Appendix E

COMPOSITE MAP

For the De Beers Demolition Works Basic Assessment Report and Environmental Management Plan

July 2017