PROPOSED MINING ON A PORTION OF THE FARM BYRON NO 9448, NEWCASTLE LOCAL MUNICIPAL AREA KWAZULU-NATAL PROVINCE

FINAL BASIC ASSESSMENT REPORT

DEPARTMENTAL REFERENCE NUMBER:

KZN 30/5/1/3/2/11072 MP

APRIL 2025

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EXECUTIVE SUMMARY

Mulilo Newcastle Wind Power (Pty) Ltd holds environmental authorisation (EA) for a wind energy complex (MNWP WEF) to be developed near Newcastle in KwaZulu-Natal. In support of the proposed development, the Applicant, Mulilo Newcastle Mining Rights (Pty) Ltd, applied for a mining permit and environmental authorisation from the Department of Mineral Resources and Energy (DMRE) for the development of a 4.9 ha quarry over the farm Byron No 9448 that forms part of the already approved wind energy complex.

The Applicant intends to extract aggregate, stone, and gravel from the mining area using opencast methods that will necessitate blasting to loosen the hard rock, crushing and screening of the material, and stockpiling. If needed the material will also be washed. From the stockpiles, the material will be transported to the construction sites of the MNWP WEF. The proposed mining area will be accessed via the internal roads planned and approved as part of the MNWP WEF projects. Haul roads into the excavation will be extended as mining progresses and the plant will be powered with generators. The proposed quarry will appoint ±15 employees, and due to the temporary nature and small scale of the operation no permanent infrastructure will be established at the mining area. Water will mainly be needed for dust suppression and the washing of the concrete aggregate. The Mulilo Newcastle Wind Power (Pty) Ltd received a General Authorisation from the DWS, for the water uses of the proposed MNWP WEF projects, that allows for the abstraction of water from boreholes. This borehole water will also be used at the proposed quarry.

The proposed mining project requires an EA & mining permit from the DMRE, and this report, the Final Basic Assessment Report, forms part of the departmental application requirements.

OUTCOME OF PROJECT ALTERNATIVES

a) <u>The property on which, or location where, it is proposed to undertake the activity.</u>

During the planning phase the Applicant identified five (5) potential mining areas that all lay within the footprint of the six land parcels of the MNWP WEF authorisation. Subsequently, the project proposal regarding the property/ies on which the proposed quarry will be developed was directed by the area/farm with the best mineral potential that will also have the least possible impact on the receiving environment. Geological input showed that the south-western part of the site (BP1) on farm Byron No 9448 has the best mineral potential, while the site position is also supported by the archaeologist, ecologist and soil specialist, and was therefore identified as the Preferred Property/Site Alternative for the development of the aggregate quarry in support of the MNWP WEF projects.

b) Type of activity to be undertaken.

The Applicant intends to extract aggregate, gravel and/or stone from the earmarked mining area in support of the MNWP WEF development. Alternative land uses of the earmarked area that could be considered is agriculture and conservation.

Although the MNWP WEF projects can co-exist with the grazing of the farms, the small losses for agriculture that will occur should the 4.9 ha quarry be developed can be offset against much greater royalties received by the landowner due to the development of the WEF and subsequent mining of the earmarked area compared to the income generated by the grazing of the earmarked footprint. As the area around the proposed mining footprint has already been approved for development, the potential use of the area for conservation purposes will, at least for the foreseeable future, be unattainable. Further to this, should the earmarked area be used for either conservation or agriculture, the dolerite resource will be sterilised, and the construction material needed at the MNWP WEF will have to be imported from alternative sources.

Considering this, mining of the earmarked area is deemed the most beneficial land use in this instance.

c) Design and layout of the activity.

The initial footprint of BP1 was ±12 ha that extended across the farms Geelhoutboom No 3350 RE & Portion 1, as well as Byron No 9448. The area was subsequently reduced to 4.9 ha that only extends over the farm Byron No 9448 and complies with the mining permit size requirements. Apart from the departmental requirements for a mining permit (5 ha), the opinion of the geologist and recommendations of the Vegetation and Wetland Assessment Opinion (VWA) also steered the final design/layout proposal (Figure 3).

d) Technology to be used in the activity.

The only technology applicable to this project is the use of the mobile crushing and screening plant to reduce the material to the sizes desired by the contractor/s, as well as the washing plant to clean concrete aggregate prior to use. This project does not require complex technology to allow the winning of the intended minerals, and therefore no technology alternatives were considered in the EIA process.

e) Operational aspects of the activity.

Due to the small scale of the proposed activity the operational requirement of the mine is lenient. The development of the farm Byron No 9448 was already approved as part of the EA of the

encompassing MNWP WEF projects that will be supplied with material from the proposed quarry; the use of water from the boreholes and construction near watercourses are generally authorised; and a land use zoning application is in process to allow for the change in land use of the earmarked farms. Should the mitigation measures proposed in this report be implemented no need for alternative operational aspects could be identified.

f) Option of not implementing the activity (No-go Alternative).

If the no-go alternative is implemented the land in question will not be mined by the Applicant and the material needed for the development of the MNWP WEF will have to be sourced from another supplier/s. The positive implications of the no-go alternative are that there will be no mining related impact on the bio- and geophysical environment of the earmarked area. However, the specialist studies did not identify any reason why the proposed development cannot proceed, nor did the EIA identify any fatal flaws. If care is taken to mitigate the potential impacts, regardless of the low ecological and migratory status of the site the no-go alternative is not supported for this project.

PUBLIC PARTICIPATION PROCESS

The relevant landowner, stakeholders and I&AP's were informed of the mining permit application by means of an advertisement in the Newcastle Advertiser, and on-site notices that were placed at conspicuous places. A notification letter inviting comments on the DBAR over a 30-days commenting period (ending 02 April 2025) was sent to the landowner, neighbouring landowners, and stakeholders.

The initial applicant for this application was Mulilo Newcastle Wind Power (Pty) Ltd. However, during the Environmental Impact Assess (EIA) process, the company changed its name to Mulilo Newcastle Mining Rights (Pty) Ltd. All relevant parties, including the landowner, stakeholders and I&AP's, were subsequently informed of the name change, and the application continues under the new name, Mulilo Newcastle Mining Rights (Pty) Ltd.

The comments received during the public participation period were incorporated into this report, the final Basic Assessment Report (FBAR), to be submitted to the DMRE for consideration.

BASIC ASSESSMENT REPORT

The basic assessment report identifies the potential positive and negative impacts that the proposed activity will have on the environment and the community as well as the aspects that may impact on the socio-economic conditions of directly affected persons and proposes possible mitigation measure that could be applied to modify / remedy / control / stop the identified impacts.

The key finding of the environmental impact assessment entail the following:

a) Topography

- ❖ Mining the proposed quarry into the western face of the hill should create an excavation with more or less three faces that will be benched as the mining depth increases.
- ❖ The MNWP WEF contractors may use the excavation, at the end of the pits life, as a spoil site for inert rubble and soil, but this may not be enough to refill the quarry pit. The rehabilitation proposal is therefore (upon closure) to render the quarry safe and leave it as a minor landscape feature. If the proposed closure actions, as prescribed in the EMPR, are implemented the impact on the topography of the specific area is deemed of low significance.

b) Visual Characteristics

- ❖ The viewshed analyses shows that the proposed visual impact will be of very low concern as the mining area will only be visible from the high laying areas north of the development.
- ❖ Should both the mining permit area and the MNWP WEF projects (separately authorised) be established on site, the cumulative visual impact that both projects may have on the receiving environment is deemed to be of medium significance.

c) Air and Noise Quality:

- ❖ The proposed activity does not require an air emissions licence.
- ❖ Should the Applicant implement the proposed mitigation measures the impact on the air quality of the surrounding environment is deemed to be of low significance.
- ❖ Should both the mining permit area and the construction of the MNWP WEF take place simultaneously, the cumulative dust nuisance on the receiving environment (after mitigation) is deemed to be of low-medium significance.
- ❖ Although the proposed activity will have a cumulative impact on the ambient noise levels, the development will be temporary and take place in an area that was already approved for the construction of the MNWP WEF, and the impact is therefore deemed compatible with the future operations and of low-medium significance.

d) Hydrology

- ❖ A stream is situated ±90 m to the north-west of the site (BP1), while a drainage line is situated ±40 m to the south-west. The stream and drainage line are highly sensitive, though are not situated on or near the site and therefore only relevant in terms of any indirect impacts the development may still have on them. The stream and drainage line should be treated as no-go areas.

- BP1 is situated within the Northern Drakensberg Strategic SWSA as well as the NPAES: Moist Escarpment Grassland Focus Area. In both instances, the proposed quarry development is unlikely to have any significant impact, both in terms of the regional water source and any future expansion of protected areas, largely as a result of its small footprint and therefore limited impact.
- A buffer of 47 m should be maintained from the edge of the riparian zone along the watercourses. This buffer area should be treated as a no-go area.
- The necessary authorisations must be acquired from the DWS for mining activities within 100 m of any of the delineated watercourses.
- Should the mitigation measures proposed in this document be implemented the proposed project is expected to have a Low impact on the hydrology of the receiving environment.

e) Terrestrial Biodiversity (including fauna and flora)

- BP1 consists of natural grassland which is in a fairly good condition. The species diversity is moderate although the area does contain a significant number of protected plant species which contribute towards its conservation value. Significant mitigation have to be implemented to ensure the impact on these elements of significant conservation value is decreased.
- BP1 is not listed as a CBA, ESA or important habitat for threatened species and is not considered essential for meeting conservation targets.
- It is recommended that a walkthrough survey be conducted prior to the site being mined. This should include identification and marking of all protected plants on the site.
- The necessary plant removal permits must be obtained from Ezemvelo prior to commencement. The surrounding proposed MNWP WEF has already initiated a protected species transplanting process and the mining permit application area can be incorporated into this process.
- Should the mitigation measures proposed in this document be implemented the ecologist supports the mining of the proposed BP1 footprint.

f) Archaeology, Cultural, Heritage and Palaeontology Environment

- The HIA found that only BP5 is located near heritage sites.
- The palaeontologist noted that the dolerite to be mined is a non-fossiliferous and no PIA mitigation will be required.
- The specialist concluded that the chances of heritage sites occurring within the study area (BP1) are very low and no further mitigation is required.

g) Existing Infrastructure

- No infrastructure exists in the proposed 4.9 ha footprint of BP1, nor are there infrastructure in proximity to the proposed footprint apart from the boundary fence. Should the mitigation measures proposed in this document be implemented the existing infrastructure on the farm will be safeguarded against mining related impacts.

ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR)

The EMPR provides a description of the impact management outcomes and closure objectives. It presents the impacts to be mitigated in their respective phases as well as stipulates the mitigation measures to be applied on site.

The financial provision amount that will be necessary for the rehabilitation of damages caused by the operation, both sudden closures during the normal operation of the project and at final, planned closure gives a sum of R 511 097.80.

LIST OF ABBREVIATIONS

ACS	Agricultural Compliance Statement
ADM	Amajuba District Municipality
ADT	Articulated Dump Truck
AMAFA	Heritage Kwazulu-Natal
ASTM	American Standard Test Method
BGIS	Biodiversity GIS
BP	Borrow Pit
BSR	Biodiversity Sensitivity Rating
CARA	Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)
CBA	Critical Biodiversity Area
DARD	Department of Agriculture and Rural Development
DBAR	Draft Basic Assessment Report
DEDTEA	Department of Economic Development, Tourism and Environmental Affairs
DFFE	Department of Forestry, Fisheries and Environment
DMRE	Department of Mineral and Resources and Energy
DoE	Department of Energy
DoL	Department of Labour
DoT	Department of Transport
DPW	Department of Public Works
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EIA Regulations	Environmental Impact Assessment Regulations, 2014 (as amended)
EIS	Ecological Importance and Sensitivity
EMPR	Environmental Management Programme
ESA	Ecological Support Areas
EZEMVELO	KZN Wildlife
FBAR	Final Basic Assessment Report
GA	General Authorisation
GDP	Gross Domestic Product
GNR	Government Notice
GPS	Global Positioning System
HDSA	Historically Disadvantaged South Africans

HGM	Hydrogeopmorphic
HIA	Heritage Impact Assessment
HSA	Hazardous Substances Act, 1973 (Act No. 15 of 1973)
I&AP's	Interested and Affected Parties
IDP	Integrated Development Plan
IHI	Index of Habitat Integrity
IRP	South African Integrated Resource Plan (IRP 2018)
KZN BP	KwaZulu-Natal Biodiversity Plan
LC	Least Concern
LSU	Large Stock Unit
MHSA	Mine Health and Safety Act, 1996 (Act No. 29 of 1996)
MNWP WEF	Mulilo Newcastle Wind Power (Pty) Ltd Wind Energy Facility
MP	Mining Permit
MPRDA	Minerals and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEM:AQA	National Environmental Management: Air Quality Control Act, 2004 (Act No. 39 of 2004)
NEM:BA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
NEM:WA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
NERSA	National Energy Regulator of South Africa
NFA	National Forest Act, 1998 (Act No. 84 of 1998)
NFEPA	National Freshwater Ecosystem Priority Areas
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NLM	Newcastle Local Municipality
NPAES	Nationals Protected Area Expansion Strategy
NRTA	National Road Traffic Act, 1996 (Act No. 93 of 1996)
NSR	Noise-sensitive Receptors
NWA	National Water Act, 1998 (Act No. 36 of 1998)
OHSA	Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)
OHSAS	Occupational Health and Safety Management Systems
PCB's	Polychlorinated Biphenyl
PCO	Pest Control Officer
PES	Present Ecological State
PIA	Palaeontological Impact Assessment
PNCO	Natal Nature Conservation Ordinance No 15 of 1974

PPE	Personal Protective Equipment
PV	Photovoltaic
REIPPPP	Renewable Energy Independent Power Producer Procurement Programme
RLE	Red List of Ecosystems
SACAD	South African Conservation Areas Database
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SAMBF	South African Mining and Biodiversity Forum
SANLC	South African National Land-Cover
SANRAL	South African National Roads Agency SOC Ltd
SANS	South African National Standards
SAPAD	South African Protected Areas Database
SCA	Systematic Conservation Assessments
SDS	Safety Data Sheet
SWSA	Strategic Water Source Area
TSCP	Terrestrial Systematic Conservation Plan
USBM	US Bureau of Mines
VWA	Vegetation and Wetland Assessment
WMA	Water Management Area

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

mineral resources
Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

BASIC ASSESSMENT REPORT

And

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

SUBMITTED FOR ENVIRONMENTAL AUTHORIZATION IN TERMS OF THE NATIONAL ENVIRONMENTAL 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:	Mulilo Newcastle Mining Rights (Pty) Ltd
TEL NO:	078 325 4342
FAX NO:	-
POSTAL ADDRESS:	Suite 53, Private Bag X21, Howard Place, Western Cape, 8001
PHYSICAL ADDRESS:	21st Floor, Portside, 5 Buitengracht Street, Cape Town
FILE REFERENCE NUMBER SAMRAD:	KZN 30/5/1/3/2/11072 MP

IMPORTANT NOTICE

In terms of the Mineral and Petroleum Resources Development Act (Act 29 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 can 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.

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 these aspects to determine:

  (i) the nature, signification, 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

1. CONTACT PERSON AND CORRESPONDENCE ADDRESS

a) Details of: Greenmined Environmental (Pty) Ltd

In terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) the proponent must appoint an independent Environmental Assessment Practitioner (EAP) to undertake the environmental impact assessment (EIA) of any activities regulated in terms of the Act. Mulilo Newcastle Mining Rights (Pty) Ltd (hereafter referred to as the "Applicant") appointed Greenmined Environmental (Pty) Ltd (hereafter referred to as "Greenmined") to undertake the study needed. Greenmined has no vested interest in Mulilo Newcastle Mining Rights (Pty) Ltd or the proposed project and declares its independence as required by the Environmental Impact Assessment Regulations, 2014 (as amended) (EIA Regulations).

i) Details of the EAP

Name of the Practitioner:	Ms Christine Fouché (Senior Environmental Specialist)
Tel No.:	021 851 2673
Cell No:	082 811 8514
Fax No.:	086 546 0579
E-mail address:	christine.f@greenmined.co.za

ii) Expertise of the EAP.

(1) The qualifications of the EAP
(with evidence).

Ms. Fouché has a Diploma in Nature Conservation and a B.Sc. in Botany and Zoology. Full cirriculum vitae with evidence is attached as Appendix M.

(2) Summary of the EAP's past experience.
(In carrying out the Environmental Impact Assessment Procedure)

Ms Fouché has twenty years' experience doing Environmental Impact Assessments in South Africa. Ms. Fouché is a registered Environmental Assessment Practitioner (registration no: 2019/1003) with EAPASA (Environmental Assessment Practitioners Association of South Africa). See a list of past projects attached as Appendix M.

b) Location of the overall Activity.

Table 1: Property description.

Farm Name:	Byron No 9448
Application area (Ha)	4.9 ha
Magisterial district:	Newcastle Local Municipality Amajuba District Municipality
Distance and direction from the nearest town	The proposed project area is approximately 24 km north-west of the town of Newcastle in the KwaZulu-Natal Province. Using the R34 leaving Newcastle towards Memel, the entrance is ±20 km from Newcastle on the left-hand side.
21 digit Surveyor General Code for each farm portion	N0HS00000000944800000

c) Locality map

(show nearest town, scale not smaller than 1:250000).

The requested map is attached as Appendix B.

Figure 1: Locality of the proposed mining footprint (blue polygon) in relation to the surrounding area, where the R34 public road passes the site to the north and the white polygon indicates the farm boundaries (Image obtained from Google Earth).

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 aforesaid main and listed activities, and infrastructure to be placed on site

The Applicant, Mulilo Newcastle Mining Rights (Pty) Ltd, (formerly known as Mulilo Newcastle Wind Power (Pty) Ltd), applied for environmental authorisation and a mining permit to mine aggregate, gravel and stone from 4.9 ha of the farm Byron No 9448 in the Amajuba Magisterial District of the KwaZulu-Natal Province.

The Applicant intends to extract the mineral from the mining area using opencast methods. The proposed mining method will make use of blasting to loosen the hard rock; the material will then be loaded and hauled to the crushing plant where it will be screened to various sized stockpiles. If needed the material will be washed upon which it will be stockpiled until it is used as part of the construction phase of the MNWP WEF projects (refer to *Part A(1)(d)(ii) Description of the activities to be undertaken* for a full description of the proposed activity).

The proposed MP project will therefore entail the:

1. site establishment and infrastructure development;
2. stripping and stockpiling of topsoil from the proposed mining footprint area;
3. blasting and excavation of the mining area;
4. crushing and screening of the loosened material at the processing plant;
5. washing of material (when needed), and
6. stockpiling the product until used at the MNWP WEF projects.

The proposed mining area will be reached via the internal roads planned and approved as part of the MNWP WEF projects. Haul roads into the excavation will be extended as mining progresses.

The proposed quarry will appoint ±15 employees, and due to the temporary nature and small scale of the operation no permanent infrastructure will be established at the mining area. The Applicant plans to establish the following mobile/temporary infrastructure within the mining footprint:

1. Chemical ablution facilities to be serviced by a registered contractor;
2. Crushing and screening plant (mobile);
3. Diesel tank (capacity less than 50 000 l);
4. Washing plant and water sump (temporary); and
5. Workshop and storage containers.

See attached as Appendix C a copy of the site activities map for the proposed project.

Upon commencement, the proposed project will trigger listed activities (see following table) in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) and the Environmental Impact Assessment Regulations 2014 (as amended) and therefore requires an environmental impact assessment (basic assessment process) that assess project specific environmental impacts and alternatives, consider public input, and propose mitigation measures, to ultimately culminate in an environmental management programme that informs the competent authority (Department of Mineral Resources and Energy) when considering the environmental authorisation.

i) Listed and specified activities

Table 2: Listed and specified activities triggered by the associated mining activities

NAME OF ACTIVITY (E.g. For prospecting – drill site, site camp, ablution facilities, accommodation, equipment storage, sample storage, site office, access route etc... etc... etc E.g. for mining – excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)	**Aerial extent of the activity** Ha or m^2	**LISTED ACTIVITY** Mark with an X where applicable or affected	**APPLICABLE LISTING NOTICE** (GNR 324, GNR 325, GNR 326 OR GNR 327)
Demarcation of site with visible beacons.	4.9 ha	N/A	Not listed
Site establishment and infrastructure development.	±1 ha	X	GNR 983 Listing Notice 1 of 2014 (as amended) – Activity 21: *Any activity including the operation of that activity which requires a mining permit in terms of section 27 of the Mineral and Petroleum Resources Development Act, as well as any other applicable activity as contained in this Listing Notice or in Listing Notice 3 of 2014, required to exercise the mining permit.*
Stripping and stockpiling of topsoil and/or overburden.	±3.9 ha	X	
Drilling and blasting.	±3.9 ha	X	
Excavation, loading and hauling to processing area.	±3.9 ha	X	
Crushing, washing, stockpiling, and transporting of material.	±1 ha	X	
Sloping and landscaping upon closure of the mining area.	4.9 ha	X	

NAME OF ACTIVITY	Aerial extent of the activity	LISTED ACTIVITY	APPLICABLE LISTING NOTICE
Replacing the topsoil and vegetating the disturbed area.	4.9 ha	X	

ii) Description of the activities to be undertaken

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

BACKGROUND INFORMATION

Mulilo Newcastle Wind Power (Pty) Ltd (MNWP) holds two environmental authorisations for a wind energy complex near Newcastle in KwaZulu-Natal namely the:

1. **Mulilo Newcastle Wind Power WEF with DFFE Reference Number: 14/12/16/3/3/2/2457.**

   MNWP proposes to develop, construct and operate the 200 MW MNWP Wind Energy Facility (WEF) as part of the Mulilo Newcastle WEF Complex located near Newcastle in KwaZulu-Natal. The MNWP WEF will comprise of up to 35 wind turbines and will have an anticipated lifespan of 20 – 25 years. The WEF will be located on six (6) land parcels with a total extent of 2,940 ha.

2. **Mulilo Newcastle Wind Power 2 WEF with DFFE Reference Number: 14/12/16/3/3/2/2458.**

   Mulilo Newcastle Wind Power 2 WEF proposes to develop, construct and operate the 160 MW Mulilo Newcastle Wind Power 2 (MNWP 2 WEF) as part of the Mulilo Newcastle Wind Energy Facility (WEF) Complex located near Newcastle in KwaZulu-Natal. The MNWP 2 WEF will comprise up to 16 wind turbines and will have an anticipated lifespan of 20 – 25 years. The WEF will be located on eight (8) land parcels with a total extent of 1,626 ha.

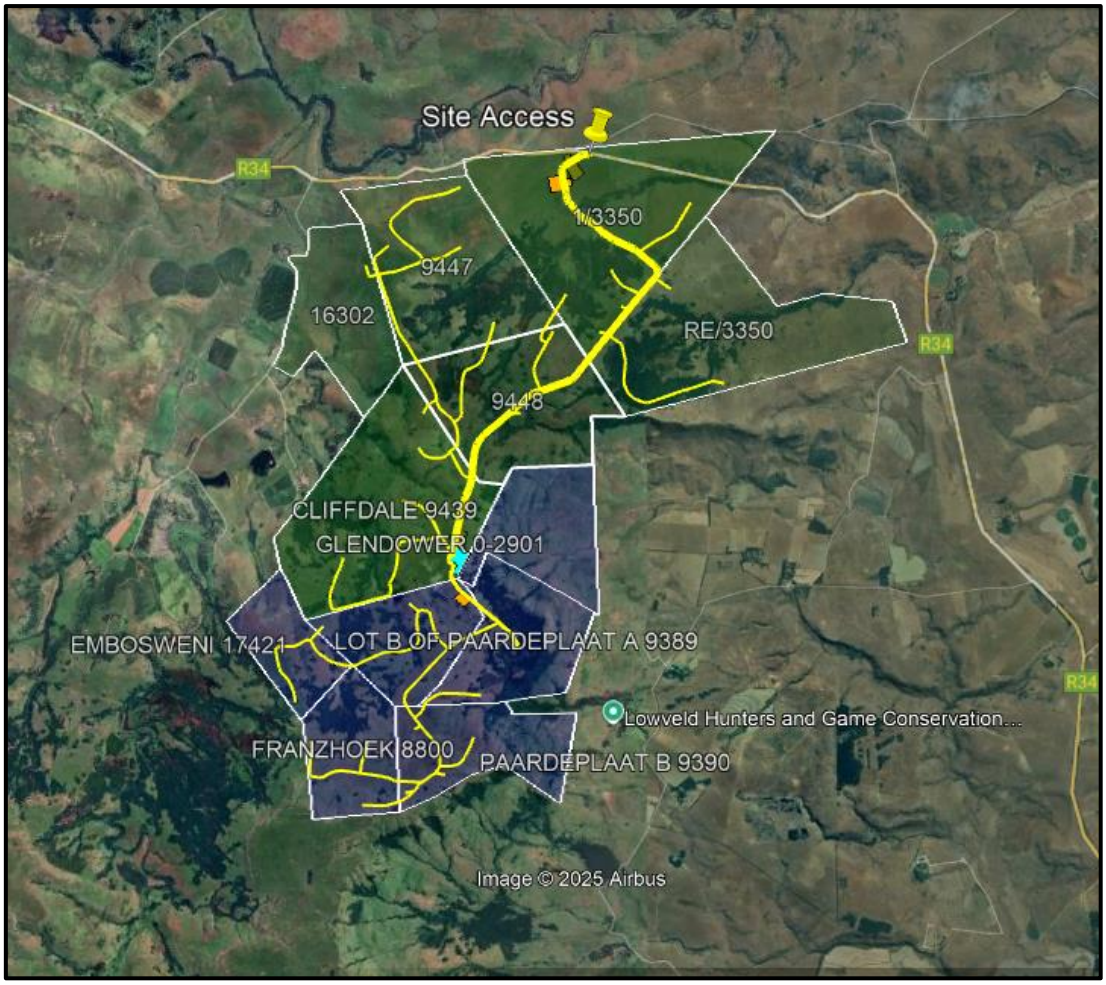


Figure 2: Satellite view showing the location of the MNWP WEF projects where the green polygons indicate MNWP WEF and the purple polygons show the location of MNWP 2 WEF. The yellow lines indicate the road infrastructure (image obtained from Google Earth).

PROJECT PROPOSAL

Considering the above, the Applicant applied for a mining permit (MP) and environmental authorisation (EA) from the Department of Mineral Resources and Energy (DMRE) for the development of a 4.9 ha quarry on the above mentioned property that will supply aggregate, gravel, and stone for the construction of the Mulilo Newcastle Wind Power WEF (MNWP WEF) projects. The following table lists the GPS coordinates of the proposed mining area as shown on the Regulation 2.2 Mine Plan (Appendix A).

Table 3: GPS Coordinates of the proposed mining footprint

NUMBER	DEGREES, MINUTES, SECONDS		DECIMAL DEGREES	
	LAT (S)	LONG (E)	LAT (S)	LONG (E)
A	27º39’32.28”	29º48’54.46”	-27.658966º	29.815127º
B	27º39’37.61”	29º48’58.49”	-27.660446º	29.816247º
C	27º39’44.90”	29º48’50.70”	-27.662473º	29.814083º
D	27º39’37.88”	29º48’49.05”	-27.660521º	29.813626º

The following satellite images shows the location of the proposed mining area (blue polygon) in relation to the surrounding landscape and MNWP WEF projects.

Figure 3: Satellite view showing the location of the MP application area (blue polygon) in relation to the surrounding area where the white lines indicate the farm boundaries (image obtained from Google Earth).

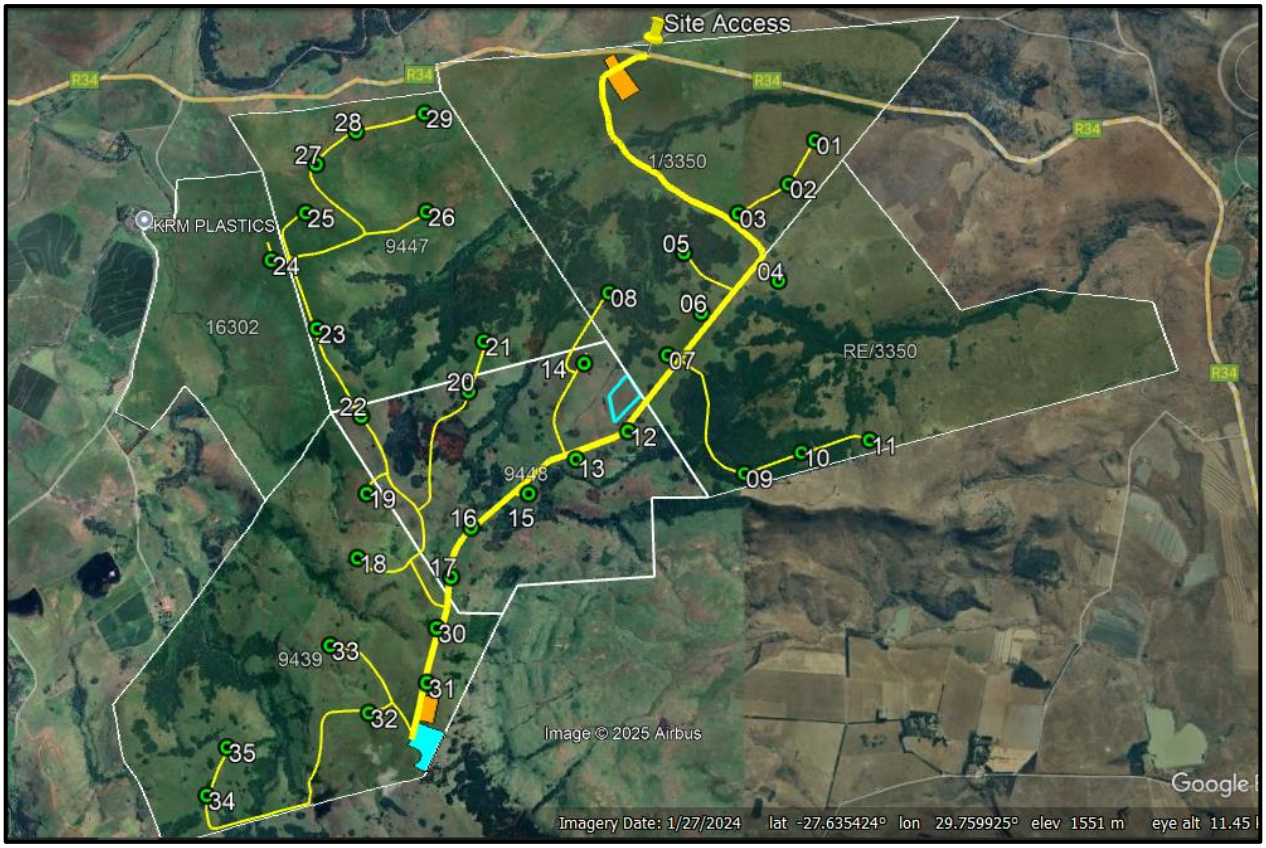


Figure 4: Satellite view showing the location of the MP application area (blue polygon) in relation to the MNWP WEF project layout (image obtained from Google Earth).

Should the relevant authorisations be granted, and the mining activity be allowed, the proposed project will comprise of activities that can be divided into three key phases (discussed in more detail below) namely the:

(1) *Site establishment/construction phase* which will involve the demarcation of the site boundaries. Site establishment will further entail the demarcation of the 47 m buffer around the identified watercourses, the relocation of the protected plants (discussed in more detail later in the report), clearing of vegetation, stripping and stockpiling of topsoil, and the introduction of the mining machinery and equipment.

(2) *Operational phase* that will entail opencast mining. The mining method will make use of blasting to loosen the hard rock; upon which the loosened material will be transported to the crushing and screening processing plant where it will be screened to various sized stockpiles. When necessary, the material will be washed at an on-site washing plant prior to use. The material will be stockpiled until it is transported from the mining area to the relevant MNWP WEF construction sites.

(3) *Decommissioning phase* which entails the rehabilitation of the affected environment prior to the submission of a closure application to the Department of Mineral Resources and Energy (DMRE). The permit holder will further be responsible for the seeding of all rehabilitated areas. Once the full mining area is rehabilitated, the mining permit holder will be required to submit a closure application to the DMRE in accordance with section 43(4) of the MPRDA, 2002. The Closure Application will be submitted in terms of Regulation 62 of the MPRDA, 2002, and Government Notice 940 of NEMA, 1998 (as amended).

1. SITE ESTABLISHMENT PHASE

Site establishment entails the demarcation of the mining boundaries, the buffer area and the relocation of the identified protected plants, clearance of vegetation, and stripping and stockpiling of topsoil and overburden (if necessary) to access the mineral as detailed below:

- **Demarcation of Mining Boundaries**

  Pursuant to receipt of the Environmental Authorisation (EA) and Mining Permit (MP), and prior to mining, the boundary of the mining area will be demarcated with visible beacons. Project specific areas to be demarcated within the boundary of the mining footprint may include, but not be limited to, the offices/workshop, stockpile and processing areas, and the excavation. Additional thereto, the 47 m buffer (Figure 25) around the identified watercourses will be demarcated and managed as a no-go area.

- **Access Road**

  The MNWP WEF projects necessitate the development/upgrade of the road network of the earmarked farms to support the proposed development. The environmental authorisation (EA) of the MNWP WEF EIA already allows for the construction/upgrading of the necessary roads. The Environmental Impact Assessment Report (EIAR) of the MNWP WEF notes the following regarding the road network (CES 2024):

  - Primary Access Roads: Site access will, where possible, make use of existing farm roads that will be upgraded and maintained for the life of the WEF. The existing roads to be upgraded will be expanded to a width of up to 9 m. New roads will be constructed (in areas where there are no existing

roads) with a final width of up to 9 m. In certain areas of steep slopes, the constructed road will require cut and fill which will extend the final 12 m total width of the road during operations. V-drains will run on both sides of the road.

- Internal Roads: Roads connecting the turbine positions will where possible make use of existing farm roads that will be upgraded and maintained for the life of the plant. The existing roads to be upgraded will be expanded to a width of up to 6 m. New roads will be constructed (in areas where there are no existing roads) with a width of up to 6 m and will connect all turbines. In certain areas of steep slopes, the constructed road will require cut and fill which will extend the final 9 m total width of the road during operations. V-drains will run on both sides of the road.

The development/upgrading of the proposed road network will be sufficient to allow access to the proposed mining area (BP1), and the mining development therefore does not require additional road related activities. The following figure shows the intended road network of the project in relation to the proposed mining area.

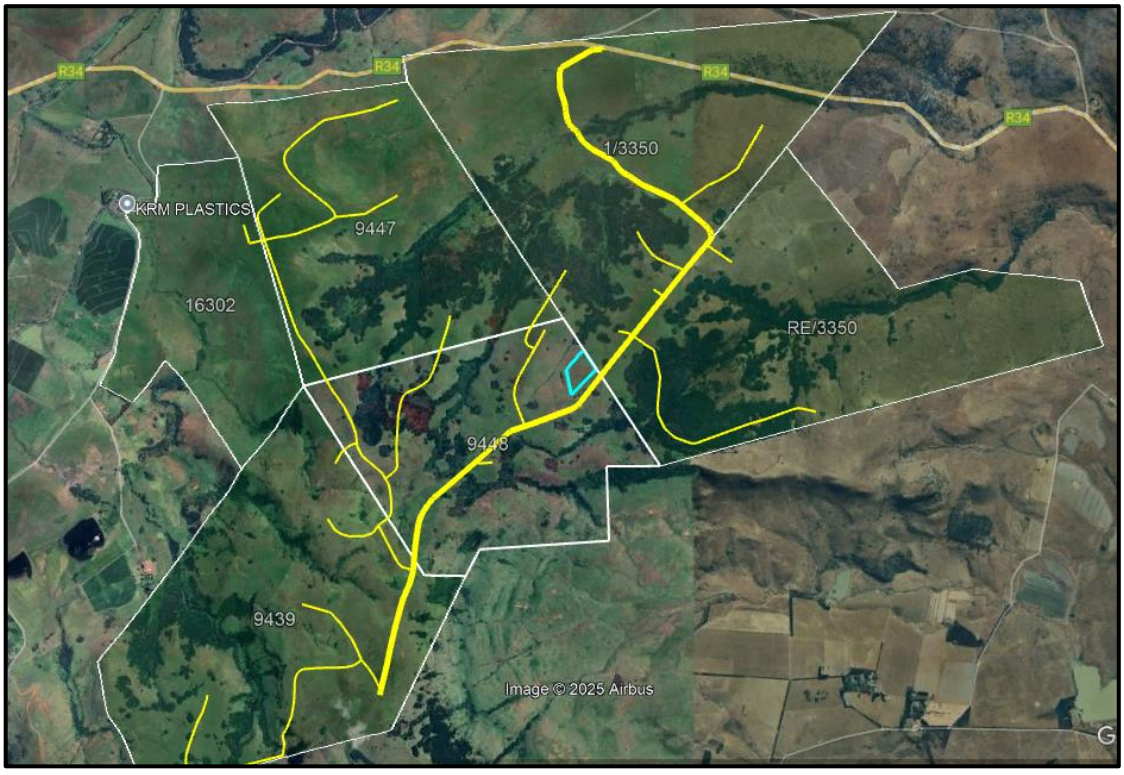


Figure 5: Satellite view showing the road network (yellow lines) of the MNWP WEF that will also grant access to the proposed mining area (blue polygon).

- **Clearing of Vegetation**

(Also refer to Part A(1)(h)(iv)(c) Description of specific environmental features and infrastructures on the site – Site Specific Terrestrial Biodiversity (including fauna and flora)

The vegetation type of the earmarked footprint consists of the Low Escarpment Moist Grassland (LC). The vegetation composition indicates a largely natural area which is still relatively unmodified. The grass layer consists of a diversity of species, with the majority being climax species. Several of the geophytic species on site are listed as protected and have a significant conservation value. Surface rock is present as boulders, and this also creates suitable habitat for scattered trees and shrubs.

Consequently the removal of vegetation will be necessary to access the resources. Where the development will affect the provincially protected plant species (geophytes) the Applicant will, prior to bush clearance, apply for relocation permits from Ezemvelo/KZN-Wildlife. Bush clearance will only commence upon receipt of the applicable plant permit and relocation of the said species. The surrounding proposed NMWF WEF has already initiated a protected species transplanting process and the mining permit application area will be incorporated into this process. The environmental control officer (ECO) will assess the compliance of the permit holder with the conditions of said permits.

- **Topsoil Stripping and Stockpiling**

It is proposed that topsoil removal will be restricted to the exact footprint of areas required during the operational phase of the activity. The topsoil will be stockpiled at a designated signposted area to be replaced during the rehabilitation of the area. It will be part of the obligations of site management to prevent the mixing of topsoil heaps with overburden/other soil heaps. The complete A-horizon (the top 100 – 200 mm of soil which is generally darker coloured due to high organic matter content) will be removed. If it is unclear where the topsoil layer ends the top 300 mm of soil will be stripped. The topsoil berm will measure a maximum of 1.5 m in height to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen.

- **Introduction of Mining Machinery and Site Equipment**

As mentioned earlier, the Applicant plans to establish mobile/temporary infrastructure within the mining footprint. It is proposed that the processing area

(including ablutions, mobile crusher, washing plant, workshop and storage containers) will occupy ±1 ha of the proposed 4.9 ha area. As no fixed/permanent infrastructure will be established, the production rate will dictate the layout of the proposed footprint area. The use of diesel and petrol on site will be below the threshold of the NEMA, 1998 EIA Regulations, 2014 (as amended).

Presently, the mining equipment/infrastructure is expected to consist of at least:

- ADT trucks;
- Chemical ablution facilities;
- Crushing and screening plant (mobile);
- Drilling equipment;
- Earthmoving- and excavating equipment;
- Generators;
- Washing plant and sump;
- Water truck;
- Workshop and storage containers.

2. OPERATIONAL PHASE

The Applicant applied for this environmental authorisation and mining permit in support of the MNWP WEF projects earmarked to commence in August 2025. The material to be generated at the proposed quarry will be used, by the contractors of the Applicant, as fill and construction material for the MNWP WEF projects and the quarry will therefore be of temporary nature, to be rehabilitated once the construction phase of the MNWP WEF is complete.

The Applicant intends to develop the earmarked site through the open-cast mining method. The hard rock of the quarry will be loosened by blasting, upon which it will be mechanically recovered with drilling-, excavating- and earthmoving equipment. The rock will then be delivered to the crushing and screening plant where it will be reduced to various sized gravels. The screened material will be delivered to various size category stockpiles. When necessary, the concrete aggregate will be washed at an on-site washing plant prior to use.

Transportation of the final product will be from the stockpile area to the MNWP WEF construction sites by means of trucks. The proposed quarry will appoint ±15 employees that will be sourced from the local municipal area and daily be

transported to site. Mining will take place from 07:00 to 18:00 Monday – Fridays, and no blasting will be done after hours or over weekends.

- **Water Use**

Water will mainly be needed for dust suppression and the washing of the concrete aggregate. The MNWP WEF project received a General Authorisation (GA) from the DWS for the water uses of the proposed projects that allows for the abstraction of water from the boreholes. Upon approval, this borehole water will also be used at the proposed quarry.

Approximately 60 000 l water will be needed per day for the washing of concrete aggregate for a period of ±6 months. The total water requirement of the mining project will be ±90 000 l/day when the washing plant is operational, and ±30 000 l/day when the plant is down. Water from the washing plant will drain into an earth sump from where it will be pumped back to the washing plant in a closed loop to lessen the abstraction need of the project. Upon closure of the mine the washing plant will be removed from site and the sump will be backfilled.

Dust generation will, as far as possible, be managed through alternative dust suppression methods to restrict water use to the absolute minimum. These measures will include a combination of the following:

- The speed of all mining equipment/vehicles will be restricted to 40 km/h on the internal farm road to minimize dust generation;
- Site management will attempt to lessen denuded areas (dust source) to the absolute minimum;
- Strips of used conveyor belts can be attached to the drop end of the crusher plant where crushed material falls onto the stockpiles. This lessens the blowing of fines from the minerals;
- Compacted dust will weekly be cleaned of the crusher plant to eliminate it as a dust source.

Under very windy/dusty conditions the permit holder might have to substitute the above mentioned dust suppression methods with the spraying of water, in which case a water truck will moisten the problem areas, and sprayers at the processing plant will moisten the material to alleviate dust generation at the

conveyor belts. The water truck driver will receive proper training to ensure effective use of the water on problem areas preventing water wastage.

(Also refer to Part B(1)(d)(vii) *Volumes and rate of water use required for the mining, trenching or bulk sampling operation*; Part B(1)(d)(viii) *Has a water use licence been applied for*).

- **Electricity Use**

Until a connection to the power network is available, the proposed project will make use of diesel generators to power the mining infrastructure. All generators will have secondary containment in the form of a bund wall/drip tray that can contain 110% of the generator's maximum capacity. The fuel needed to power the generators will be stored in a 50 000 l or smaller fuel tank with a build in drip tray. Drip trays will also be used when refuelling is required.

- **Servicing and Maintenance**

A workshop and storage containers will be established in the proposed mining area for servicing and emergency purposes. Routine maintenance of the equipment will however take place at the offsite MNWP WEF workshop. If emergency repairs are needed on equipment not able to move to the workshop, drip trays will be used under the machinery and all waste will be contained and removed from the emergency service area to the workshop to ensure proper disposal.

There will be no bulk storage of fuel (>80 000 l), and very little (if any) chemicals will be needed on site. Any chemicals/hazardous substances needed will be kept in the mobile storage containers, alternatively the products will be contained in the vehicles and removed from the site to the MNWP WEF workshop at the end of each day.

- **Waste Handling**

Solid (general) waste, generated during the operational phase, will be contained in sealable refuse bins that will be placed at the workshop area until the waste is transported to a registered general waste landfill site. A recognized contractor will service the chemical toilets that will serve as ablution facilities to the employees.

Due to the nature of the project very little generation of hazardous waste is expected and will mainly be the result of accidental spillages or breakdowns. Such contaminated areas will be cleaned up immediately (within two hours of the occurrence) and the contaminated soil will be contained in designated hazardous waste containers that will be kept in a bunded area with impermeable surface until it is removed from site by a registered hazardous waste handling contractor to an approved facility.

3. DECOMMISSIONING PHASE

The decommissioning phase will entail the reinstatement of the processing area by removing the stockpiled material, and site equipment/infrastructure and landscaping the disturbed footprint. Due to the impracticality of importing large volumes of fill to restore the quarry area to its original topography, the rehabilitation option is to develop the excavation into a minor landscape feature. This will entail creating a series of irregular benches along the quarry faces, the top edges of each face being blasted away to form scree slopes on the benches below, thereby reducing the overall face angle. The benches will be top-dressed with topsoil and vegetated with an appropriate indigenous grass mix if vegetation does not naturally establish in the area within six months of the replacement of the topsoil (see Appendix J for the Closure Plan).

The decommissioning activities will therefore consist of the following:

- Sloping and landscaping the excavation;
- Removing all stockpiled material;
- Removing all mining machinery and equipment from site;
- Landscaping all disturbed areas and replacing the topsoil;
- Vegetating the reinstated area; and
- Controlling/monitoring the invasive plant species.

Upon rehabilitation, the area around the excavation will be landscaped and form part of the MNWP WEF, and the planting of the indigenous grass layer (to protect the topsoil) will tie in with the proposed land use.

The Applicant will comply with the minimum closure objectives as prescribed by the DMRE and detailed below:

- Rehabilitation of the excavated area:

  The excavated area must serve as a final depositing area for the placement of overburden. Rocks and coarse material removed from the excavation must be dumped into the excavation.

  No waste may be permitted to be deposited in the excavations.

  Once overburden, rocks and coarse natural materials have been added to the excavation and it was profiled with acceptable contours and erosion control measures, the topsoil previously stored must be returned to its original depth over the area.

  The area must be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within 6 months from closure of the site.

  If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.

- Rehabilitation of processing area:

  Coarse natural material used for the construction of ramps must be removed and dumped into the excavations.

  Stockpiles must be removed during the decommissioning phase, the area ripped, and the topsoil returned to its original depth to provide a growth medium.

  On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002):

- Where sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.
- The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.

Photographs of the camp and office sites, before and during the mining operation and after rehabilitation, shall be taken at selected fixed points and kept on record for the information of the DMRE Regional Manager.

On completion of mining operations, the surface of these areas, if compacted due to hauling and dumping operations, shall be scarified to a depth of at least 200 mm and graded to an even surface condition. Where applicable/possible topsoil needs to be returned to its original depth over the area.

The area shall then be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local, adapted indigenous seed mix.

If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the DMRE Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a seed mix to his or her specification.

❖ <u>Final rehabilitation:</u>

Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation, seeding (if required) and maintenance, and invasive plant species clearing.

All mining equipment, and other items used during the mining period must be removed from the site (section 44 of the MPRDA).

Waste material of any description, including receptacles, scrap, rubble, and tyres, must be removed entirely from the mining area and disposed of at a recognized landfill facility. It will not be permitted to be buried or burned on the site.

The management of invasive plant species must be done in a sporadic manner during the life of the mining activities. Species regarded as Category 1a and

1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto) will be eradicated from the site.

Final rehabilitation shall be completed within a period specified by the Regional Manager.

Once the mining area was rehabilitated the permit holder is required to submit a closure application to the Department of Mineral Resources and Energy in accordance with section 43(4) of the MPRDA, 2002 that states: *"An application for a closure certificate must be made to the Regional Manager in whose region the land in question is situated within 180 days of the occurrence of the lapsing, abandonment, cancellation, cessation, relinquishment or completion contemplated in subsection (3) and must be accompanied by the prescribed environmental risk report".* The Closure Application will be submitted in terms of Regulation 62 of the MPRDA, 2002, and Government Notice 940 of NEMA, 1998 (as amended).

e) Policy and Legislative Context

Table 4: Policy and Legislative Context.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process)	**REFERENCE WHERE APPLIED**	**HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.** (E.g. in terms of the National Water Act a Water Use License has/has not been applied for)
Amajuba District Municipality Final Integrated Development Plan 2024 – 2025 / 2026 – 2027 (IDP).	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – *Socio-economic Environment.*	The description of the study area's socio-economic status is in accordance with that of the IDP.
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983). Subdivision of Agricultural Land Act, 1970 (Act No. 70 of 1970).	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity: *Physical Environment – Geology and Soil.* Part A(1)(h)(viii) The possible mitigation measures that could	The mitigation measures proposed for the site includes specifications of the CARA, 1983.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.
	be applied on the level of risk – *Management of invader plant species*.	
Electrical Machinery Regulations, 2011 of the Occupational Health and Safety Act, 1993 (Act No 85 of 1993)	Part A(1)(h)(iii) Summary of issues raised by I&AP's	The mining activities will be conducted in accordance with the said regulations.
Integrated Environmental Management Guideline: Guideline on Need and Desirability (2017).	Part A(1)(f) Need and desirability of the proposed activity.	The need and desirability of the proposed project was assessed in terms of this guideline.
KwaZulu-Natal AMAFA and Research Institute Act, 2018 (Act No 05 of 2018)	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – *Human Environment.* Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Archaeological, Heritage and Palaeontological Aspects*.	An application in terms of Section 41 of the said act was submitted on 11 March 2025 to AMAFA for their perusal.
KwaZulu-Natal Nature Conservation Ordinance No 15 of 1974	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity - *Biological Environment* Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Management of Vegetation Removal & Management of invader plant species*.	The Applicant will apply for relocation permits from Ezemvelo for the protected plants within the proposed footprint area.
Mine Health and Safety Act, 1996 (Act No 29 of 1996) read together with applicable amendments and regulations thereto including relevant OHSA regulations.	Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Management of Health and Safety Risks.*	The mitigation measures proposed for the site includes specifications of the MHSA, 1996

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.
Mineral and Petroleum Resources Development Act, 2002, (Act No. 28 of 2002) read together with applicable amendments and regulations thereto. ❖ Section 27	Part A(1)(d) Description of the scope of the proposed overall activity	Application for a mining permit submitted to DMRE-KZN. Ref No: KZN 30/5/1/3/2/11072 MP
National Environmental Management Act,1998 (Act No. 107 of 1998) and the Environmental Impact Assessment Regulations, 2014 (as amended) ❖ GNR 983 Listing Notice 1 of 2014 (as amended) - Activity 21	Part A(1)(d)(i) Listed and specified activities.	Application for environmental authorisation submitted to DMRE-KZN. Ref No: KZN 30/5/1/3/2/11072 MP
National Environmental Management: Air Quality Control Act, 2004 (Act No 39 of 2004) read together with applicable amendments and regulations thereto specifically the National Dust Control Regulations, GN No R827	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – *Air and Noise Quality.* Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Fugitive Dust Emission Mitigation Measures.*	The mitigation measures proposed for the site consider the NEM:AQA, 2004 and the National Dust Control Regulations.
National Environmental Management Act: Biodiversity Act, 2004 (Act No. 10 of 2004) read together with applicable amendments and regulations thereto.	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity - *Biological Environment* Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Management of Vegetation Removal & Management of invader plant species*.	The mitigation measures proposed for the site includes specifications of the NEM:BA, 2004.
National Environmental Management: Waste Act, 2008 (Act No 59 of 2008) read together with applicable amendments and regulations thereto.	Part A(1)(d)(ii) Description of the activities to be undertaken. Part A(1)(h)(viii) The possible mitigation measures that could	The mitigation measures proposed for the site consider the NEM:WA.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.
NEM:WA, 2008: National norms and standards for the storage of waste (GN 926)	be applied on the level of risk – *Waste Management*.	
National Forest Act, 1998 (Act No 84 of 1998)	Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Management of Vegetation Removal.*	The mitigation measures proposed for the site includes specifications of the NFA, 1998.
National Heritage Resources Act. 1999 (Act No 25 of 1999).	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – *Human Environment.* Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Archaeological, Heritage and Palaeontological Aspects*.	The mitigation measures proposed for the site includes specifications of the NHRA, 1999. An application in terms of Section 41 of the said act was submitted to AMAFA on 11 March 2025 for their perusal.
National Water Act, 1998 (Act No 36 of 1998) read together with applicable amendments and regulations thereto.	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – *Hydrology.* Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Mitigating the potential impact on the hydrology related features*. Part B(1)(d)(iii) Has a water use licence been applied for?	The mitigation measures proposed for the site includes specifications of the NWA, 1998. MNWP received a GA from the DWS for the water uses of the MNWP WEF projects. The development of the proposed quarry will be incorporated into the MNWP WEF GA.
Public Participation Guideline in terms of the NEMA EIA Regulations	Part A(1)(h)(ii) Details of the Public Participation Process Followed	Public participation was conducted in accordance with the guidelines published in terms of the NEMA EIA Regulations.
The South African Constitution	Implied throughout the document.	To be upheld throughout the EIA assessment, planning-,

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.
		construction-, operational- and decommissioning phases.

f) Need and desirability of the proposed activities.

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

PROJECT CONTEXT

(Information extracted from the Final Environmental Impact Assessment Report for the Mulilo Newcastle Wind Power (Pty) Ltd, Wind Energy Facility, Near Newcastle, KwaZulu-Natal Province, compiled by CES and dated February 2024)

The EIAR of the MNWP WEF (CES 2024) underlines the increasing pressure that is being placed on countries to reduce their reliance on fossil fuels, such as oil and coal, which contribute greenhouse gases (GHG) into the atmosphere and thus promote global climate change. Renewable energy resources such as wind energy facilities and solar PV farms are being implemented as alternative sources of energy at a global and national scale.

South Africa has recognised the need to expand electricity generation capacity within the country. This is based on national policy and informed by ongoing planning undertaken by the Department of Energy (DoE) and the National Energy Regulator of South Africa (NERSA). The draft of the South African Integrated Resource Plan (IRP 2018) present a new direction in energy sector planning. The plan included a shift away from coal, increased adoption of renewables and gas, and an end to the expansion of nuclear power. The IRP 2019 was Gazetted in October 2019 and makes provision for the procurement of 1.6 GW of wind energy per annum from 2020 to 2030. The implementation of the IRP constitutes significant progress in the transformation of the South African energy sector. To be in line with the Paris Agreement goals for mitigation, South Africa would still need to adopt more ambitious actions by 2050 such as expanding renewable energy capacity beyond 2030, fully phasing out coal by mid-century, and substantially limiting unabated natural gas use.

In addition to the above, South Africa has currently been experiencing severe electricity shortages causing frequent and prolonged loadshedding. Consequently, in 2023, Government gazetted the Disaster Management Act (57/2002): Regulations issued in terms of Section 27 (2) of the Act. The objects of these Regulations are to assist, protect

and provide relief to the public; to protect property; to prevent and combat disruption; and to deal with the destructive nature and other effects of the disaster by:

- Minimising the impact of load shedding on livelihoods, the economy, policing functions, National security, security services, education services, health services, water services, food security, communications and municipal services, amongst others;
- Reducing and managing the impact of load shedding on service delivery to support lifesaving and specified essential infrastructure;
- Providing measures to enable the connection of new generation of electricity; and
- Providing measures to **improve** Eskom's plant performance.

South Africa has a high level of renewable energy potential and presently has in place a target of 17,800 MW of renewable energy. The Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) has been designed to contribute towards the national target and towards socio-economic and environmentally sustainable growth, and to start and stimulate the renewable industry in South Africa.

Considering the above, the MNWP WEF intends to promote local economic growth and development through direct and indirect employment, as well as the identification and implementation of social development schemes during the project's operational phase. A local community trust will be established to ensure that funds are channelled to these social development schemes.

CES (2024) notes that the need and desirability of the MNWP WEF project can be demonstrated in the following main areas:

- Move to green energy due to growing concerns associated with climate change and the on-going exploitation of non-renewable resources;
- Security of electricity supply, where over the last few years, South Africa has been adversely impacted by interruptions in the supply of electricity; and
- Stimulation of the green economy where there is a high potential for new business opportunities and job creation.

The EIA of the MNWP WEF showed that the proposed wind energy project is consistent with various National, Provincial and local policies and programmes relating to economic and socio-economic development, infrastructure development (renewable energy) and climate change mitigation. The MNWP WEF projects will contribute to local developmental objectives of poverty eradication and other social and socio-economic benefits that are integral to the REIPPPP process.

Further positive social and socio-economic benefits will be realised by the landowners which will host turbines, in the form of rental income which in turn will have multiplier effects on the local economy due to local spend. In addition, farming activities can continue alongside the wind turbines, while rental income may also be used to enhance farming activities.

PROPOSED MINING PROJECT

The proposed MNWP WEF projects will require aggregate, gravel and/or stone from the proposed quarry for (amongst others) the:

- Concrete Batch Plant – Aggregate will be used in the batching of concrete during the construction phase;

- Gravel Roads – Gravel will be used to build and/or upgrade the internal roads of the MNWP WEF;

- Erosion Protection – Rock, stone and/or gravel will be needed to install erosion protection structures such dump rock and riprap to prevent scouring of watercourses, gabion baskets and/or reno-mattresses to dissipate flow, etc.

The earmarked mining area is ±6.5 km from the furthest corner of the MNWP WEF development footprint, while it will be ±3.5 km from the proposed on-site batching plant. The quarry material will be transported from the stockpile area to the construction sites and/or batch plant with trucks that will travel on the internal gravel roads of the MNWP WEF along short distances.

This will result in a reduced need for the transport of raw materials (needed for the construction of the MNWP WEF) along public roads. Transporting most of the required raw material from the proposed quarry along internal roads, will reduce the possibility of traffic incidents that is usually associated with delivery vehicles turning into/exiting construction sites. The use of materials from the immediate surroundings will further reduce the need for foreign materials to be brought to site. This is advantageous in that the distribution of plant species is controlled and the introduction of foreign and/or invasive species is reduced. Other advantages of mining the material from the MNWP WEF footprint include:

- Reduced transport costs that directly affects material costs and project feasibility;
- Reduced CO_2 emissions as the material will be transported over shorter distances;

- Impacts such as dust generation, noise and produce spillage is contained to an already approved construction site controlled through an EMPR;
- Improved security of the mining equipment and reduction in unauthorized entry of the mining area as the quarry is encircled by the MNWP WEF projects;
- The potential impact that overloading may have on the public roads is eliminated;
- Containing mining related impacts associated with blasting, crushing, screening and the washing of materials within the perimeters of a larger operation construction site lessens the potential of public complaints as the mining area will not occur near residences nor a pristine rural development;
- The excavation can at the end of the life of mine be used as spoil site for all spoil rock, sand, and/or soil (from the MNWP WEF construction sites) and this will assist in the rehabilitation of the quarry pit and supply the WEF contractors with a responsible spoil site within proximity of the construction sites, without the need of spoiling material at registered landfill sites;
- The landowner of the farm Byron No 9448 will be compensated for the use of the material mined from the proposed quarry.

INTEGRATED ENVIRONMENTAL MANAGEMENT GUIDELINE: GUIDELINE ON NEED AND DESIRABILITY (2017)

The need and desirability of the proposed project was assessed in terms of the National Department of Environmental Affairs' Guideline on Need and Desirability (first version published in terms of section 24J of the NEMA in 2014, and second version in 2017)). The following table shows the questions that were considered in this regard.

Table 5: Need and desirability determination.

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
How were ecological integrity considerations taken into account? How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity?	Kindly refer to the following discussions: ❖ *Part (A)(1)(h)(i) Details of the development footprint alternatives considered.* ❖ *Part (A)(1)(h)(iv) The Environmental attributes associated with the alternatives.* ❖ *Part (A)(1)(g) Motivation for the overall preferred site, activities, and technology alternative.* ❖ *Part (A)(1)(h)(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.* ❖ *Part (A)(1)(l)(i) Summary of the key findings of the environmental impact assessment.*	Desirable should the management and mitigation measures be implemented.
How will this development pollute and/or degrade the biophysical environment?	Due to the nature of the proposed activity, it is inevitable that the present vegetation cover of the earmarked footprint will eventually be removed to allow access to the dolerite resource, only to be replaced (to some extend) during the rehabilitation phase. Taking the above mentioned into consideration, the ecologist concluded that the project may be allowed if a fair representation of the protected species are relocated prior to bush clearance. Therefore, should the permit holder adhere to the conditions of the specialist report (incorporated into this report) it is believed that the impact on the biophysical environment is of acceptable significance.	
What waste will be generated by this development?	The general waste to be generated at the quarry will mainly consist of paper, plastic, tin, and/or glass from the daily operations of the employees. All general waste will be contained in sealable refuse bins that will be placed at the workshop until it is transported to a registered general waste landfill site. A registered contractor will service the chemical toilets and be responsible for the removal of the sewerage to a registered sewerage handling facility. As mentioned earlier, hazardous waste may result from accidental spillages/breakdowns. Such contaminated areas will immediately (within two hours of occurrence) be cleaned, and the contaminated soil will be contained in a designated hazardous waste container that will be kept in a bunded area with impermeable surface until it is	Highly Desirable

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
	removed from site by a registered hazardous waste handling contractor to an approved facility. No waste will be disposed of, buried, burned, or treated on the site.	
How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage?	Kindly refer to the following discussions: ❖ *Part (A)(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Cultural and Heritage Environment.* ❖ *Part (A)(1)(h)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Cultural and Heritage Environment.* ❖ *Part (A)(1)(t)(i)(2) Impact on any national estate referred to in section 3(2) of the National Heritage Resources Act.*	Highly Desirable
How will this development use and/or impact on non-renewable natural resources?	If approved the Applicant will mine the resource identified on the farm Byron No 9448 in support of the MNWP WEF projects. Widespread visible daylighting of in-tact, hard dolerite material at surface level indicated that minimal overburden stripping can be anticipated, reducing the overall volume of materials needed to be moved, and thus lowering the overall impact of the borrowing activities on the environment. Considering this, the permit holder will responsibly mine the resource on the property.	Highly Desirable
How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part?	It is proposed that the total water requirement of the mining project will be ±90 000 l/day when the washing plant is operational, and ±30 000 l/day when the plant is down. Water from the washing plant will drain into a sump from where it will be redirected to the plant in a closed loop to lessen the abstraction need of the project. All water uses will occur in accordance with the GA of the MNWP WEF projects. As mentioned earlier, the contractor will strive to manage dust generation through alternative suppression methods to restrict water use to the absolute minimum.	Desirable
How were a risk-averse and cautious approach applied in terms of ecological impacts?	The Applicant will apply for a relocation permit for the protected plant species from KZN-Wildlife (Ezemvelo) prior to bush clearance. Bush clearance will only commence upon receipt of the applicable plant permit and relocation of the identified plants. The environmental control officer (ECO) will assess the compliance of the permit holder with the conditions of the said permit.	Highly Desirable

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
How will the ecological impacts resulting from this development impact on people's environmental right?	The mine will be managed in accordance with the specifications of a memorandum of agreement to be signed with the landowner and should the mitigation measures proposed in this document be implemented the potential visual-, dust-, and noise impacts associated with the mining operation will be of low significance. If the monitoring programs, proposed in this document, is implemented it is believed that no environmental rights of the surrounding residents/public will be affected by ecological impacts associated with the proposed activity.	Highly Desirable
Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socio-economic impacts.	If approved, the quarry will supply the MNWP WEF projects with construction material at a reduced material cost due to lessened travel distances and handling requirements. The EIA of the MNWP WEF showed that the proposed wind energy project is consistent with various National, Provincial and local policies and programmes relating to economic and socio-economic development, infrastructure development (renewable energy) and climate change mitigation. The MNWP WEF projects will contribute to local developmental objectives of poverty eradication and other social and socio-economic benefits that are integral to the REIPPPP process. Further positive social and socio-economic benefits will be realised by the landowners which will host turbines, in the form of rental income which in turn will have multiplier effects on the local economy due to local spend. In addition, farming activities can continue alongside the wind turbines, while rental income may also be used to enhance farming activities. The operation of the quarry in support of the MNWP WEF and according to the mitigation measures and management programmes proposed in this document will therefore have an assured positive influence on the receiving environment. It is therefore proposed that the quarry will contribute to the local economy of the area, both directly and through the multiplier effect that its presence will create.	Highly Desirable
Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives/targets/considerations of the area?	If the mitigation measures proposed in this document are adhered to, the project entails the mining of the 4.9 ha area without influencing the status of the ecosystem type, red data species or the conservation targets set out for a SWSA.	Desirable

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified, resulted in the selection of the "best practicable environmental option" in terms of ecological considerations	Also refer to: ❖ *Part A(1)(d)(ii) Description of the activities to be undertaken – Clearing of Vegetation;* ❖ *Part A(1)(h)(i) Details of the development footprint alternatives considered;* ❖ *Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Mining and Biodiversity;* ❖ *Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Biodiversity Conservation Areas;* ❖ *Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Groundcover;* ❖ *Part A(1)(h)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Terrestrial Biodiversity (including fauna and flora).*	

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		
Question	**Response**	**Level of Desirability**
What is the socio-economic context of the area?	Please refer to *Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Socio-Economic Environment.*	Highly Desirable
Considering the socio-economic context, what will the socio-economic impacts be of the development, and specifically also on the socio-economic objectives of the area?	If approved, the quarry will supply construction material to be used for the development of the MNWP WEF, create at least fifteen new work opportunities for local residents and will also contribute an additional source of income (compensation) to the landowner. It is proposed that the quarry will (apart from supporting the MNWP WEF development) contribute to the local economy of the area, both directly and through the multiplier effect that	

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		
Question	**Response**	**Level of Desirability**
How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?	its presence will create. Equipment and supplies will be purchased locally, and wages will be spent at local businesses, generating both jobs and income in the area.	
Will the development result in equitable impact distribution, in the short- and long-term?	Although the development of the quarry will not directly impact equitable distribution of income (apart from employee salaries for the life of mine), the associated MNWP WEF projects intends to promote local economic growth and development through direct and indirect employment, as well as the identification and implementation of social development schemes during the project's operational phase. A local community trust will be established to ensure that funds are channelled to these social development schemes. The anticipated life span of the associated MNWP WEF projects is between 20 – 25 years.	Highly Desirable
In terms of location, describe how the placement of the proposed development will contribute to the area.	The material to be mined from the proposed quarry will be used in the development of the MNWP WEF projects. Mining the required fill material from an on-site quarry will, amongst others, reduce the need to transport raw materials along public roads, that will in turn reduce the probability of traffic incidents usually associated with delivery vehicles turning into/exiting construction sites. Also refer to: ❖ *Part A(1)(h)(i) Details of the development footprint alternatives considered;* ❖ *Part A(1)(h)(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; and* ❖ *Part A(1)(l) Environmental Impact Statement.*	Highly Desirable
How were a risk-averse and cautious approach applied in terms of socio-economic impacts?	No negative socio-economic impacts could, at this stage, be identified that cannot be managed through the implementation of mitigation measures included in this report.	Highly Desirable

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		
Question	**Response**	**Level of Desirability**
How will the socio-economic impacts resulting from this development impact on people's environmental right?	As mentioned in Part A(1)(t)(i)(1) *Impact on the socio-economic conditions of any directly affected person*, the activity may have an impact on the visual characteristics of the surrounding environment and may affect air quality and the noise ambiance of the study area. However, the mine will be managed in accordance with the specifications of the lease agreement with the landowner and should the mitigation measures proposed in this document be implemented the potential visual-, dust-, and noise impacts associated with the mining operation will be of low significance. If the monitoring programs, proposed in this document, is implemented it is believed that no environmental rights of the surrounding residents/public will be affected by the ecological impacts associated with the proposed activity.	Highly Desirable
Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socio-economic impacts will result in ecological impacts?	As mentioned earlier, the need and desirability of the MNWP WEF projects can be demonstrated in the following main areas: ❖ Move to green energy; ❖ Security of electricity supply; and ❖ Stimulation of the green economy where there is a high potential for new business opportunities and job creation. The development of the quarry within the already approved MNWP WEF project footprint will contain mining related impacts to an area already authorised for development without the need to transport fill material on public roads or past communities. Also refer to: ❖ Part A(1)(h)(i) Details of the development footprint alternatives considered ❖ Part A(1)(g)(viii) *The possible mitigation measures that could be applied and the level of risk*; ❖ Part A(1)(k) *Environmental impact statement*; ❖ Part A(1)(u)(i)(1) *Impact on the socio-economic conditions of any directly affected person*.	Highly Desirable

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		
Question	**Response**	**Level of Desirability**
What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations? What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons?	If the mitigation measures proposed in this document are adhered to, the project entails the mining of the 4.9 ha area without influencing the status of the ecosystem type, red data species or the conservation targets set out for a SWSA. Should the permit application be approved, the project will directly contribute to the socio-economic status of the receiving environment through the subsequent development of the MNWP WEF projects, employment of at least fifteen local residents, and support of the local economy. Also refer to: ❖ Part A(1)(h)(vii) The positive and negative impacts that the proposed activity and alternatives will have on the environmental and the community that may be affected.	Highly Desirable
What measures were taken to pursue equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing, and what special measures were taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination? What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle?	The mine will operate in accordance with, amongst others, the following: ❖ CARA, 1983 – to ensure agriculture related compliance; ❖ Financial Provision Regulations, 2015 – to ensure compliance in terms of rehabilitation; ❖ Mine Health and Safety Act, 1996 (as amended) – to ensure employee safety; ❖ MPRDA, 2002 (as amended) – to ensure mining related compliance; ❖ NEM:AQA, 2004 – to ensure air quality related compliance; ❖ NEM:BA, 2004 – to ensure biodiversity related compliance; ❖ NEM:WA, 2008 – to ensure waste related compliance; ❖ NEMA, 1998 (as amended) – to ensure environmental related compliance; As mentioned earlier, the associated MNWP WEF projects intends to promote local economic growth and development through direct and indirect employment, as well as the identification and implementation of social development schemes during the project's operational phase. A local community trust will be established to ensure that funds are channelled to these social development schemes.	Highly Desirable

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		
Question	**Response**	**Level of Desirability**
Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community that is consistent with the priority needs of the local area.	Presently, it is proposed that the mine will create a minimum of fifteen employment opportunities to local residents. In a municipal area with an unemployment rate of ±32%, new job opportunities are of high significance. Further to this, the real benefits will stem from the development and operation of the proposed MNWP WEF and its associated socio-economic advantages.	Highly Desirable
What measures have been taken to ensure that current and/or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected.	The mine will operate in accordance with the specifications of the Mine Health and Safety Act, 1996 as well as the Occupational Health and Safety Act, 1993. Site management will arrange regular toolbox talks with the site personnel regarding the work to be performed and the environment in which the work will take place. Grievances/concerns can be lodged during the toolbox sessions and site meetings.	Highly Desirable
Describe how the development will impact on job creation in terms of, amongst other aspects?	As mentioned earlier, the proposed quarry will appoint ±15 employees from the surrounding area.	Highly Desirable
What measures were taken to ensure that the environment will be held in public trust for the people, that the beneficial use of environmental resources will serve the public interest, and that the environment will be protected as the people's common heritage.	The proposed mine will operate under a valid environmental authorisation and mining permit to be issued by the DMRE-KZN. Compliance of the site with the approved EMPR, and EA conditions will be reported on as per departmental specifications. Considering this, the proposed activity will take place in an environmentally sustainable manner with the least possible impact on the receiving environment.	Highly Desirable

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		
Question	**Response**	**Level of Desirability**
Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left.	It is believed that the mitigation measures proposed in this document is realistic and can be implemented (when applicable) by the mine. As mentioned earlier, due to the impracticality of importing large volumes of fill to restore the quarry pit to its original topography, the rehabilitation option is to develop the excavation into a minor landscape feature that will be rendered safe upon final site closure. The benches will be top-dressed with topsoil and vegetated with an appropriate indigenous grass mix and the area will be returned to grazing. If the disturbed areas are successfully rehabilitated no long-term management burden will be left behind.	Highly Desirable
What measures were taken to ensure that the costs of remedying pollution, environmental degradation, and consequent adverse health effects and of preventing, controlling or minimising further pollution environmental damage or adverse health effects will be paid for by those responsible for harming the environment.	In terms of Section 41 of the MPRDA, 2002 a mining permit holder must submit a financial provision to the DMRE that is sufficient to rehabilitate or manage the negative environmental impacts related to the mining activity. Upon approval of this application, the Applicant will lodge a financial guarantee with the DMRE that will be deemed sufficient to cover the financial provision amount needed to rehabilitate the mining footprint. The environmental liability of the operation will annually be reviewed and if a shortfall is indicated, the guarantee will be accordingly adjusted.	Highly Desirable
Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified, resulted in the selection of the best practicable environmental option in terms of socio-economic considerations Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and other planned developments in the area.	Please refer to: ❖ *Part A(1)(h)(i) Details of the development footprint alternatives considered.* ❖ *Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Socio-Economic Environment.* ❖ *Part A(1)(h)(vii) The positive and negative impacts that the proposed activity and alternatives will have on the environmental and the community that may be affected.* ❖ *Part A(1)(t)(i)(1) Impact on the socio-economic conditions of any directly affected person.*	Highly Desirable

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

Refer to *Part A(1)(h)(i) Details of the development footprint alternatives considered*.

During the environmental impact assessment process the feasibility of the final project proposal was assessed to identify fatal flaws that are deemed as severe as to prevent the activity continuing or warrant a site- or project alternative. The outcome of the assessment showed that should the mitigation measures and monitoring programmes proposed in this document be implemented, no fatal flaws could be identified that prevents the activity continuing. Considering the above, the mining proposal was updated to incorporate the project related mitigation measures and monitoring programmes identified during the assessment process. The preferred development footprint was subsequently finalized and is depicted on the attached site activities plan (Appendix C).

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.

i) Details of the development footprint alternatives considered.

With reference to the site plan provided as Appendix 4 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.

During the EIA phase the following alternatives were assessed upon receipt of the site-specific information, comments received from the public, and the results of the specialist studies.

a) <u>THE PROPERTY ON WHICH, OR LOCATION WHERE, IT IS PROPOSED TO UNDERTAKE THE ACTIVITY</u>

Applicants can only apply for mining permits within areas where such rights are not yet held by other companies/applicants. Furthermore, the mining activities are dependent upon the presence of the desired minerals which are again dependent upon geological formations. A mining permit furthermore may not exceed an area of 5 ha.

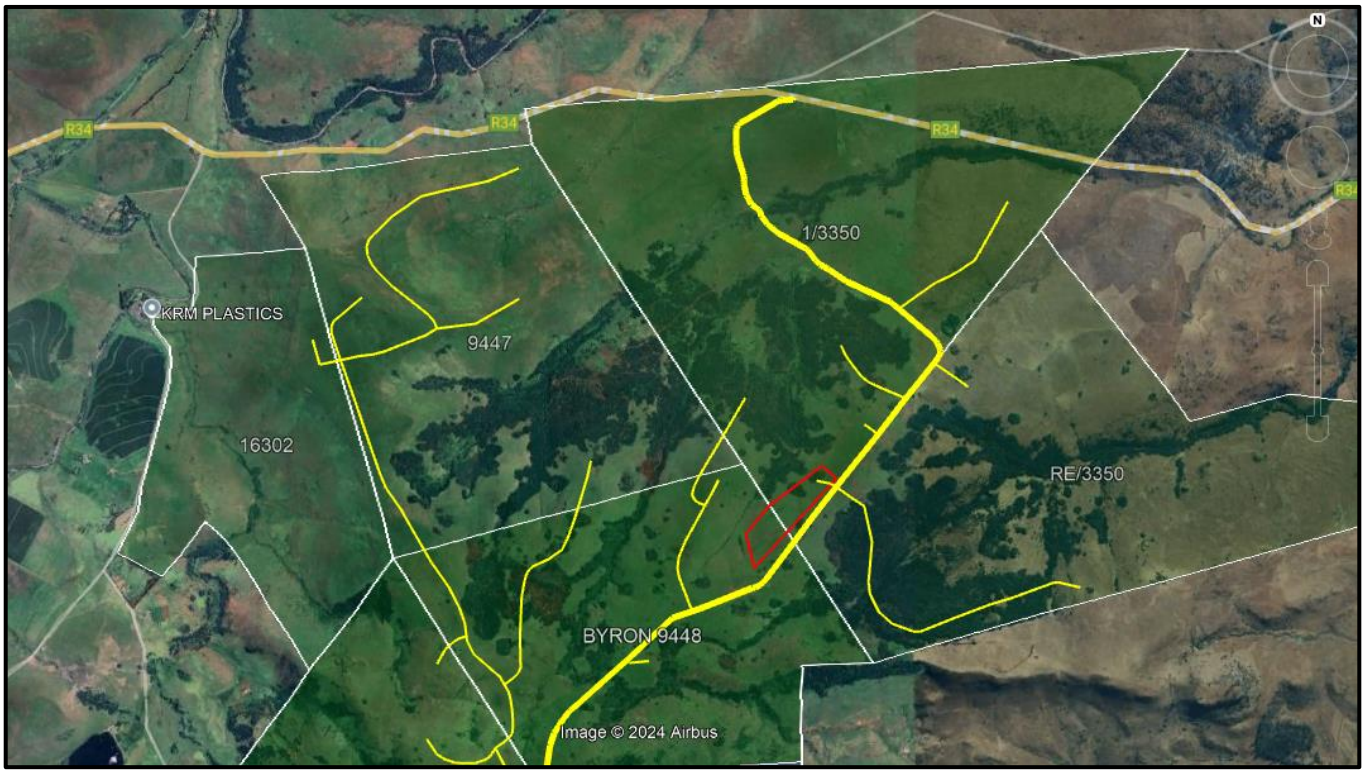
As the intention of the proposed mining operations is to exploit the aggregate, gravel, and/or stone deposits of the area, a site known to contain these resources needed to be selected.

During the planning phase the Applicant identified five (5) potential mining areas, referred to as BP1 – BP5 (in the following table) that all lay within the footprint of the six land parcels of the MNWP WEF authorisation.

Table 6: Site alternatives considered during the planning phase of the project.

INITIAL SITE ALTERNATIVES			
ID	**PROPERTY DESCRIPTION**	**GPS COORDINATES (DD, MM, SS)**	**AREA SIZE (HA)**
BP1 (Initial Layout)	Geelhoutboom No 3350	A: 27˚39'24.15"S; 29˚49'06.71"E	±12 ha
	Portion 1 of Geelhoutboom No 3350	B: 27˚39'26.67"S; 29˚49'10.07"E	
	Byron No 9448	C: 27˚39'44.79"S; 29˚48'50.73"E	
		D: 27˚39'38.07"S; 29˚48'48.90"E	
		E: 27˚39'32.27"S; 29˚48'54.45"E	

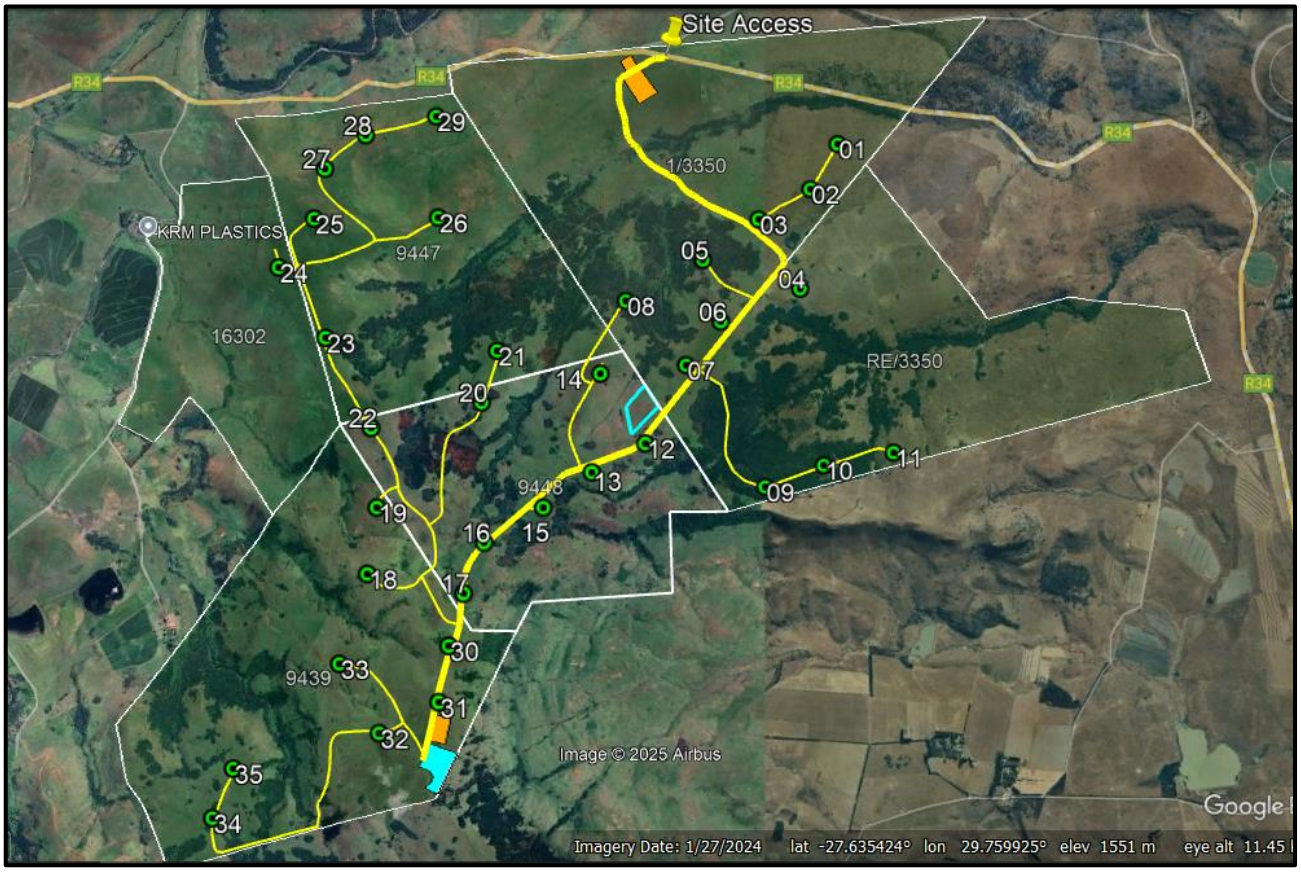
INITIAL SITE ALTERNATIVES			
ID	**PROPERTY DESCRIPTION**	**GPS COORDINATES (DD, MM, SS)**	**AREA SIZE (HA)**



BP1 (initial layout) is indicated by the red polygon. The white polygons show the farm boundaries, the MNWP WEF footprint is indicated by the green shaded area while the access roads are shown by the yellow lines.

AGRICULTRAL COMPLIANCE STATEMENT (ACS) OPINION	The desktop assessment for BP1 supports the medium sensitivity of the screening tool. It is the specialist's opinion that the development continues. The development will not have a significant impact on potential agricultural activities in the area and pose no threat to food security.
VEGETATION AND WETLAND ASSESSMENT (VWA) OPINION	A stream is situated ±90 m to the north-west of the site, while a drainage line is situated ±40 m to the south-west of the site. Both are therefore a fair distance from the site footprint though still within the regulated area and will require authorisation for the applicable water uses. The anticipated impact should however remain low as long as a suitable buffer zone is implemented and maintained, and suitable mitigation implemented to limit any indirect impacts that the proposed borrow pit will have. This site should therefore be feasible, and impacts anticipated to be limited.
HIA & PIA OPINION	The chances of heritage sites occurring within the study areas are very low. No further mitigation, apart from a Chance Find Protocol is required.

INITIAL SITE ALTERNATIVES			
ID	**PROPERTY DESCRIPTION**	**GPS COORDINATES (DD, MM, SS)**	**AREA SIZE (HA)**
BP1 **(Final layout - 4.9 ha)**	Byron No 9448	A: 27º39'32.28"S; 29º48'54.46"E	4.9 ha
		B: 27º39'37.61"S; 29º48'58.49"E	
		C: 27º39'44.90"S; 29º48'50.70"E	
		D: 27º39'37.88"S; 29º48'49.05"E	

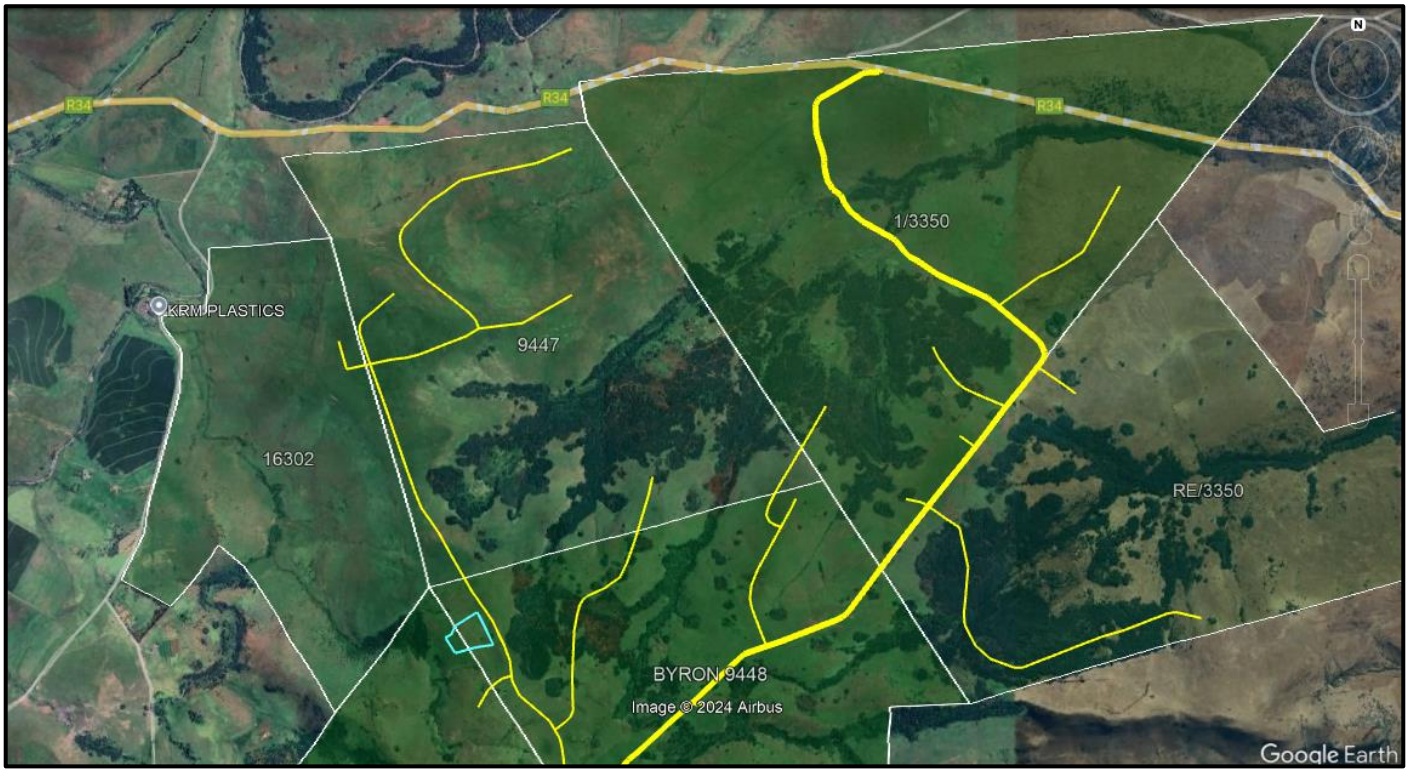


BP1 (final layout) is indicated by the blue polygon. The white polygons show the farm boundaries, the MNWP WEF footprint is indicated by the green shaded area while the access roads are shown by the yellow lines

AGRICULTRAL COMPLIANCE STATEMENT (ACS) OPINION	The desktop assessment for BP1 supports the medium sensitivity of the screening tool. It is the specialist's opinion that the development continues. The development will not have a significant impact on potential agricultural activities in the area and pose no threat to food security.

INITIAL SITE ALTERNATIVES			
ID	**PROPERTY DESCRIPTION**	**GPS COORDINATES (DD, MM, SS)**	**AREA SIZE (HA)**
VEGETATION AND WETLAND ASSESSMENT (VWA) OPINION	BP1 consists of natural grassland which is still in a fairly good condition. The species diversity is moderate although the area does contain a significant number of protected plant species which contribute towards its conservation value. Significant mitigation will still have to be implemented to ensure the impact on these elements of significant conservation value is decreased. BP1 is not listed as a CBA, ESA or important habitat for threatened species and is not considered essential for meeting conservation targets. BP1 is situated within the Northern Drakensberg Strategic Water Source Area (SWSA) as well as the National Protected Areas Expansion Strategy (NPAES): Moist Escarpment Grassland Focus Area. In both instances, the proposed borrow pit development is unlikely to have any significant impact, both in terms of the regional water source and any future expansion of protected areas, largely as a result of its small footprint and therefore limited impact. A stream is situated ±90 metres to the north-west of the site, while a drainage line is situated ±40 metres to the south-west of the site. The stream and drainage line are considered as highly sensitive, though are not situated on or near the site and therefore only relevant in terms of any indirect impacts the development may still have on them. Both watercourses are a fair distance from the site footprint though still within the regulated area and will require authorisation for the applicable water uses. The anticipated impact should however remain low as long as a suitable buffer zone is implemented and maintained, and suitable mitigation implemented to limit any indirect impacts that the proposed borrow pit will have. This site should therefore be feasible, and impacts anticipated to be limited.		
HIA & PIA OPINION	The chances of heritage sites occurring within the study areas are very low. No further mitigation, apart from a Chance Find Protocol is required.		
GEOLOGY RELATED OPINION	Widespread visible daylighting of in-tact, hard dolerite material at surface level indicates that minimal overburden stripping can be anticipated in this area, reducing the overall volume of materials needed to be moved, and thus lowering the overall impact of the borrowing activities on the environment.		
BP2	Cliffdale No 9439	A: 27˚39’46.72”S; 29˚47’37.69”E	±3.36 ha
	Byron No 9448	B: 27˚39’52.52”S; 29˚47’41.06”E	
		C: 27˚39’54.13”S; 29˚47’33.25”E	
		D: 27˚39’51.52”S; 29˚47’31.12”E	

INITIAL SITE ALTERNATIVES			
ID	**PROPERTY DESCRIPTION**	**GPS COORDINATES (DD, MM, SS)**	**AREA SIZE (HA)**
		E: 27˚39'50.71"S; 29˚47'32.41"E	
		F: 27˚39'49.36"S; 29˚47'33.09"E	

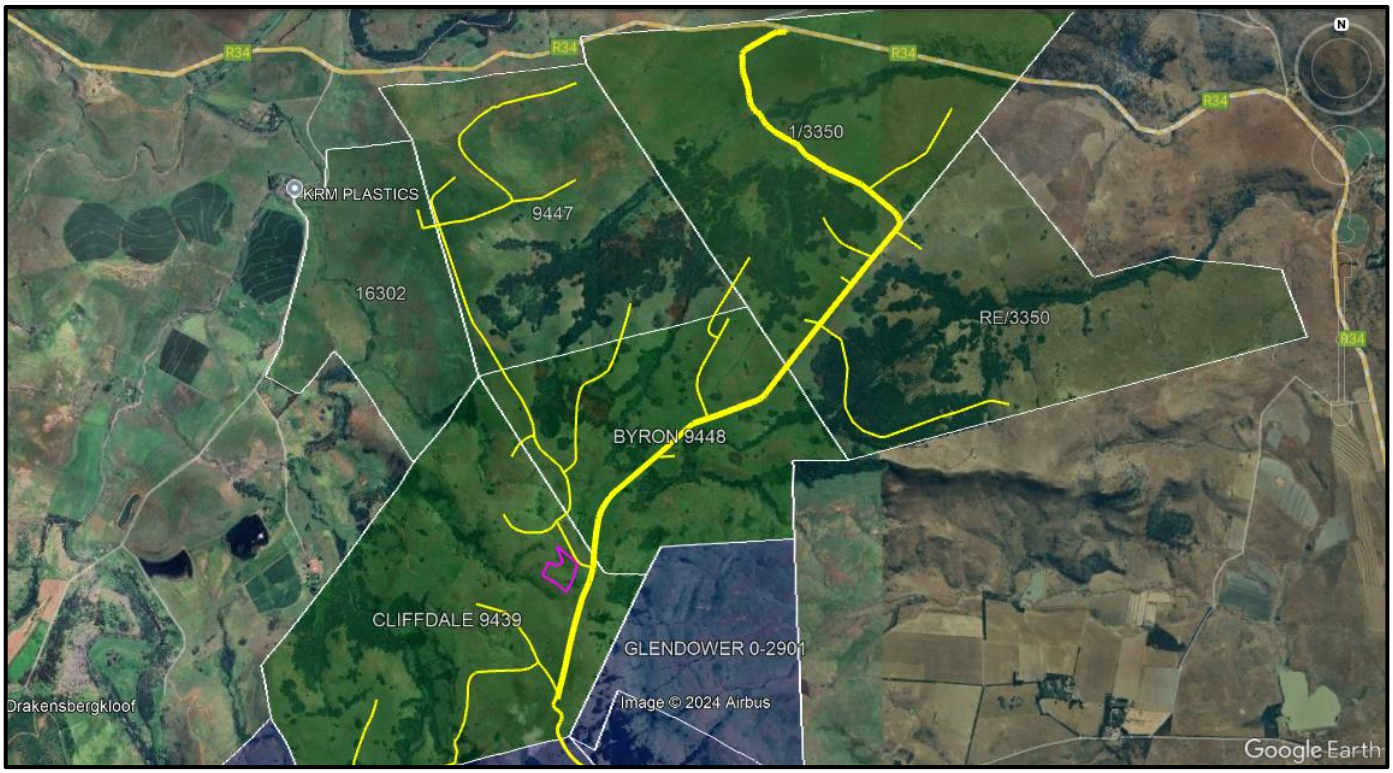


BP2 is indicated by the light blue polygon. The white polygons show the farm boundaries, the MNWP WEF footprint is indicated by the green shaded area while the access roads are shown by the yellow lines.

AGRICULTRAL COMPLIANCE STATEMENT (ACS) OPINION	The desktop assessment for BP2 supports the medium sensitivity of the screening tool. It is the specialist's opinion that the development continues. The development will not have a significant impact on potential agricultural activities in the area and pose no threat to food security.
VEGETATION AND WETLAND ASSESSMENT (VWA) OPINION	BP2 is completely situated within a CBA1, which also forms part of the origin of several wetland systems and will have a higher conservation value. A seepage wetland to the south and east of the site is situated ±100 and 40 metres respectively from the borrow pit footprint and it is therefore not anticipated to be directly affected by it. However, a seepage wetland in the north transects the corner of the site and it will therefore be directly affected by it. This will result in high impacts and permanent loss of at least a portion of the wetland and will also affect the downstream

INITIAL SITE ALTERNATIVES			
ID	**PROPERTY DESCRIPTION**	**GPS COORDINATES (DD, MM, SS)**	**AREA SIZE (HA)**
	section of the system. It should be possible to adjust the borrow pit footprint to avoid this seepage wetland and should the wetland be excluded, a suitable buffer zone be maintained between the borrow pit and surrounding wetlands, and suitable mitigation implemented, the site should remain feasible, and impacts anticipated to be limited.		
HIA & PIA OPINION	The chances of heritage sites occurring within the study areas are very low. No further mitigation, apart from a Chance Find Protocol is required.		
BP3	Cliffdale No 9439	A: 27˚40'26.83"S; 29˚47'51.62"E	±4.75 ha
		B: 27˚40'31.06"S; 29˚47'57.81"E	
		C: 27˚40'35.38"S; 29˚47'56.51"E	
		D: 27˚40'38.59"S; 29˚47'54.55"E	
		E: 27˚40'34.33"S; 29˚47'47.43"E	
		F: 27˚40'30.73"S; 29˚47'49.24"E	
		G: 27˚40'31.85"S; 29˚47'51.32"E	
		H: 27˚40'31.03"S; 29˚47'53.46"E	

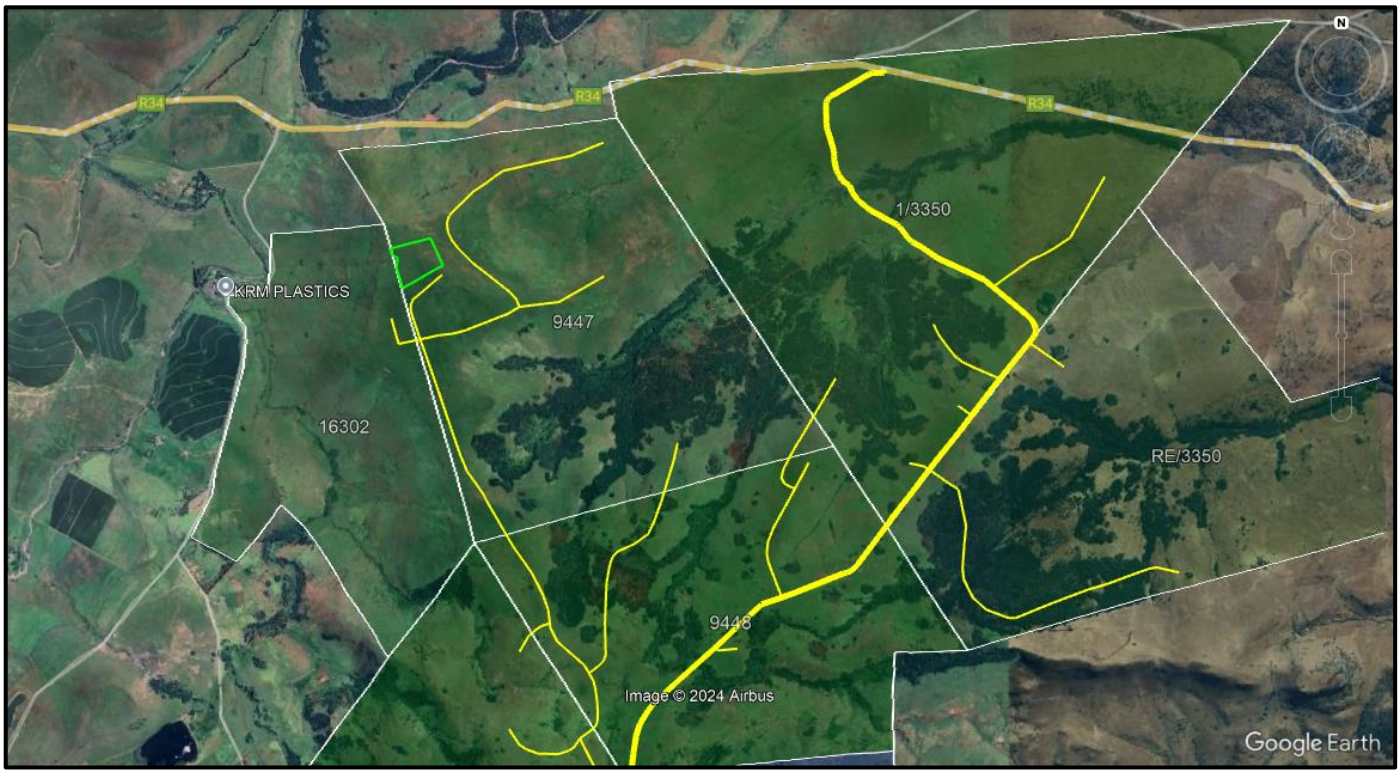
INITIAL SITE ALTERNATIVES			
ID	**PROPERTY DESCRIPTION**	**GPS COORDINATES (DD, MM, SS)**	**AREA SIZE (HA)**



BP3 is indicated by the pink polygon. The white polygons show the farm boundaries, the MNWP WEF footprint is indicated by the green shaded area while the MNWP WEF 2 is shown by the blue shaded area. The yellow lines indicate the proposed access roads.

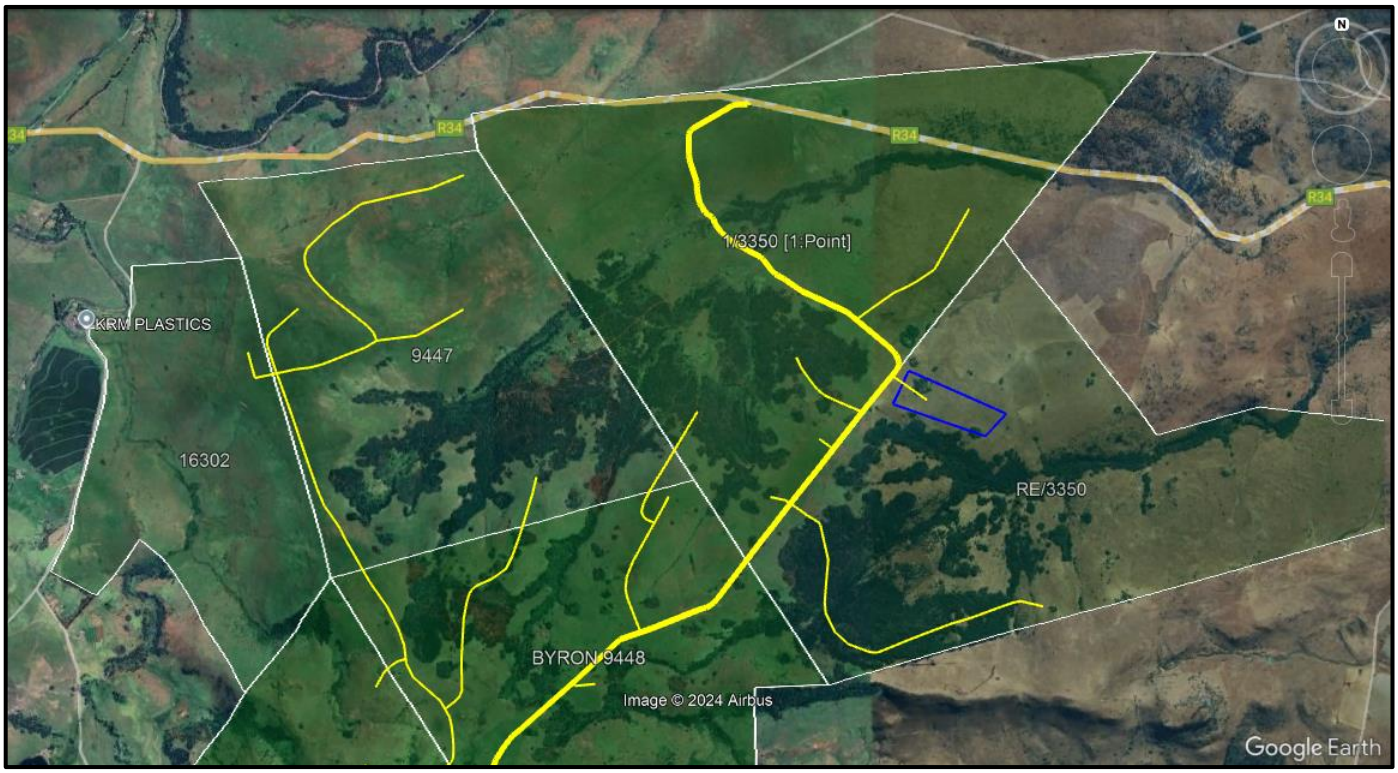
AGRICULTRAL COMPLIANCE STATEMENT (ACS) OPINION	The desktop assessment for BP3 supports the medium sensitivity of the screening tool. It is the specialist's opinion that the development continues. The development will not have a significant impact on potential agricultural activities in the area and pose no threat to food security.
VEGETATION AND WETLAND ASSESSMENT (VWA) OPINION	BP3 is situated outside any CBA area and is not considered essential for meeting conservation targets, while these habitats are also not considered as important for threatened species. Several drainage lines originate to the north, west and south of the site at distances of approximately 100, 70 and 10 metres respectively. These would therefore still be affected indirectly by the borrow pit development. However, a large seepage wetland situated on the site itself will, due to its size, be unavoidable by the borrow pit footprint. This would therefore almost certainly result in direct wetland loss. This would entail a permanent loss of a large portion of the wetland and will also affect the downstream section of the system. As a result, this alternative is considered unfeasible and would result in a large impact which would not be possible to avoid or mitigate.

INITIAL SITE ALTERNATIVES			
ID	**PROPERTY DESCRIPTION**	**GPS COORDINATES (DD, MM, SS)**	**AREA SIZE (HA)**
HIA & PIA OPINION	The chances of heritage sites occurring within the study areas are very low. No further mitigation, apart from a Chance Find Protocol is required.		
BP4	Bernard No 9447	A: 27˚38'44.49"S; 29˚47'08.91"E	±5.79 ha
	Spitskop No 16302	B: 27˚38'42.47"S; 29˚47'17.83"E	
		C: 27˚38'47.87"S; 29˚47'20.86"E	
		D: 27˚38'52.27"S; 29˚47'11.83"E	
		E: 27˚38'48.10"S; 29˚47'10.33"E	
		F: 27˚38'46.40"S; 29˚47'10.63"E	
		G: 27˚38'45.72"S; 29˚47'09.37"E	



INITIAL SITE ALTERNATIVES			
ID	**PROPERTY DESCRIPTION**	**GPS COORDINATES (DD, MM, SS)**	**AREA SIZE (HA)**
BP4 is indicated by the green polygon. The white polygons show the farm boundaries, the MNWP WEF footprint is indicated by the green shaded area while the access roads are shown by the yellow lines.			
AGRICULTRAL COMPLIANCE STATEMENT (ACS) OPINION	The desktop assessment for BP4 supports the medium sensitivity of the screening tool. It is the specialist's opinion that the development continues. The development will not have a significant impact on potential agricultural activities in the area and pose no threat to food security.		
VEGETATION AND WETLAND ASSESSMENT (VWA) OPINION	BP4 is situated outside any CBA area and is not considered essential for meeting conservation targets, while these habitats are also not considered as important for threatened species. A small seepage wetland is situated immediately to the west of the site, ±5 metres from the borrow pit footprint, and it is therefore likely to have significant impacts on it. If the borrow pit site should therefore remain viable, it would be necessary to ensure the seepage wetland is designated a no-go area, a suitable buffer zone is maintained between the borrow pit and the wetland, and suitable mitigation implemented, the site should remain feasible, and impacts should then remain at moderate levels.		
HIA & PIA OPINION	The chances of heritage sites occurring within the study areas are very low. No further mitigation, apart from a Chance Find Protocol is required.		
BP5	Geelhoutboom No 3350	A: 27˚39'01.71"S; 29˚49'37.28"E	±13.4 ha
		B: 27˚39'10.39"S; 29˚49'59.91"E	
		C: 27˚39'14.99"S; 29˚49'55.15"E	
		D: 27˚39'08.49"S; 29˚49'33.46"E	

INITIAL SITE ALTERNATIVES			
ID	**PROPERTY DESCRIPTION**	**GPS COORDINATES (DD, MM, SS)**	**AREA SIZE (HA)**



BP5 is indicated by the dark blue polygon. The white polygons show the farm boundaries, the MNWP WEF footprint is indicated by the green shaded area while the access roads are shown by the yellow lines.

AGRICULTRAL COMPLIANCE STATEMENT (ACS) OPINION	The desktop assessment for BP5 slightly differs from the high sensitivity indicated by the screening tool. Ea land types are not associated with high productivity; instead, their high clay content presents significant challenges. Furthermore, only one pixel (30 x 30 m) is classified as high sensitivity in the screening tool. Therefore, it is recommended that BP5 be reclassified as medium sensitivity. In the specialist's opinion, the development should proceed. The development will not have a significant impact on potential agricultural activities in the area and poses no threat to food security.
VEGETATION AND WETLAND ASSESSMENT (VWA) OPINION	BP5 is partially situated within a CBA1, which is associated with wetland habitats to the south, which will increase its conservation value. Several seepage wetlands are situated a significant distance from the site, ranging from 100 to 140 m. They are therefore unlikely to be affected by the borrow pit, though some indirect impacts may still be relevant. The site should therefore be feasible though the borrow pit will still need to implement adequate mitigation, such as storm water management to ensure that no direct impacts affect wetlands.

INITIAL SITE ALTERNATIVES			
ID	**PROPERTY DESCRIPTION**	**GPS COORDINATES (DD, MM, SS)**	**AREA SIZE (HA)**
HIA & PIA OPINION	BP5 is located near heritage sites and therefore has a greater chance to affect heritage sites by means of an access road, and MUL02 will require a site revisit.		

Final Project Proposal

Considering the abovementioned, the project proposal regarding the property/ies on which the proposed quarry will be developed was directed by the area/farm with the best mineral potential that will also have the least possible impact on the receiving environment.

The geologist confirmed that the south-western part of BP1 on farm Byron No 9448 (refer to Figure 3 and Table 6) has the best mineral potential, while the site position is also supported by the archaeologist, ecologist and soil specialist, and was therefore identified as the Preferred Property/Site Alternative for the development of the aggregate quarry in support of the MNWP WEF projects.

b) Type of activity to be undertaken

The Applicant intends to extract aggregate, gravel and/or stone from the earmarked area in support of the MNWP WEF development. Alternative land uses of the earmarked area that could be considered is agriculture and conservation.

Agriculture

(Also refer to *Part A(1)(h)(iv)(1)(b) Description of the current land uses – Site Specific Agricultural and Land Use*)

Although the MNWP WEF projects can co-exist with the grazing of the farms, the small losses for agriculture that will occur should the 4.9 ha quarry be developed can be offset against much greater royalties received by the landowner due to the development of the WEF and subsequent mining of the earmarked area compared to the income generated by the grazing of the earmarked footprint.

The Agricultural Assessment identifies the agricultural sensitivity of BP1 as medium due to the following:

- The study area is not situated within a Protected Agricultural Area.

- No field crop boundaries were recorded in SANLC 2014 and 2020, no agricultural activities were observed from the Google satellite images or photos.
- The climate capability of the area was classified as moderate to high.
- Fa land types are characterised by shallow soils (Mispah & Glenrosa forms), with little or no lime in the landscape. The soil capability was classified as moderate for site BP1,
- Due to the topography, the sites terrain capability ranges from low to high.
- The overall land capability for all the sites was as considered not arable or marginal.
- The grazing capacity of sites was very high (3 ha/LSU).

The Agricultural Assessment however supports development of the proposed quarry over the location of BP1, as the development will in the soil specialists opinion not have a significant impact on potential agricultural activities in the area and pose no threat to food security.

Conservation

Conservation is not a viable option, regardless of the CBA shown by the DFFE screening tool. The ecologist confirmed that the footprint of BP1 is not listed as a CBA, ESA, or important habitat for threatened species and is therefore not considered essential for meeting conservation targets. Although BP1 is situated within the Northern Drakensberg SWSA as well as the Moist Escarpment Grassland Focus Area (NPAES) the specialist concluded that the proposed development is unlikely to have a significant impact, both in terms of the regional water sources and any future expansion of protected areas, largely as a result of its small footprint and therefore limited impact. The quarry will avoid the surrounding watercourses and wetland, incorporating a suitable buffer and should therefore not have an effect on the strategic surface water resources. The approval of the MNWP WEF environmental authorisations also renders the earmarked area out of commission for conservation for at least the next 25 – 30 years.

Final Project Proposal

In conclusion, as the larger surrounding area has already been approved for development, the potential use of the area for conservation purposes will, at least for the foreseeable future, be unattainable. The earmarked 4.9 ha parcel of land will not have a significant impact on the regional water source and/or any future

expansion of protected areas, nor will the development of the proposed mining area lead to the loss of ecosystem connectivity.

Further to this, should the earmarked area be used for either conservation or agricultural purposes the dolerite resource will be sterilised, and the construction material needed at the MNWP WEF will have to be imported from alternative sources.

Considering this, mining of the earmarked area is deemed the most beneficial land use in this instance.

c) <u>Design and layout of the activity</u>

As mentioned earlier, an application for a mining permit may not exceed 5 ha. Considering this, the initial layout of BP1, once it was identified as the preferred site alternative, had to be amended to comply with the size limitation of a mining permit application.

The initial footprint of BP1 was ±12 ha (Table 6), and this was subsequently reduced to 4.9 ha (Table 3) that only extends over the farm Byron No 9448 and complies with the mining permit requirements. The following figure shows the initial layout of BP1 compared to the final layout of BP1 applied for as part of this application.

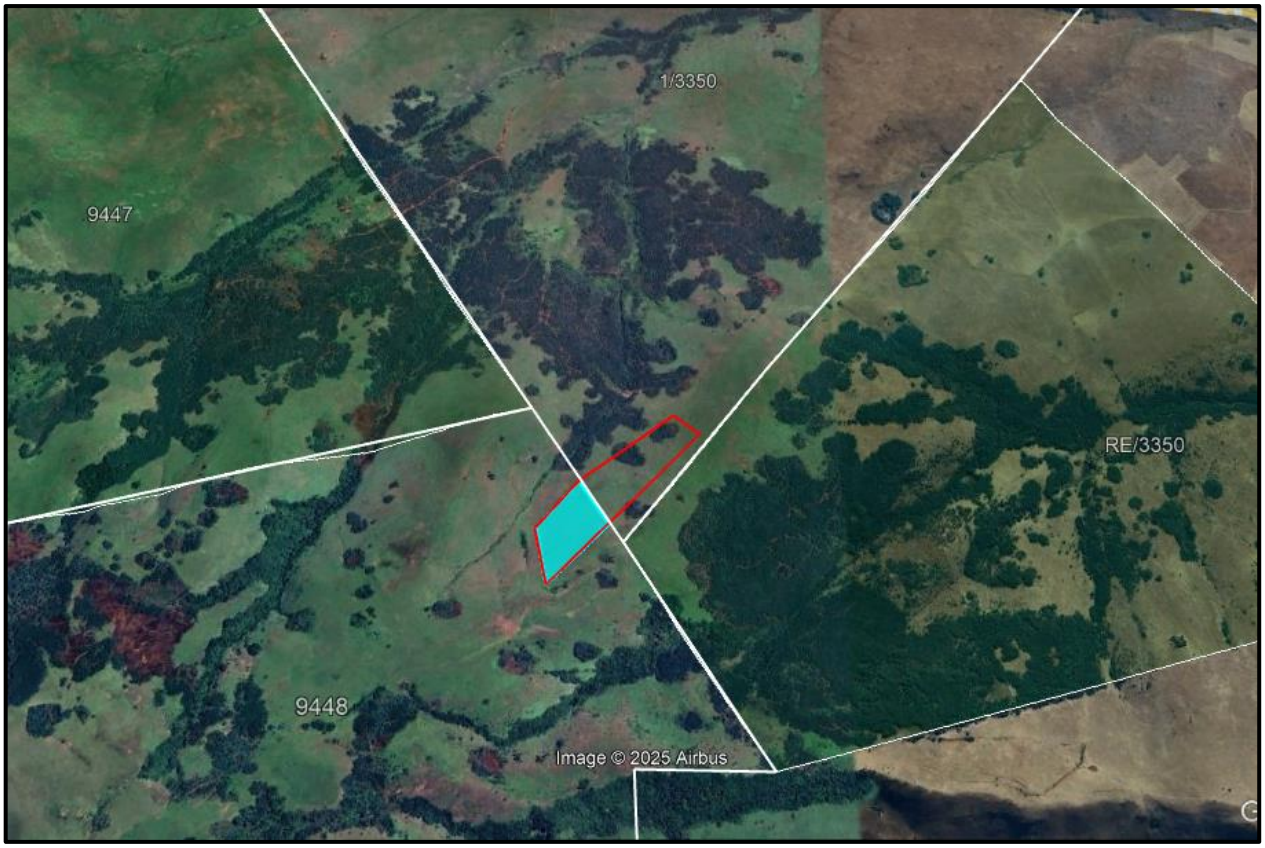


Figure 6: Image showing the initial layout of BP1 (red polygon) in relation to the final layout of BP1 (blue polygon) in relation to the farms Byron No 9448 and Portion 1 of Geelhoutboom No 3350 (image obtained from Google Earh).

Apart from the departmental requirements for a mining permit (5 ha), the geology surveys and findings of the VWA (refer to *Part A(1)(h)(iv)(1)(c) Description of the specific environmental features and infrastructure on the site – Site Specific Geology and Soil*, *-Site Specific Hydrology*, and *Site Specific Terrestrial Biodiversity (Including Fauna and Flora*) also steered the final design/layout proposal.

Final Project Proposal

The Applicant will not establish any permanent infrastructure and/or buildings on site that will affect the proposed layout. The crushing- and washing plants, as well as the ablution hut and storage containers will be of temporary nature and can be moved as mining progress. The water sump will be rehabilitated when the site is rehabilitated.

Considering the above, the final layout proposal for this project is that of BP1 in accordance with the GPS coordinates listed in Table 3 and presented in Figure 3.

d) Technology to be used in the activity

As mentioned earlier, the Applicant intends to extract the aggregate, gravel and/or stone from the mining area using conventional opencast methods. Blasting will loosen the hard rock; the material will then be loaded and hauled to the crushing plant where it will be screened to various sized stockpiles. When necessary, the material will be washed prior to use. The material will be stockpiled until it is transported from the mining area to the relevant construction sites.

The only technology applicable to this project is the use of the mobile crushing and screening plant to reduce the material to the sizes desired by the contractor/s, as well as the washing plant to clean concrete aggregate prior to use.

This project does not require complex technology to allow the winning of the intended minerals, and therefore no further technology alternatives are considered in the EIA process.

Final Project Proposal:

It is a small scale mining operation where there is no alternative other than to blast, excavate, load, process and haul the aggregate.

e) Operational aspects of the activity

Due to the small scale of the proposed activity the operational requirement of the mine is lenient. The development of the farm Byron No 9448 was already approved as part of the EA of the encompassing MNWP WEF projects that will be supplied with material from the proposed quarry; the use of water from the boreholes and construction near watercourses are generally authorised; and a land use zoning application is in process to allow for the change in land use of the earmarked farms.

The workshop and laydown areas of the proposed MNWP WEF projects can be used by the mining contractor (when needed), and the proposed roads (which development was already authorised) will provide access to the mining area.

This project considers mitigating impacts such as dust and/or noise generation, waste management, and rehabilitation. These mitigation measures were incorporated into the EMPR (Part B) that forms part of this report and will become a legally binding document once approved.

Should the mitigation measures proposed in this report be implemented no need for alternative operational aspects could be identified.

f) Option of not implementing the activity (No-go Alternative):

The no-go alternative entails no change to the *status quo* and is therefore a real alternative that needs to be considered. If the no-go alternative is implemented the land in question will not be mined by the Applicant and the material needed for the development of the MNWP WEF will have to be sourced from another supplier/s.

The positive implications of the no-go alternative are that there will be no mining related impact on the bio- and geophysical environment of the earmarked area. However, the specialist studies did not identify any reason why the proposed development cannot proceed, nor did the EIA identify any fatal flaws. Nevertheless, care must always be taken to mitigate potential impacts, regardless of the low ecological and migratory status of the site.

Furthermore, the no-go alternative is not supported as a viable option due to the following reasons:

- the Applicant will not be able to utilize the resource deposit available within the proposed mining area, and will need to acquire fill material for the MNWP WEF projects from other commercial sources, which will directly affect the building costs;
- the raw materials needed during the construction of the MNWP WEF's will have to be transported along public roads, increasing the possibility of traffic related impacts;
- foreign material will have to be imported that may contribute to the distribution of invasive plant species;
- dust generation, noise and produce spillage will not be contained to an already approved construction site controlled through an EMPR;
- transport of the material along public roads may introduce the added impact of overloading and its associated impact on public roads;
- the potential use of the excavation at the end of the life of mine as a spoil site for rock, sand, and/or soil associated with the development of the MNWP WEF will be lost, and contractors may have to transport spoil material over larger distances to landfill sites.

- the proposed job opportunities, associated with the development of the quarry, will be lost to the surrounding community, and the landowner will not receive compensation for the use of his land.

g) Final Project Proposal

In summary, it is deduced that the Final Project Proposal entails:

- the mining of BP1 which involves the development of a 4.9 ha quarry over the farm Byron No 9448 within the boundaries of the GPS Coordinates listed in Table 3;
- the mining of the earmarked area in support of the development of the MNWP WEF projects;
- the opencast mining of the hard rock including the blasting, crushing, screening, washing and stockpiling of the material using temporary equipment;
- the management of the proposed mining area according to the mitigation measures, management programmes and rehabilitation objectives as proposed in this document as well as the EMPR (Part B).

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 relevant landowner, stakeholders and I&AP's were informed of the mining permit application by means of an advertisement in the Newcastle Advertiser, and on-site notices that were placed at conspicuous places. A notification letter inviting comments on the DBAR over a 30-days commenting period (ending 02 April 2025) was sent to the landowner, neighbouring landowners, and stakeholders. All the notices and advertisement were available in both English and isiZulu.

The initial applicant for this application was Mulilo Newcastle Wind Power (Pty) Ltd. However, during the Environmental Impact Assess (EIA) process, the company changed its name to Mulilo Newcastle Mining Rights (Pty) Ltd. All relevant parties, including the landowner, stakeholders and I&AP's, were subsequently informed of the name change, and the application continues under the new name, Mulilo Newcastle Mining Rights (Pty) Ltd.

The comments received during the public participation period were incorporated into this report, the FBAR, to be submitted to the DMRE for consideration. The following

table lists the I&AP's and stakeholders that were informed/invited to comment/register on the project:

Table 7: List of the I&AP's and stakeholders that were informed/invited to comment/register on the project.

SURROUNDING LANDOWNERS & INTERESTED AND AFFECTED PARTIES	STAKEHOLDERS
Landowner: ❖ Mr JF Brink & Mr CJC Brink Byron No 9448 **Surrounding landowners:** ❖ Lentevlei Landgoed (Pty) Ltd Bernard No 9447 Spitskop No 16302 ❖ Kwaggaskop Landgoed (Pty) Ltd Portion 1 of Geelhoutboom No 3350 ❖ Maria Elizabeth Brink-Trust & Me ME Brink Geelhoutboom No 3350 ❖ CJC Brink Trust Portion 6 of Geelhoutboom No 3350 ❖ Markop Proprietary Limited Glendower No 2901 ❖ Zama Retailers Proprietary Limited Cliffdale No 9439	❖ AMAFA / Heritage KZN; ❖ Amajuba District Municipality; ❖ Department of Agriculture and Rural Development; ❖ Department of Economic Development, Tourism and Environmental Affairs; ❖ Department of Labour; ❖ Department of Transport; ❖ Department Water and Sanitation; ❖ Ezemvelo / KZN Wildlife; ❖ Newcastle Local Municipality; ❖ Newcastle Local Municipality Ward Councillor (Ward 1); ❖ South African Heritage Resources Agency.
RESPONSE RECEIVED DURING THE COMMENTING PERIOD	
❖ AMAFA; ❖ Mr P Conradie; ❖ Commission of Restitution of Land Rights; ❖ Community of Barnad Farm & Bothas Pass Area	

Refer to the following table for an explanation on how the public participation process of this project took the methods stipulated in Regulation 41 of the NEMA Regulations into account.

Table 8: Table comparing the required methods with the public participation process of this project.

REQUIREMENTS IN TERMS OF NEMA REGULATION 41	PUBLIC PARTICIPATION PROCESS FOLLOWED
❖ Regulation 41(2)(a): *Fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of-* *(i) The site where the activity to which the application or proposed application relates is or is to be undertaken; and* (ii) *Any alternative site.* ❖ Regulation 41(3): *A notice, notice board or advertisement referred to in subregulation (2) must—* *(a) give details of the application or proposed application which is subjected to public participation; and* *(b) state—* *(i) whether basic assessment or S&EIR procedures are being applied to the application;* *(ii) the nature and location of the activity to which the application relates;* *(iii) where further information on the application or proposed application can be obtained; and* (iv) *the manner in which and the person to whom representations in respect of the application or proposed application may be made.* ❖ Regulation 41(4): *A notice board referred to in subregulation (2) must—* *(a) be of a size of at least 60cm by 42cm; and* (b) *display the required information in lettering and in a format as may be determined by the competent authority.*	Notice boards were fixed at the following conspicuous and publicly accessible areas: ❖ Entrance to the farm/site turning from the R34; and ❖ Newcastle Municipal Offices. All the notice boards that were placed complied with the requirements of Regulation 41(3). The notices were printed on notice boards of 60 x 42 cm in Arial font of sufficient size and were available in both English and isiZulu.
❖ Regulation 41(2)(b): *giving written notice, in any of the manners provided for in section 47D of the Act, to-* (i) *the occupiers of the site and, if the proponent or applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken;* (ii) *owners, persons in control of, and occupiers of land adjacent to the site where the activity*	(i) The landowner is aware of the MP application and is kept apprised of the EIA (BA) process and was invited to comment on the DBAR. (ii) The directly surrounding landowners were invited to comment on the project and the DBAR. The Community of Barnad Farm and the Bothas Pass Area registered on the project and a meeting was held with them to discuss the project. (iii) The Ward Councillor of Ward 1 was invited to comment on the project and DBAR.

REQUIREMENTS IN TERMS OF NEMA REGULATION 41	PUBLIC PARTICIPATION PROCESS FOLLOWED
is or is to be undertaken and to any alternative site where the activity is to be undertaken; (iii) *the municipal councillor of the ward in which the site and alternative site is situated and any organisation of ratepayers that represent the community in the area;* *(iv) the municipality which has jurisdiction in the area;* *(v) any organ of state having jurisdiction in respect of any aspect of the activity;* *(vi) any other party as required by the competent authority;*	(iv) Both the Amajuba District Municipality and the Newcastle Local Municipality were invited to comment on the project and DBAR. (v) As listed in Table 7 the relevant state departments and entities were invited to comment on the project and DBAR. (vi) No other parties were identified that needed to be contacted.
❖ Regulation 41(2)(c): *Placing an advertisement in-* *(i) One local newspaper; or* *(ii) any official Gazette that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations.*	❖ The project and availability of the DBAR was advertised in the Newcastle Advertiser in both English and isiZulu.
❖ Regulation 41(2)(d): *Placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be undertaken…*	Not applicable, as the proposed activity will not extend beyond the boundaries of the metropolitan or district municipality in which it will be undertaken.
❖ Regulation 41(2)(e): *Using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desirous of but unable to participate in the process due to—* *(i) illiteracy;* *(ii) disability; or* (iii) *any other disadvantage.*	Not applicable to this application.
❖ Regulation 41(5): *Where public participation is conducted in terms of this regulation for an application or proposed application, subregulation (2)(a), (b), (c) and (d) need not be complied with again during the additional public participation process contemplated in regulations 19(1)(b) or 23(1)(b) or the public participation process contemplated in regulation 21(2)(d)…*	Not applicable to this application.
❖ Regulation 41(6): *When complying with this regulation, the person conducting the public participation process must ensure that—* *(a) information containing all relevant facts in respect of the application or proposed*	❖ The DBAR containing all the facts in respect of this application was available to landowners, stakeholders and potential I&AP's for perusal and commenting over a 30-days commenting period. The DBAR was also available on the Greenmined website. I&AP's and stakeholders were invited to contact the EAP should additional information be required.

REQUIREMENTS IN TERMS OF NEMA REGULATION 41	PUBLIC PARTICIPATION PROCESS FOLLOWED
application is made available to potential interested and affected parties; and (b) *participation by potential or registered interested and affected parties is facilitated in such a manner that all potential or registered interested and affected parties are provided with a reasonable opportunity to comment on the application or proposed application.*	❖ The comments received on the DBAR were incorporated into the FBAR to be submitted for departmental consideration. ❖ The Applicant met with the representatives of the Barnad Farm & Bothas Pass Area Community to discuss the project. ❖ All relevant stakeholders, the landowner, and I&AP's were informed of the name change of the Applicant via email notifications.
❖ Regulation 41(7): *Where an environmental authorisation is required in terms of these Regulations and an authorisation, permit or licence is required in terms of a specific environmental management Act, the public participation process contemplated in this Chapter may be combined with any public participation processes prescribed in terms of a specific environmental management Act, on condition that all relevant authorities agree to such combination of processes.*	Not applicable to this project.

iii) Summary of issues raised by I&AP's

(Compile the table summarising comments and issues raised, and reaction to those responses)

Table 9: Summary of issues raised by IAPs

Interested and Affected Parties **List the name of persons consulted in this column, and** **Mark with an X where those who must be consulted were in fact consulted**		**Date Comments Received**	**Issues raised**	**EAPs response to issues as mandated by the applicant**	**Section and paragraph reference in this report where the issues and or response were incorporated.**
AFFECTED PARTIES	**X**	-	-	-	-
Landowner/s		-	-	-	-
Mr JF Brink & Mr CJC Brink ❖ Byron No 9448	X	No comments were received from the landowner that could be incorporated into the final BAR and EMPR.			Refer to Appendix H2 for Proof of Public Participation.
Lawful occupier/s of the land	-	-			
N/A	-	-			
Landowners or lawful occupiers on adjacent properties	**X**	-			
Lentevlei Landgoed (Pty) Ltd ❖ Bernard No 9447 ❖ Spitskop No 16302	X	No comments were received from the directly surrounding landowners that could be incorporated into the final BAR and EMPR.			Refer to Appendix H2 for Proof of Public Participation.
Kwaggaskop Landgoed (Pty) Ltd ❖ Portion 1 of Geelhoutboom No 3350	X				
Maria Elizabeth Brink-Trust & Me ME Brink ❖ Geelhoutboom No 3350	X				
CJC Brink Trust					

Interested and Affected Parties **List the name of persons consulted in this column, and** **Mark with an X where those who must be consulted were in fact consulted**		**Date Comments Received**	**Issues raised**	**EAPs response to issues as mandated by the applicant**	**Section and paragraph reference in this report where the issues and or response were incorporated.**
❖ Portion 6 of Geelhoutboom No 3350	X				
❖ Markop Proprietary Limited Glendower No 2901	X	No comments were received from the directly surrounding landowners that could be incorporated into the final BAR and EMPR.			Refer to Appendix H2 for Proof of Public Participation.
❖ Zama Retailers Proprietary Limited Cliffdale No 9439	X				
❖ Community of Barnad Farm & Bothas Pass Area	X	02 April 2025	The following objection was received from Mr Sifiso Mgudulela on behalf of the Barnad Farm & Bothas Pass Area Community upon reading the on-site notice.	The Applicant met with the community representatives on 11 April 2025 and the following matters were discussed.	Refer to Appendix H2 for Proof of Public Participation.

Summary of the objection submitted by Mr Mgudulela on 02 April 2025:

"Objection to mining / issuing prospecting mining rights at Barnad Farm & Bothas Pass Area (Ward 1):

- ….We the community of Barndad Farm hereby wish to lodge our objection to attempts to mine in our area.
- We have heard over the grapevine that there are attempts to do mining in our area.
- We believe that mining would have devastating impact on our lives.
- We submit that starting mining in our area will pollute our water sources, air and the environment that is crucial for our sustenance and that of our livestock.
- ….We object because no attempts have been made to engage communities involved in the environmental impact of this mining project.
- We insist that a proper consultative process be embarked upon to solicit the views of the community before this mining project is granted.
- We also request an audience with the company involved.
- We further request engagement with the Department of Mineral Resources and Energy…."

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted	Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.

Minutes of the meeting held between the Applicant and the Bothas Pass Community representatives on 11 April 2025:

"The meeting was conducted on 11 April 2025 at Rocomamas in Newcastle between Muhsin Osman (MO) and Bothas Pass Community (BPC) representatives.

Attendees list

- M Osman (MO – Mulilo)
- M.S Nkosi (Bothas Pass Community Secretary)
- S.S Magudulela (Bothas Pass Community Chairperson)
- J. Hadebe (Bothas Pass Community Deputy chairperson)

Discussion

- MO indicated that this mining right is different to all current mining applications in the Newcastle area. The purpose of this mine is not for coal mining, but to provide gravel, stone, and aggregate for the construction of a wind energy facility. Mulilo is proposing to construct a wind energy facility on a number of farms which involves the use of wind turbines to generate electricity. This electricity will be fed back to the national grid and reduce load shedding.
- There are no wind farms in KZN at present and the Mulilo Newcastle Wind Power stands to be the first one in the province. Most operational wind farms to date are located in Western Cape, Eastern Cape, and Northern Cape. There is however no longer grid available to connect these projects to in those provinces and companies like Mulilo have had to move to the north eastern provinces, Eastern Free State, KwaZulu-Natal, and Mpumalanga to look at developing wind farms as there is grid available to connect these projects to in those provinces.
- Mulilo has 6 operational renewable energy projects, two wind farms and four solar farms. All of these operational farms are located in the Northern Cape.

Issues raised

- Security: BPC - Mentioned that there will be risk to livestock as theft might increase as a result of more workers brought to the area. MO: This issue has been raised by the surrounding farmers as well and measures will be put in place to alleviate these concerns
- Impact on waste source and environment: BPC - Mentioned that their members obtain their water from the escarpment and concern was raised about what the impact could be from this development. MO: The issue has been raised by other farmers as well and measures will be put in place to alleviate these concerns.

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted	Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.

- Job creation: BPC - Mentioned that jobs should be offered to those in Ward 1 first, who are directly impacted by the project, as opposed to those in other wards. MO: The standard procedure is to work through the local municipality and this process will commence shortly.
- Benefits to the community: BPC - What benefits to the community will these projects have. MO - A community needs assessment will be conducted to access the needs of the community prior to the commencement of construction. These benefits will be rolled out to the wider community.

Further requests

- 1. To see an operational wind energy facility
- 2. To meet with local communities who have benefitted from a wind energy facility
- 3. To meet with the DFFE, DMRE, and Premier's office

It was agreed that the parties will continue to engage in the coming months and Mulilo will possibly meet with the wider Bothas pass community members to discuss the project"

Additional information regarding the concerns raised during the meeting:

Greenmined informed Mr Nkosi on 14 April 2025 that the minutes of the above meeting was added to the FBAR and that the following matters are addressed in the document:

- Safety and Security Matters
  Please refer to the following sections in the FBAR:
  - Part A(1)(h)(v) Impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts;
  - Part A(1)(h)(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;
  - Part A(1)(h)(viii) The possible mitigation measures that could be applied and the level of risk – Management of safety and security risk posed by mining activities to surrounding residents;
  - Part A(1)(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;
  - Part A(1)(j) Assessment of each identified potentially significant impact and risk;
  - Part A(1)(m) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr;;

<table>
<tr><th>Interested and Affected Parties

List the name of persons consulted in this column, and

Mark with an X where those who must be consulted were in fact consulted</th><th>Date Comments Received</th><th>Issues raised</th><th>EAPs response to issues as mandated by the applicant</th><th>Section and paragraph reference in this report where the issues and or response were incorporated.</th></tr>
<tr><td colspan="5">

Part B(1)(d)(iv) Impacts to be mitigated in their respective phases;
Part B(1)(e) Impacts management outcomes;
Part B(1)(f) Impacts management actions;
Part B(1)(g) – (k) Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon.

❖ Impact on water sources
Please refer to the following sections in the FBAR:

Part A(1)(h)(v) Impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts;
Part A(1)(h)(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;
Part A(1)(h)(viii) The possible mitigation measures that could be applied and the level of risk – Hydrology & Waste Management;
Part A(1)(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;
Part A(1)(j) Assessment of each identified potentially significant impact and risk;
Part A(1)(m) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr;;
Part B(1)(d)(iv) Impacts to be mitigated in their respective phases;
Part B(1)(e) Impacts management outcomes;
Part B(1)(f) Impacts management actions;
Part B(1)(g) – (k) Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon.

Refer to Appendix H2 for Proof of Public Participation.
</td></tr>
<tr><td>Municipal councillor</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>Cllr. Pauline Shabalala (Ward 1)</td><td>X</td><td colspan="3">No comments were received from the ward councillor that could be incorporated into the final BAR and EMPR.</td><td>Refer to Appendix H2 for Proof of Public Participation.</td></tr>
</table>

Interested and Affected Parties **List the name of persons consulted in this column, and** **Mark with an X where those who must be consulted were in fact consulted**		**Date Comments Received**	**Issues raised**	**EAPs response to issues as mandated by the applicant**	**Section and paragraph reference in this report where the issues and or response were incorporated.**
Municipality	**-**	-	-	-	-
Newcastle Local Municipality	X	No comments were received from the municipality that could be incorporated into the final BAR and EMPR.			Refer to Appendix H2 for Proof of Public Participation.
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA e	-	-	-	-	-
Department of Transport (DoT)	X	No comments were received from the DoT that could be incorporated into the final BAR and EMPR.			Refer to Appendix H2 for Proof of Public Participation.
Department of Public Works (DPW)	X	No comments were received from the DPW that could be incorporated into the final BAR and EMPR.			Refer to Appendix H2 for Proof of Public Participation.
Department of Water and Sanitation (DWS)	X	No comments were received from the DWS that could be incorporated into the final BAR and EMPR.			Refer to Appendix H2 for Proof of Public Participation.
Communities	N/A	-			

Interested and Affected Parties **List the name of persons consulted in this column, and** **Mark with an X where those who must be consulted were in fact consulted**		**Date Comments Received**	**Issues raised**	**EAPs response to issues as mandated by the applicant**	**Section and paragraph reference in this report where the issues and or response were incorporated.**
Dept. Land Affairs	X	31 January 2025	The Commission on Restitution of Land Rights responded that according to their records a claim for restitution in terms of the provision of the Restitution of Land Rights Act, 22 of 1994 (as amended) was lodged in respect of the farm Byron No 9448. The property fell under the Ecikweni Community Claim, but the Commission confirmed that the claim was subsequently amended to exclude the said property.		Refer to Appendix H2 for Proof of Public Participation.
Traditional Leaders	N/A	-	-	-	-
Dept. Environmental Affairs					
Department of Economic Development, Tourism and Environmental Affairs (DEDTEA)	X	No comments were received from the DEDTEA that be incorporated into the final BAR and EMPR.			Refer to Appendix H2 for Proof of Public Participation.
Other Competent Authorities affected	-	-	-	-	-
AMAFA / Heritage KZN	X	Upon submission of the Application Form for comments on proposed developments as set out in Section 41(1) of the KwaZulu-Natal AMAFA and Research Institute Act, 2018 (Act No 5 of 2018), and Section 38 of the National Heritage Resources Act (Act no 25 of 1999) on 11 March 2025. AMAFA responded (18 March 2025) that they will only consider the application after the commenting period lapsed on 02 April 2025. AMAFA was subsequently informed of the Applicant's name change and will be supplied (15 April 2025) with a copy of the final Comments and Responses Report as well as the Proof of Public Participation and any further comments received from them will be submitted to the DMRE.			Refer to Appendix H2 for Proof of Public Participation.
Department of Agriculture and Rural Development (DARD)	X	No comments were received from DARD that could be incorporated into the final BAR and EMPR.			Refer to Appendix H2 for Proof of Public Participation.

Interested and Affected Parties **List the name of persons consulted in this column, and** **Mark with an X where those who must be consulted were in fact consulted**		**Date Comments Received**	**Issues raised**	**EAPs response to issues as mandated by the applicant**	**Section and paragraph reference in this report where the issues and or response were incorporated.**
Department of Labour (DoL)	X	No comments were received from DoL that could be incorporated into the final BAR and EMPR.			Refer to Appendix H2 for Proof of Public Participation.
Ezemvelo / KZN Wildlife	X	Ezemvelo was supplied with a soft copy (USB Stick) of the DBAR & EMPR and supporting documents that were couriered to them on 24 February 2025. The contact person was also informed of the package to be delivered to Ezemvelo via email. The package was subsequently delivered on 26 February 2025. Ezemvelo did not comment on the project during the commenting period.			Refer to Appendix H2 for Proof of Public Participation.
Amajuba District Municipality (ADM)	X	No comments were received from ADM that could be incorporated into the final BAR and EMPR.			Refer to Appendix H2 for Proof of Public Participation.
South African Heritage Resources Agency	X	Please refer to the earlier discussion regarding AMAFA.			
OTHER AFFECTED PARTIES		-	-	-	-
N/A		-	-	-	-
INTERESTED PARTIES		-	-	-	-
Mr Pieter Conradie ❖ Drakensbergkloof Wedding Venue & Accommodation		30 March 2025	Mr Conradie advised that his venue (Drakensbergkloof) is near the proposed MNWP projects and subsequently offered the farm as housing option for project contractors.	Greenmined acknowledged receipt of Mr Conradie's correspondence that was then shared with the Applicant for consideration during the construction phase.	Refer to Appendix H2 for Proof of Public Participation.

iv) The Environmental attributes associated with the alternatives.

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

(1) Baseline Environment

(a) Type of environment affected by the proposed activity.

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

This section describes the biophysical, cultural, and socio-economic environment that may be affected and the baseline conditions, which are likely to be affected by the proposed mining activity.

Due to the relevance of the information and overlapping of the study areas this segment draws on the available information as contained in the final EIAR of the MNWP WEF compiled by CES in February 2024.

PHYSICAL ENVIRONMENT

CLIMATE

The climate of the study area for the proposed quarry development is classified as a temperate oceanic climate. This is based on available climate data for Newcastle, which is the nearest town to the study area. The average annual temperature in Newcastle is 16.0°C, with an average maximum of 20.9°C in February (summer) and an average minimum of 12.5°C in July (winter). Newcastle is a summer rainfall region and receives an average of 726 mm of precipitation per annum. December receives the most rainfall, with an average of 163 mm, while June receives the least rainfall, with an average of 11 mm (following table) (CES 2024).

Table 10: Climate data Newcastle (image obtained from the MNWP WEF EIAR)

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature °C (°F)	19.9 °C (67.7) °F	19.8 °C (67.7) °F	18.6 °C (65.5) °F	15.9 °C (60.6) °F	13.1 °C (55.5) °F	10.3 °C (50.6) °F	10.1 °C (50.1) °F	13 °C (55.3) °F	16 °C (60.9) °F	17.5 °C (63.5) °F	18.6 °C (65.4) °F	19.7 °C (67.5) °F
Min. Temperature °C (°F)	14.9 °C (58.8) °F	14.9 °C (58.9) °F	13.4 °C (56.2) °F	10.4 °C (50.7) °F	6.7 °C (44.1) °F	3.7 °C (38.7) °F	3.1 °C (37.5) °F	5.6 °C (42.2) °F	8.6 °C (47.5) °F	11 °C (51.8) °F	12.6 °C (54.8) °F	14.3 °C (57.8) °F
Max. Temperature °C (°F)	25.5 °C (77.9) °F	25.5 °C (77.9) °F	24.4 °C (76) °F	22 °C (71.6) °F	20.2 °C (68.3) °F	17.9 °C (64.2) °F	17.9 °C (64.2) °F	21 °C (69.8) °F	24 °C (75.2) °F	24.8 °C (76.6) °F	25.2 °C (77.3) °F	25.8 °C (78.5) °F
Precipitation / Rainfall mm (in)	146 (5.7)	105 (4.1)	104 (4.1)	44 (1.7)	19 (0.7)	11 (0.4)	14 (0.6)	25 (1)	42 (1.7)	99 (3.9)	123 (4.8)	163 (6.4)
Humidity(%)	72%	71%	69%	66%	57%	53%	49%	45%	46%	58%	64%	69%
Rainy days (d)	13	10	9	6	3	2	2	3	5	10	12	14
avg. Sun hours (hours)	8.3	8.6	8.2	8.1	8.6	8.4	8.5	8.9	8.8	8.6	8.7	9.1

To collect wind measurements for the intended MNWP WEF, two 90 m high wind measurement masts were erected in 2021 to gather wind speed data and correlate these measurements with other meteorological data to produce a final wind model.

The following figure shows the wind capability figures for the two Mulilo Newcastle WEF sites as per the Department of Energy High Resolution Wind Resource Map for South Africa (2018), which indicates that the area has an average wind speed of between 7.5 and 10 m/s. These high wind speeds have been confirmed by the data obtained from the two high wind measurement masts on site.

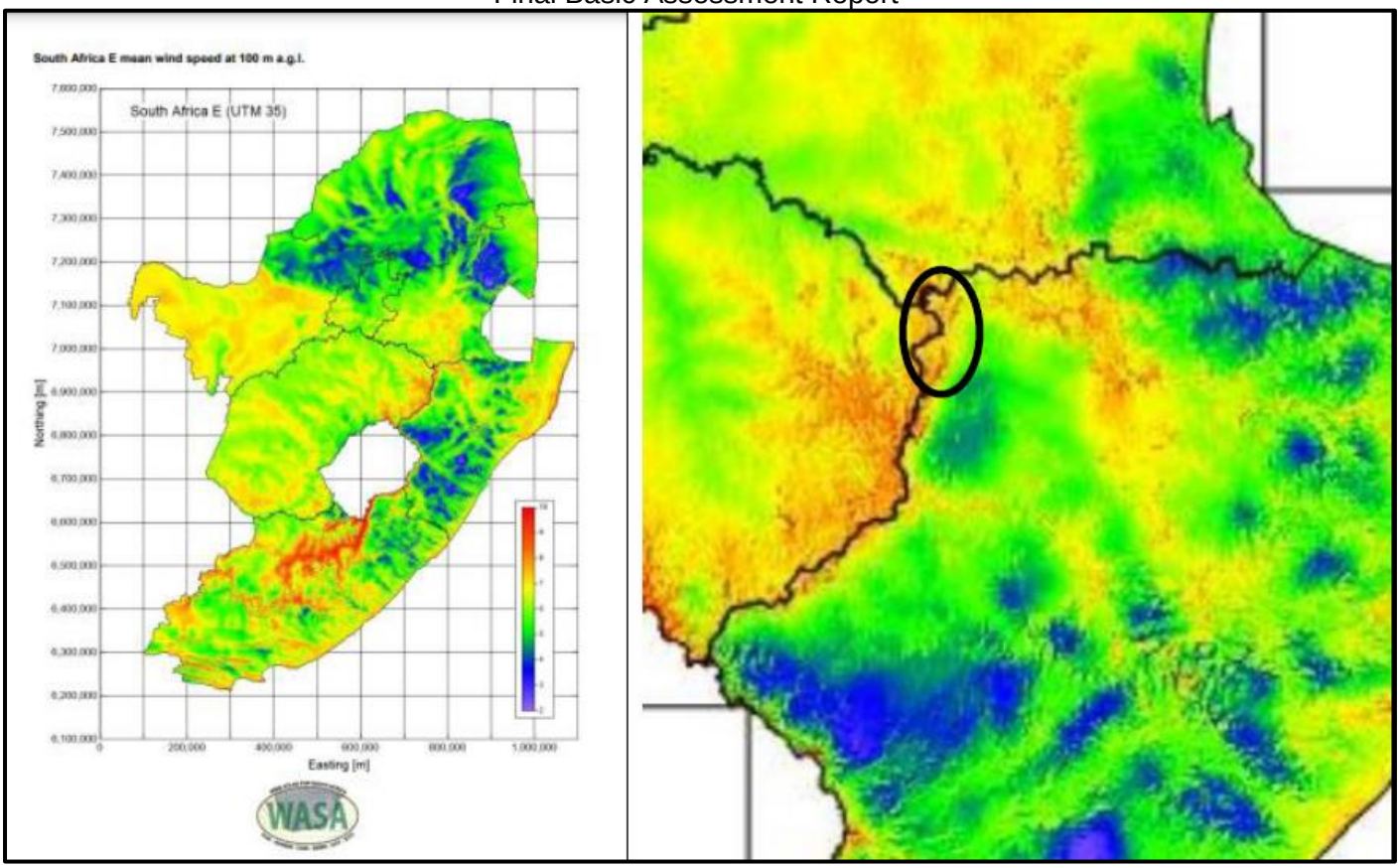


Figure 7: High resolution wind resource map for the Newcastle area (mean wind speed, ms-1, Department of Energy, 2018) with location of MNWP WEF circled (CES 2024).

TOPOGRAPHY

The greater study area of the MNWP WEF is located on a topographically steep slope, with an average gradient of 12.7% (maximum) and 11.3% (minimum), sloping in a north westerly and south easterly direction (following figures). Several drainage lines flow from the top of the study area, which is on average 1,654 m above sea level.

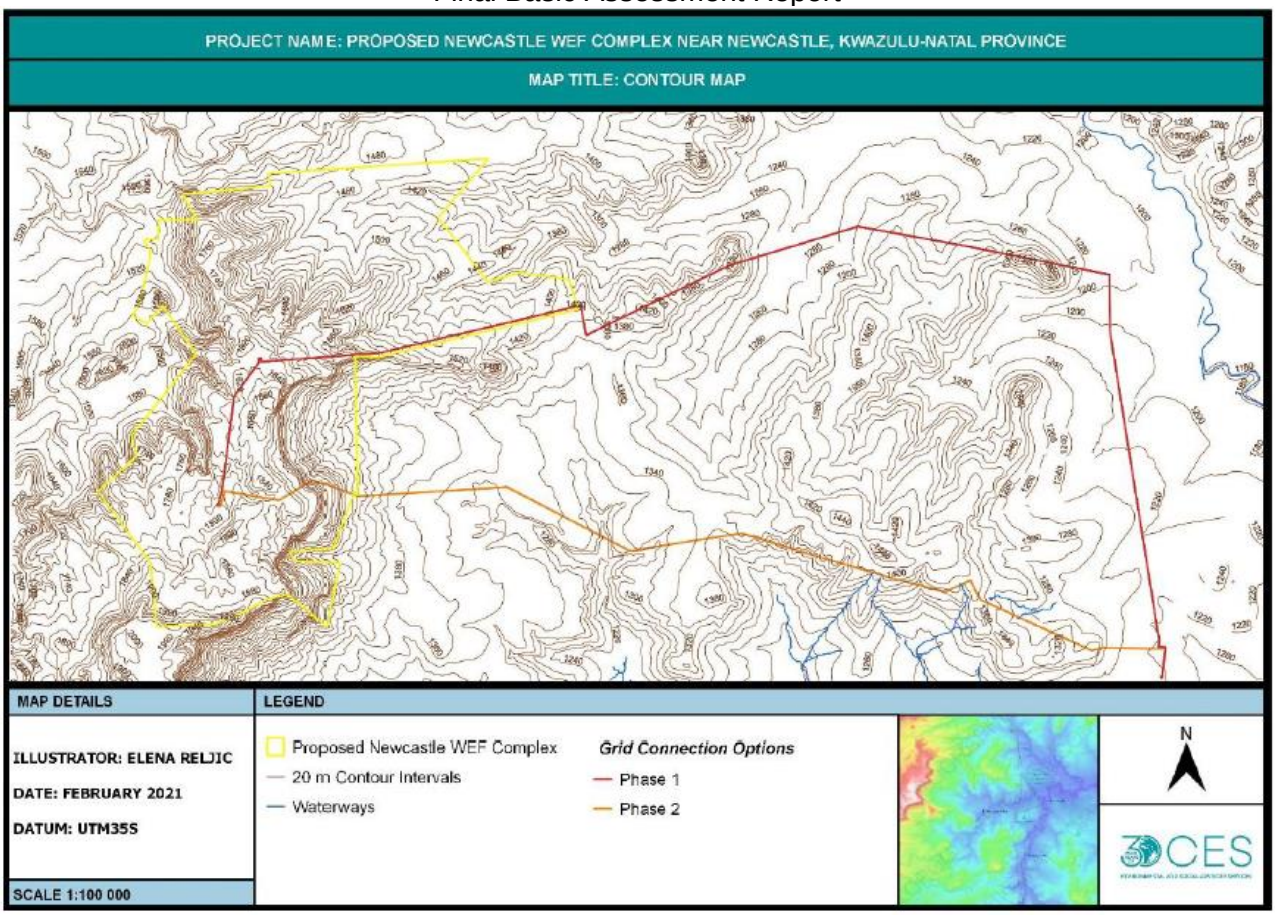


Figure 8: Contour map of the MNWP WEF study area (CES 2024).

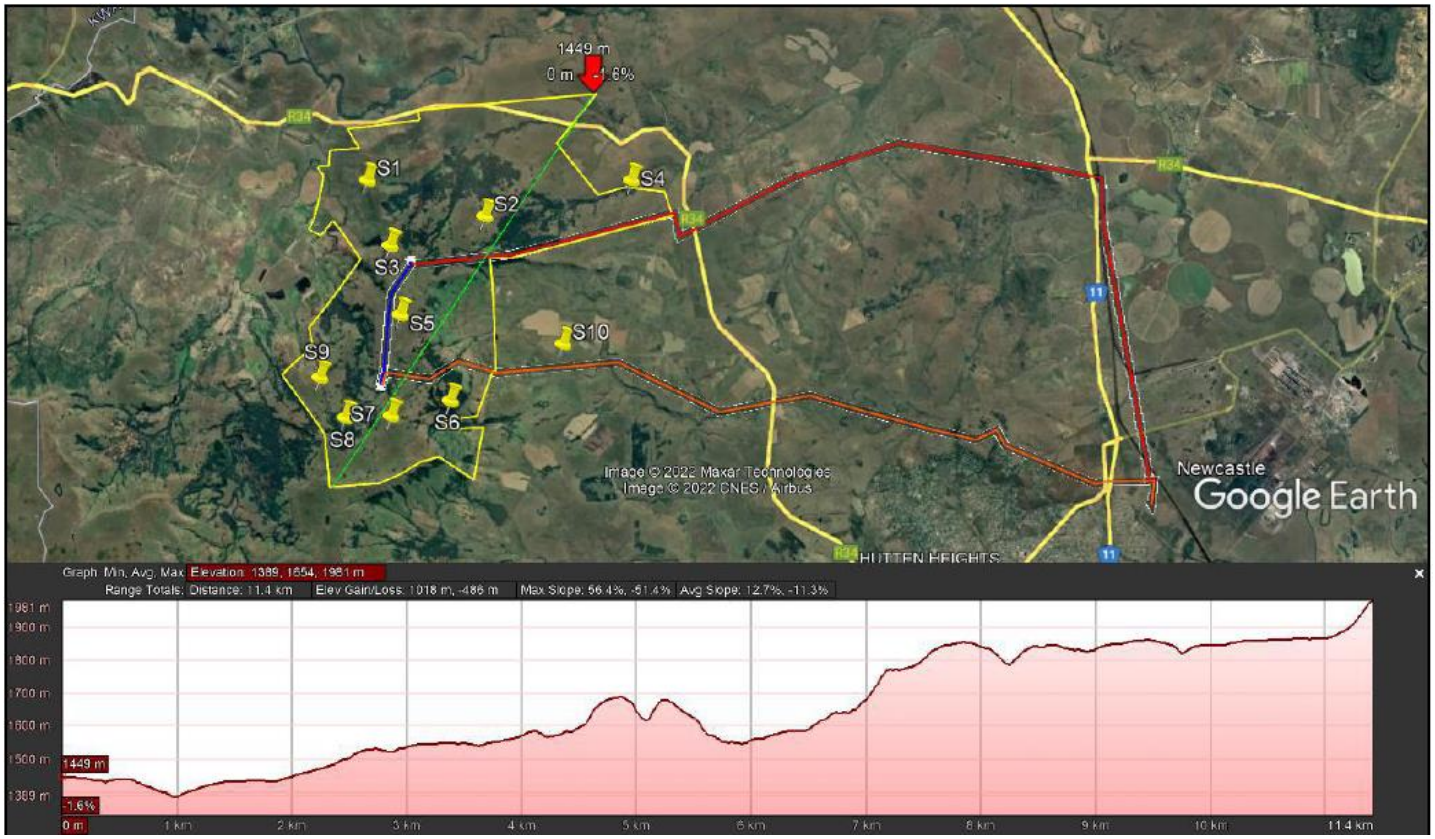


Figure 9: Elevation profile of the MNWP WEF study area from south-west to north-east (CES 2024).

Also refer to *Part A(1)(h)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Topography.*

VISUAL CHARACTERISTICS

The baseline assessment of the visual characteristics of the greater MNWP WEF study area was obtained from the Visual Impact Assessment for the proposed MNWP WEF as compiled by NuLeaf Planning and Environmental (Pty) Ltd in 2023.

The greater environment with its wide open, undeveloped landscapes is considered to have a high visual quality. This study area is not known as a tourist destination, but Newcastle is an alternate route for travellers from Gauteng to Durban. Additionally, Newcastle is part of the KZN Battlefields Route where the Majuba Mountain has historical significance.

Also refer to *Part A(1)(h)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Visual Characteristics.*

AMBIENT NOISE QUALITY

The baseline assessment of the ambient noise quality of the greater MNWP WEF study area was obtained from the Environmental Noise Impact Assessment for the proposed MNWP WEF compiled by EARES Enviro Acoustic Research in 2023.

The MNWP WEF study area has little natural features that could act as noise barriers considering practical distances at which sound propagates. Most dwellings featuring in the vicinity of the project focus area are scattered in a heterogeneous fashion, typical of a rural area. Most of the area can be considered wilderness, with animal husbandry (stock grazing) and subsistence farming predominant in the area. None of these activities will influence the ambient sound levels in the project focus area.

The R34 pass the project site to the north. Traffic volumes are relatively low, though noises from passing traffic would be audible up to 2 km from the road. Road traffic noises may influence ambient sound levels within 500 m from the roads.

Excluding a small plastics manufacturer to the west of the project focus area, there are no industries or mines located within the project focus area that would impact on the ambient sound levels in the area.

The following figure highlights the potential noise-sensitive developments, receptors and communities (NSRs) that were identified in the study area.

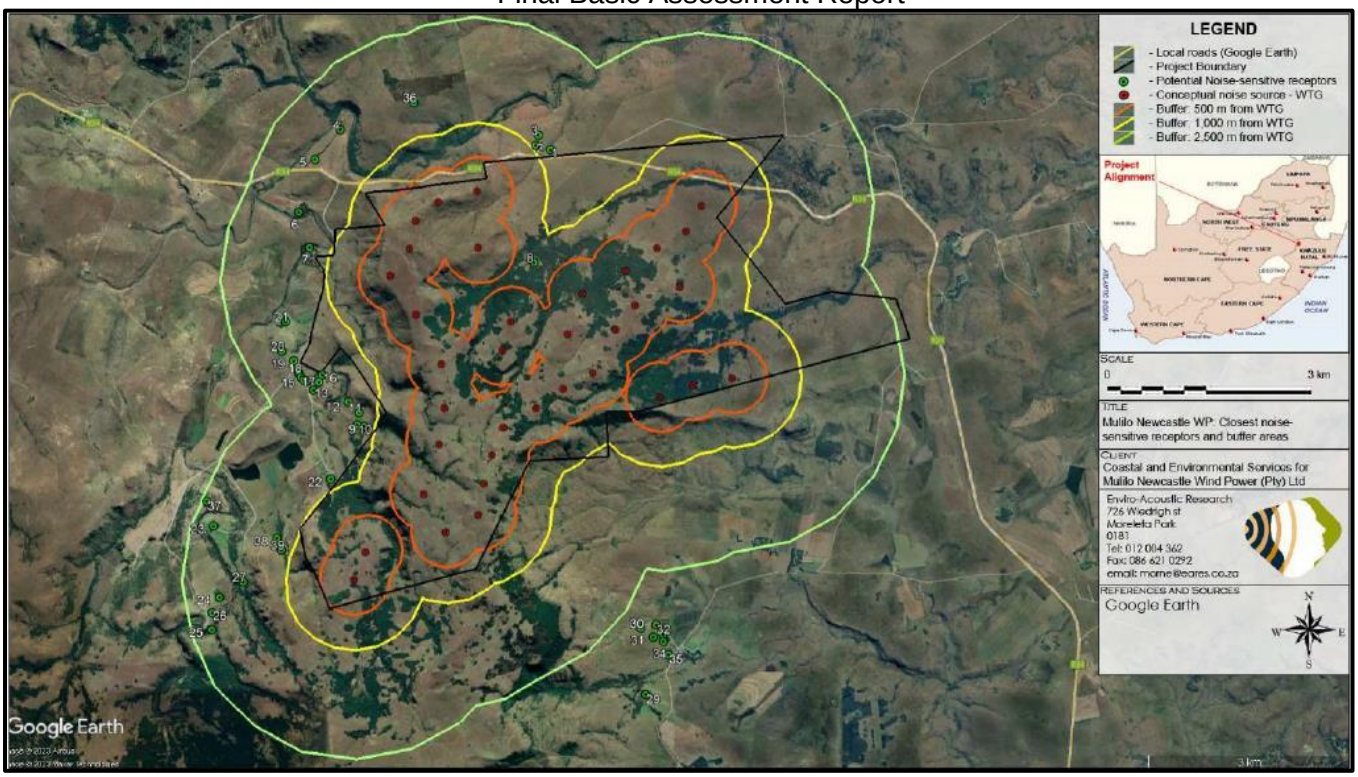


Figure 10: Study area and potential noise-sensitive receptors near the greater MNWP WEF study area (EARES 2023)

Also refer to *Part A(1)(h)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Air Quality* and *Ambient Noise Quality*.

BASELINE GEOLOGY AND SOIL

The geology section was sourced from the FEIAR of the MNWP WEF compiled by CES in 2024. This section provides an overview of the geological setting of the greater MNWP WEF project area as well as an indication of the types of lithology underlying the greater study area based on relevant available literature.

Geology

The underlying geology of the study area comprises sedimentary deposits from the Beaufort Group and Volkrust Formation of the Karoo Supergroup and ECCA Group, respectively, as well as the Karoo Dolerite Suite (following figure).

- **Beaufort Group** - covers a surface area of approximately 200 000 km^2 and is made up of fluvial rocks deposited about 250 million years ago within the Main Karoo Basin of South Africa. The strata in the Beaufort Group consist predominantly of mudstones and sandstones deposited by a variety of fluvial systems (Catuneanu et al., 2005).

- **Volksrust Formation** - Volksrust Formation is a transgressive argillaceous succession occurring about 252 million years ago that superimposes the Vryheid Formation in the northern part of the Karoo Basin (Catuneanu et al., 2005). Rocks of the Volksrust Formation consist mainly of shale and mud-rocks, and minor coals.

- **Karoo Dolerite Suite** - Karoo **Dolerite** Suite **represents** a network of igneous dykes and sills that intruded rocks of the Beaufort Group in the Karoo Basin about 180 million years ago (Neumann et al., 2011).

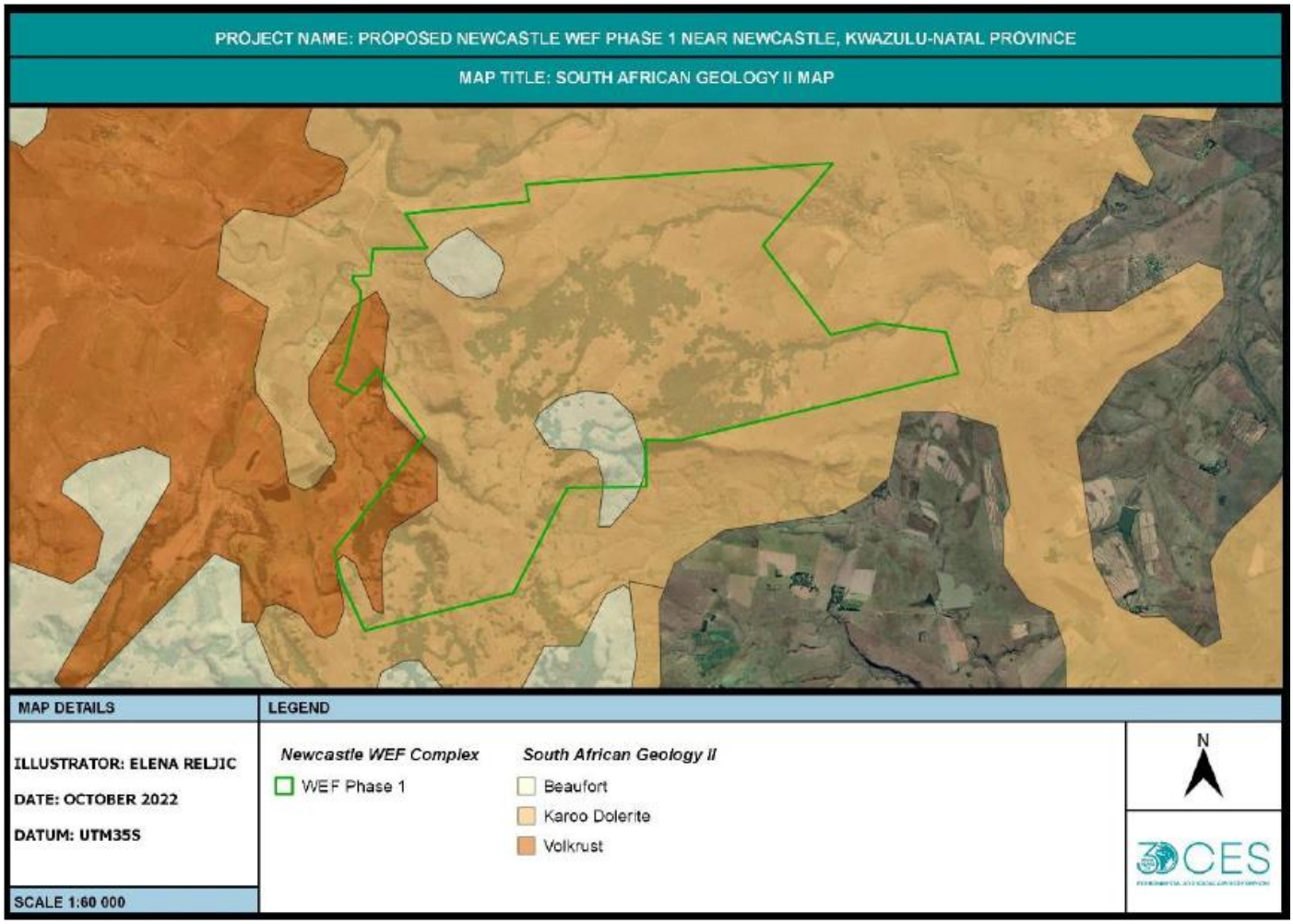


Figure 11: Geology map of the greater MNWP WEF study area (CES 2024)

Soils

According to SOTER (1995), the soils within the study area are classified as Lithic Leptosols, Rhodic Ferralsols and Rhodic Nitisols (following figure).

- **Leptosols** – are very shallow soils which overlie continuous hard rock and consist primarily of **various** kinds of rock or unconsolidated materials with less than 20% fine earth. These soils generally occur in mountainous areas and are best kept underneath forests as they easily eroded (ISRIC, 2021).

- **Ferralsols** – are deeply weathered, red or yellow, clayey soils found in humid tropical zones. These soils are typically found in low undulating areas and are low in fertility (ISRIC, 2021).

- **Nitisols** – are deep, well-drained, red, clayey soils that are generally found in hilly landscapes under tropical forests or grasslands. These soils are strongly weathered and considered to be fertile, making them relatively good for farming and plantations (ISRIC, 2021).

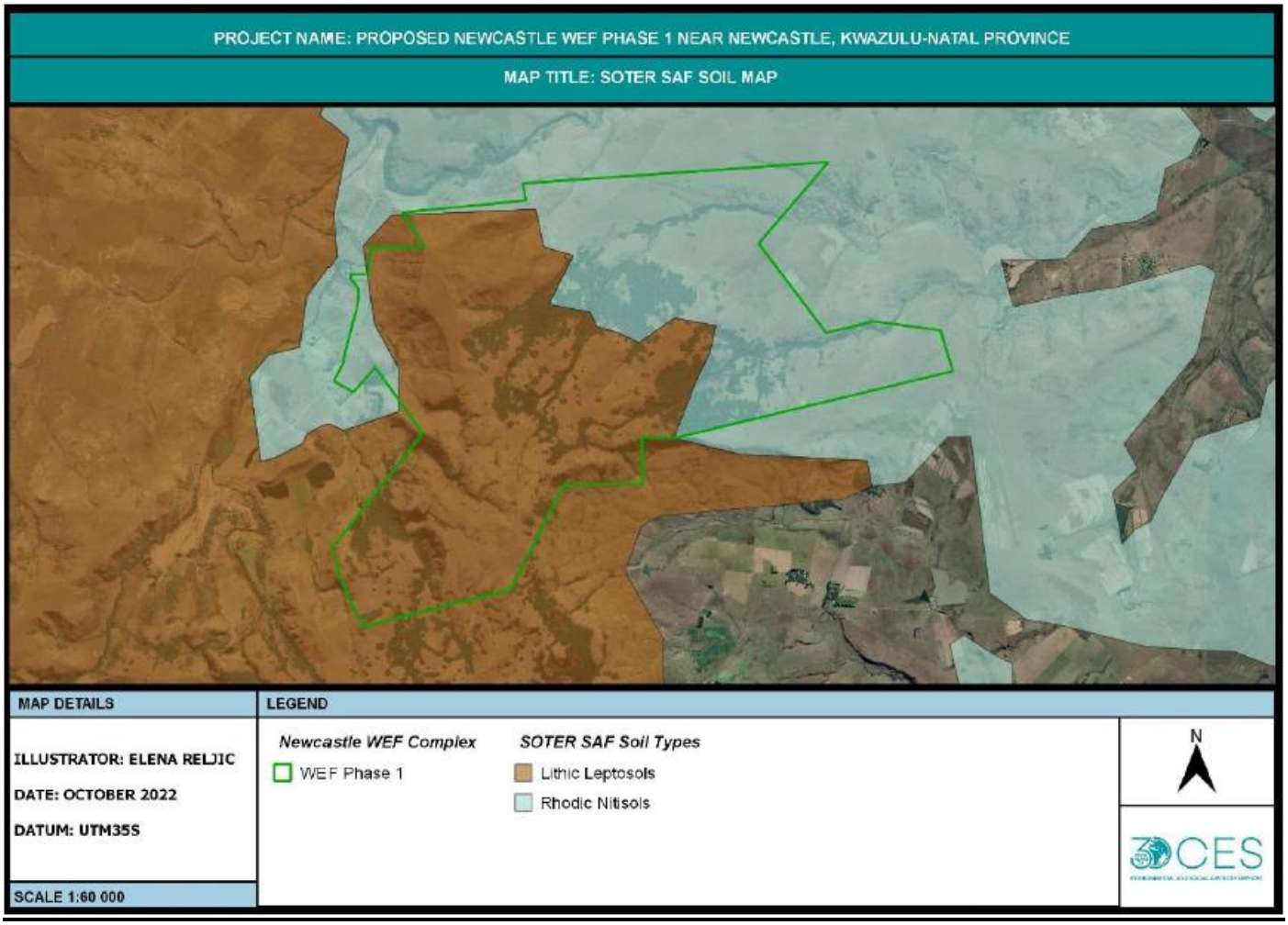


Figure 12: SOTER SAF Soil map of the greater MNWP WEF study area (CES 2024)

Also refer to *Part A(1)(h)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Geology.*

HYDROLOGY (INCLUDING WETLAND SYSTEMS)

The following baseline assessment of the freshwater aquatic features was obtained from the FEIAR of the MNWP WEF as compiled by CEM in 2024 and was based on the study of Verdant Environmental.

Desktop PES Assessment

The desktop PES (present ecological state) assessment indicated that the majority of the watercourses on the higher lying plateau area and slopes in the southern half of the greater MNWP WEF study area are rated as being in good condition (Class A and B) with very little direct and indirect modification of ecosystem drivers and biotic response (vegetation and habitat condition). The only impacts observed on these systems were as a result of cattle grazing. Some of the larger wetlands and some mountain headwater streams in the southern half were rated as being moderately to largely modified (PES Class C – D) because of extensive wattle invasion of the wetlands.

In the northern half of the greater MNWP WEF study area, there are some wetlands and streams in good condition that are confirmed to the highest lying areas and slopes. However, most of the streams and wetlands are rated as being in moderately to seriously modified condition (PES C – D). This is largely due to extensive wattle invasion of these systems and widespread overgrazing that has resulted on erosion and sedimentation. Within the lower lying areas there is also widespread cultivation of some of the broader seep and valley bottom wetlands.

For the most part, the wetlands along the proposed powerline alignments are moderately to seriously modified (PES Class C – D) and substantially more impacted than the wetlands on the higher lying plateaus and mountain slopes of the turbine study area. Impacts in the eastern half of the alignments are most severe with most wetlands and streams / rivers assessed as being seriously modified (PES Class D) due to a mix of impacts that include: impacts of dams, widespread gully and channel erosion and overgrazing.

Desktop EIS Assessment

All intact wetlands of PES A – C were scored as high EIS considering that the threat status of the regional wetlands is critically endangered. Highly impacted wetlands (PES D – E) were generally rated as being of moderate EIS unless there was evidence that ecosystem system provision is still high. The intact headwater, mountain headwater and upper foothills streams were rated as moderate EIS with some of the larger rivers (i.e. transitional rivers) in a good condition rated as high EIS.

National Freshwater Ecosystems Priority Areas

The National Freshwater Ecosystems Priority Areas (NFEPA) (2011) database provides strategic spatial priorities for conserving South Africa's freshwater ecosystems and supports the sustainable use of water resources. The spatial priority areas are known as Freshwater Ecosystem Priority Areas (FEPAs). A review of the NFEPA coverage for the study area revealed that the proposed site (BP1) is not within a NFEPA area.

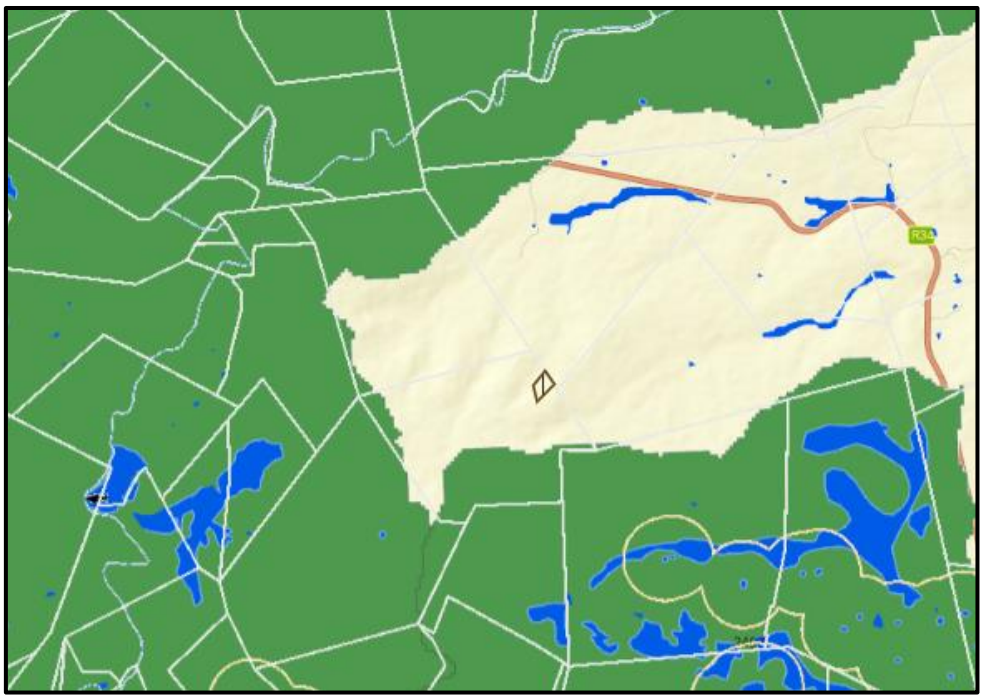


Figure 13: Map confirming that the application area (black polygon) is outside any NFEPA classified area. (Image obtained from the BGIS Map Viewer – National Wetlands and NFEPA).

Strategic Water Source Areas

Strategic Water Source Areas (SWSAs) are defined as areas of land that either:

- supply a disproportionate (i.e. relatively large) quantity of mean annual surface water runoff in relation to their size and so are considered nationally important;
- have high groundwater recharge and where the groundwater forms a nationally important resource;
- areas that meet both criteria mentioned above.

The project site is located within the Northern Drakensberg SWSA. Also refer to *Part A(1)(h)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Hydrology.*

MINING AND BIODIVERSITY

(Information extracted from the Mining and Biodiversity Guideline: Mainstreaming Biodiversity into the Mining Sector, Department of Environmental Affairs, Department of Mineral Resources, Chamber of Mines, 2013)

The Mining and Biodiversity Guideline, compiled by the South African Mining and Biodiversity Forum (SAMBF) provides the mining sector with a practical, user-friendly manual for integrating biodiversity considerations into planning processes and managing biodiversity during the developmental and operational phases of a mine, from exploration through to closure.

When the potential mining footprint is layered over the Mining and Biodiversity Map (following figure), it falls in an area of moderate biodiversity importance (yellow) with a corresponding rating of moderate risk for mining.

The Mining and Biodiversity Guideline's definition for areas of moderate biodiversity importance stipulates that: "*these biodiversity priority areas have moderate biodiversity importance in which mining options may be constrained".* The guidelines note that environmental screening, the EIA and specialists should focus on confirming the presence and significance of biodiversity features and provide a site-specific basis on which to apply the mitigation hierarchy to inform regulatory decision-making.

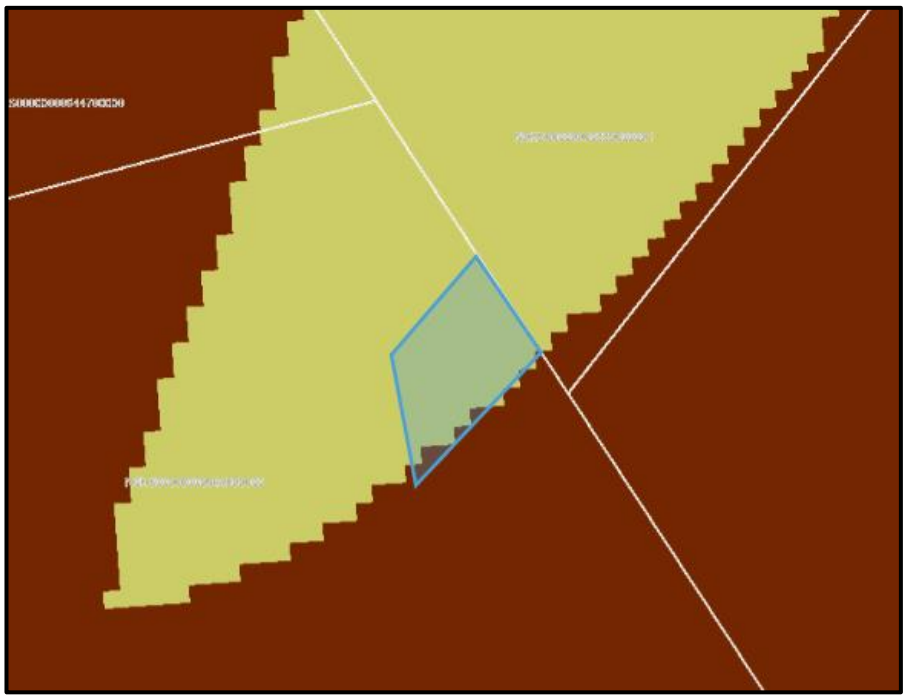


Figure 14: The Mining Guidelines map shows the proposed mining area (blue polygon) within an area of moderate biodiversity importance with a moderate risk for mining (yellow) (image obtained from the BGIS Map Viewer – Mining Guidelines).

Also refer to *Part A(1)(h)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Site Specific Terrestrial Biodiversity (including fauna and flora).*

BASELINE ECOLOGICAL ENVIRONMENT (FAUNA AND FLORA)

(Also refer to Part A(1)(h)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Terrestrial Biodiversity (including fauna and flora)

The following baseline ecological information was obtained from the FEIAR of the MNWP WEF as compiled by CEM in 2024 and was based on available desktop information and several initial site assessments conducted by the ecological specialists (faunal and floral) during February and March 2022.

Biomes

The greater MNWP WEF area falls within two biomes, the Grassland Biome and the Forest Biome (Mucina et al., 2018).

Grassland biome

Approximately 40% of the grassland biome in South Africa has been transformed, while almost 60% of the remaining grassland areas are classified as threatened due to the loss of vital aspects of their composition, structure, and functioning. Only 3% of this valuable ecosystem is formally conserved. The fragmentation and degradation of grassland ecosystem severely affects the ecosystems' ability to provide valuable ecosystem services such as soil formation, freshwater, climate regulation and erosion prevention. As such, development within the remaining natural grassland areas should be well informed and err on the side of caution (SANBI, 2013). The two (2) key ecological drivers of grassland ecosystems include climate and fire which influences their character, community structure, composition, and primary productivity. In addition to climate and fire, other ecological drivers influencing these factors include grazing, soil types, and nutrient status. Due to their high biodiversity and their suitability for human habitation, these ecosystems are often negatively impacted by various anthropogenic activities including grazing by livestock, over harvesting of natural resources, misappropriation of fire, mining, agriculture, urban and industrial expansion, amongst others (SANBI, 2013).

Forest biome

The indigenous forest biome in South Africa covers less than 0.1% of the land surface area and are defined as, "a generally multi-layered vegetation unit dominated by trees (largely evergreen or semi-deciduous), whose combined strata have overlapping

crowns (i.e., crown cover is 75% or more), and where graminoids in the herbaceous stratum (if present) are generally rare" (Bailey et al., 1999 and Shackleton et al., 1999 in Rutherford et al., 2006). In South Africa, forests typically occur in small, scattered patches of less than 10 ha, forming islands within large scale patches of temperate biomes such as Grassland, Savanah, Fynbos, and Albany Thicket, along the eastern and southern margins (Great Escarpment, mountain ranges and coastal lowlands) (Rutherford et al. 2006). The major factors determining the distribution of forest patches within South Africa include not only environmental factors such as rainfall and substrate but also fire pattern which in turn is determined by the interaction between the topography and the prevailing wind direction during dry periods. Forests tend to persist in topographic or wind shadow areas (also called fire refugia) (Rutherford et al. 2006).

National Vegetation Map

The South African Vegetation Map (SA VEGMAP) of 2018 is an important resource for biodiversity monitoring and conservation management in South Africa. Under the custodianship of the South African National Biodiversity Institute (SANBI) the SA VEGMAP, (2018) was updated to 'provide floristically based vegetation units of South Africa, Lesotho and Swaziland at a greater level of detail than had been available before'. The map provides a detailed description of each of South Africa's unique vegetation types along with a comprehensive list of the important species associated with each, including endemic and biologically important species.

According to SANBI's National Vegetation Map (2018), the greater MNWP WEF Project occurs within four (4) vegetation types, namely Northern KwaZulu-Natal Moist Grassland, KwaZulu-Natal Highland Thornveld, Low Escarpment Moist Grassland, and Southern Mistbelt Forest (following figure).

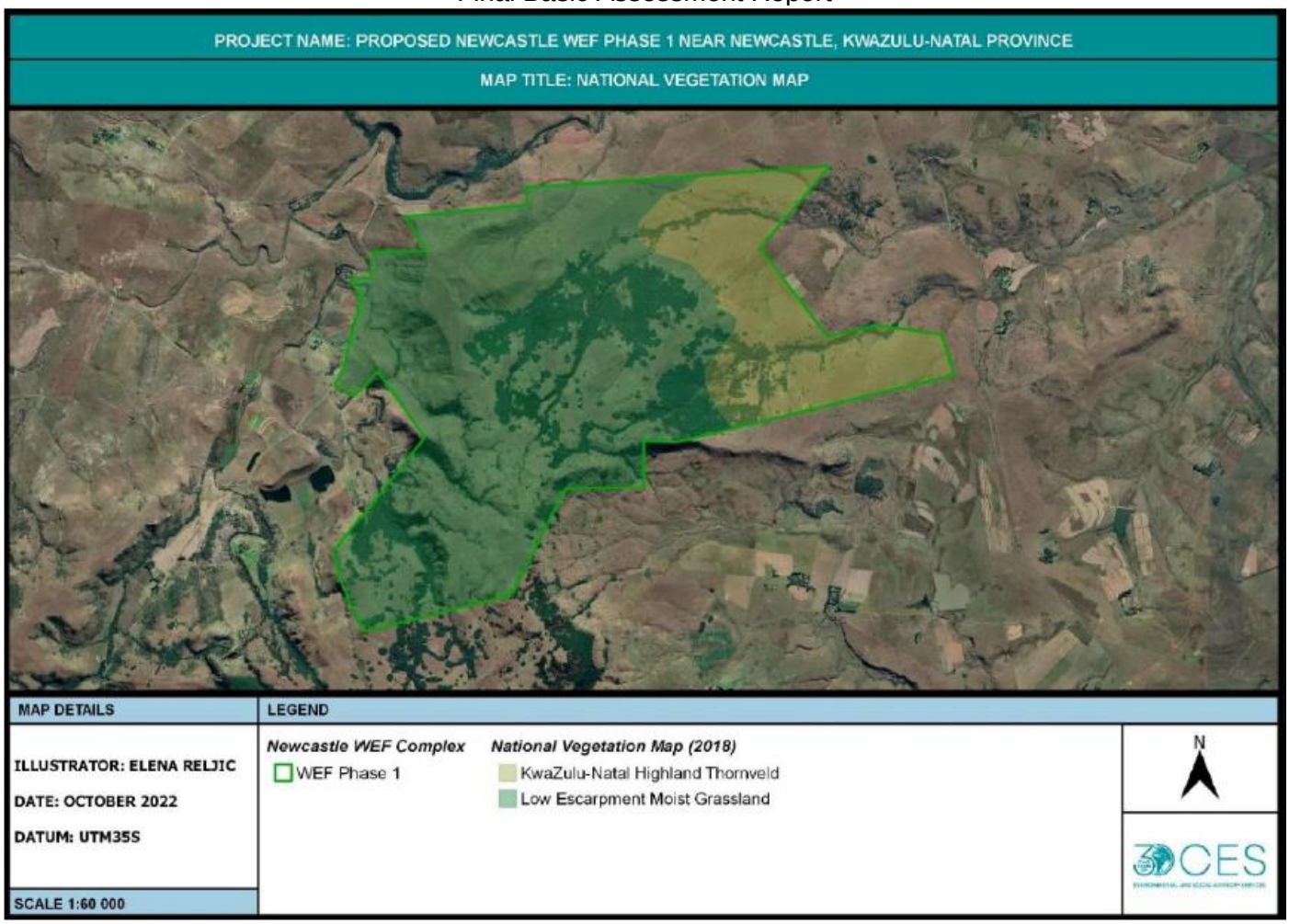


Figure 15: National vegetation map of the greater MNWP WEF area (CES 2024).

KwaZulu-Natal Highland Thornveld

KwaZulu-Natal Highland Thornveld occurs in a series of patches in the central-northern regions of KwaZulu-Natal in dry valleys and moist uplands at an altitude of approximately 920-1440 m. This vegetation type falls within the summer rainfall region (MAP: ±750 mm) and is characterised by tall tussock grassland dominated by *Hyparrhenia hirta*, with occasional savannoid woodlands with scattered *Vachellia sieberiana, V. karroo* and *V. nilotica* which usually occur in small pockets. It is typically underlain by a variety of Karoo Supergroup rocks (Mucina et al., 2006).

According to South Africa's Terrestrial Red List of Ecosystems (RLE), KwaZulu-Natal Highland Thornveld is classified as Least Concern (SANBI, 2021). The historical extent of this vegetation type amounted to 5 227 km^2 but only 63% of its natural extent remains. It is considered poorly protected and the conservation target for this vegetation type is 23% (SA VEGMAP, 2018).

Low Escarpment Moist Grassland

Low Escarpment Moist Grassland occurs on complex mountain topography such as steep (generally east- and south-facing) slopes at a range of altitudes within the KwaZulu-Natal, Free State and Mpumalanga Provinces. It is characterised by tall, closed grassland dominated by *Hyparrhenia hirta* and *Themeda triandra* with patches of *Protea caffra* and *Leucosidea* scrub communities appearing at higher altitudes. This vegetation type falls within the summer rainfall region and is typically underlain by mudstone and shales of the Ecca and Beaufort Groups (Karoo Supergroups). Patches of Northern KwaZulu-Natal Mistbelt Forest occur within the sub-escarpment regions and deep-kloof positions (Mucina et al., 2006).

According to South Africa's Terrestrial Red List of Ecosystems (RLE), Low Escarpment Moist Grassland is classified as Least Concern (SANBI, 2021). Its historical extent was 1 742 km² and the remaining natural extent amounts to 90%. It is considered poorly protected and the major threats which lead to the loss and degradation of this ecosystem includes plantations, cultivation, and invasion by *Acacia dealbata*.

Southern Mistbelt Forest

Southern Mistbelt Forest is endemic to South Africa and occurs as patches in shadow habitats on south- and southeast-facing slops along the Great Escarpment. In KwaZulu-Natal, this vegetation type is characterised by a tall (15-20 m) and multi-layered canopy typically composed of two layers of trees and a dense shrubby understory with a well-developed herbaceous layer. In low altitudes, these forests represent more of a scrub forest with a low, unstructured canopy characterised by high species diversity. In high altitudes, Southern Mistbelt Forest is characterised by a tall canopy, with a mixture coarse-grained canopy gap/disturbance driven dynamics and regeneration characteristics. Dominant species include emergent trees such as *Afrocarpus falcatus, Celtis africana, Calodendrum capense, Vepris lanceolata* and *Zanthoxylum davyi*, with *Podocarpus henkelii* becoming more prominent in the canopy layer of forests that fall within the KwaZulu-Natal Midlands (SANBI, 2021).

According to South Africa's Terrestrial Red List of Ecosystems (RLE), Southern Mistbelt Forest is classified as Least Concern (SANBI, 2021). Its historical extent was 1 061.95 km^2 and the remaining natural extent amounts to 83%. This vegetation type has experienced low rates of natural habitat loss and biotic disruptions, placing this ecosystem at low risk of collapse. Southern Mistbelt Forest is classified as moderately protected.

Critical Biodiversity Areas

The Conservation Terms for the EKZNW Spatial Planning Products Document (2014) provides a map of important biodiversity areas within the KwaZulu-Natal Province, to guide sustainable development as well as focus conservation efforts within the province. The aim of the document is to provide stakeholders with a simplified guide to Systematic Conservation Assessment (SCA) and the development of the KwaZulu-Natal Biodiversity Plan (KZN BP). The KZN BP consists of two primary spatial layers, namely Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs), but also includes the legislated Protected Areas, modified areas and Natural Biodiversity Areas.

Critical Biodiversity Areas (CBAs) are defined as natural or near-natural features, habitats or landscapes that include terrestrial, aquatic and marine areas that are considered critical for the following reasons:

- Meeting national and provincial biodiversity targets and thresholds;
- Safeguarding areas required to ensure the persistence and functioning of species and ecosystems, including the delivery of ecosystem services; and/or
- Conserving important locations for biodiversity features or rare species. Conservation of these areas is crucial, in that if these areas are not maintained in a natural or near-natural state, biodiversity conservation targets cannot be met.

The KZN BP CBAs are divided into two subcategories, namely Irreplaceable and Optimal CBAs. Irreplaceable CBAs are areas considered critical for meeting biodiversity targets and thresholds, and which are required to ensure the persistence of viable populations of species and the functionality of ecosystems. Optimal CBAs are areas that represent an optimised solution to meet the required biodiversity conservation targets while avoiding areas where the risk of biodiversity loss is high Category driven primarily by process but is also informed by expert input. Unlike CBAs, ESAs are not entirely natural but are still required to ensure the persistence and maintenance of biodiversity patterns and ecological processes within CBAs.

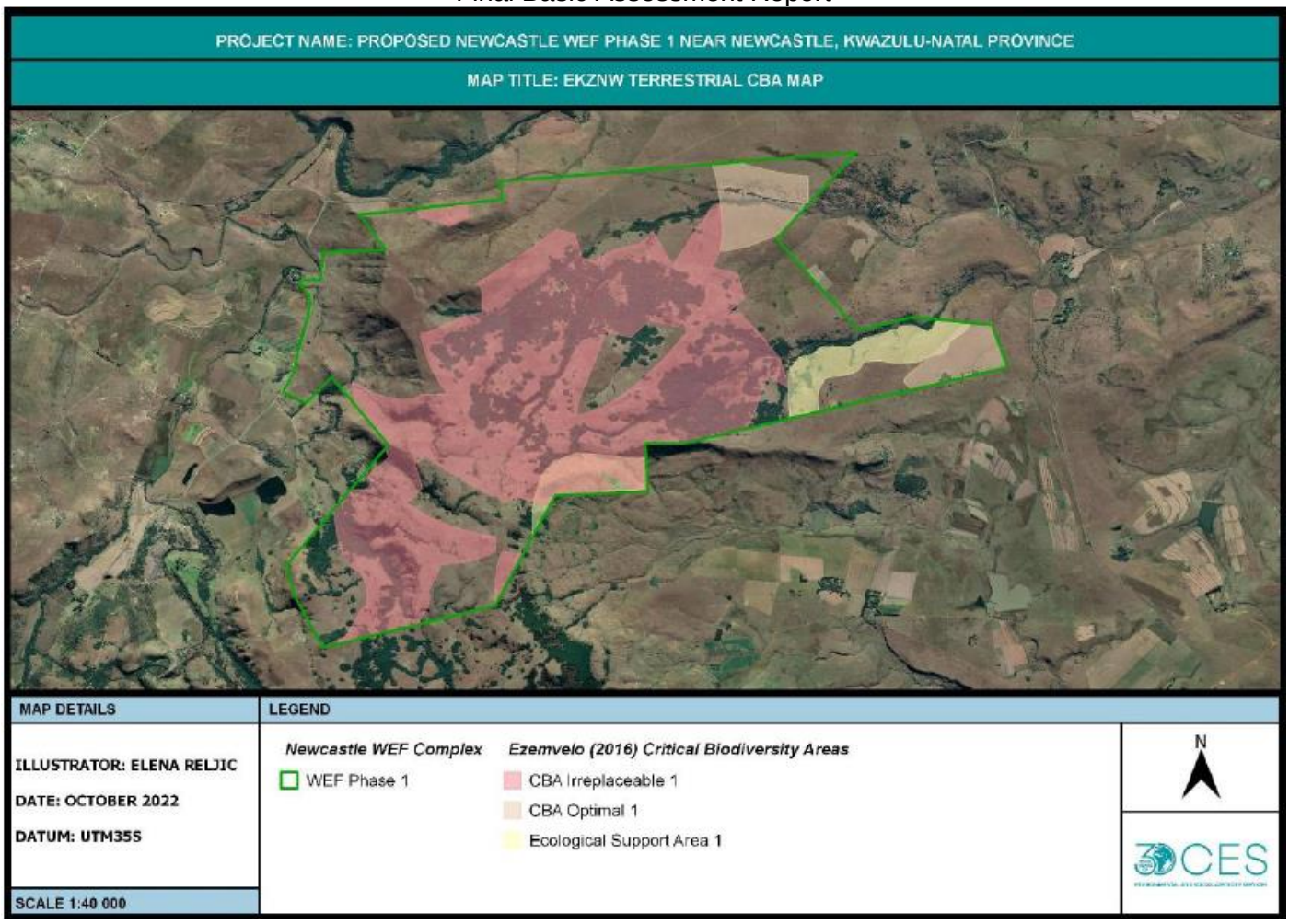


Figure 16: EKZNW (2016) Terrestrial CBAs within the greater MNWP WEF area (CES 2024).

Protected Areas

The National Protected Areas Expansion Strategy (NPAES, 2008) was developed to "achieve cost-effective protected area expansion for ecological sustainability and increased resilience to climate change." The NPAES originated as Government recognised the importance of protected areas in maintaining biodiversity and ecosystem functions. The NPAES sets targets for expanding South Africa's protected area network, placing emphasis on those ecosystems that are least protected.

As illustrated in the following figure the greater MNWP WEF study area is located within an NPAES Focus Area (2010), namely Moist Escarpment Grasslands. In addition, the study area occurs within 10 km of a protected or conservation area recognised by the South African Protected Areas Database (SAPAD, 2021), namely the Sneeuberg Protected Environment. However, the site does not occur within a protected or conservation area recognised by the South African Conservation Areas Database (SACAD, 2021).

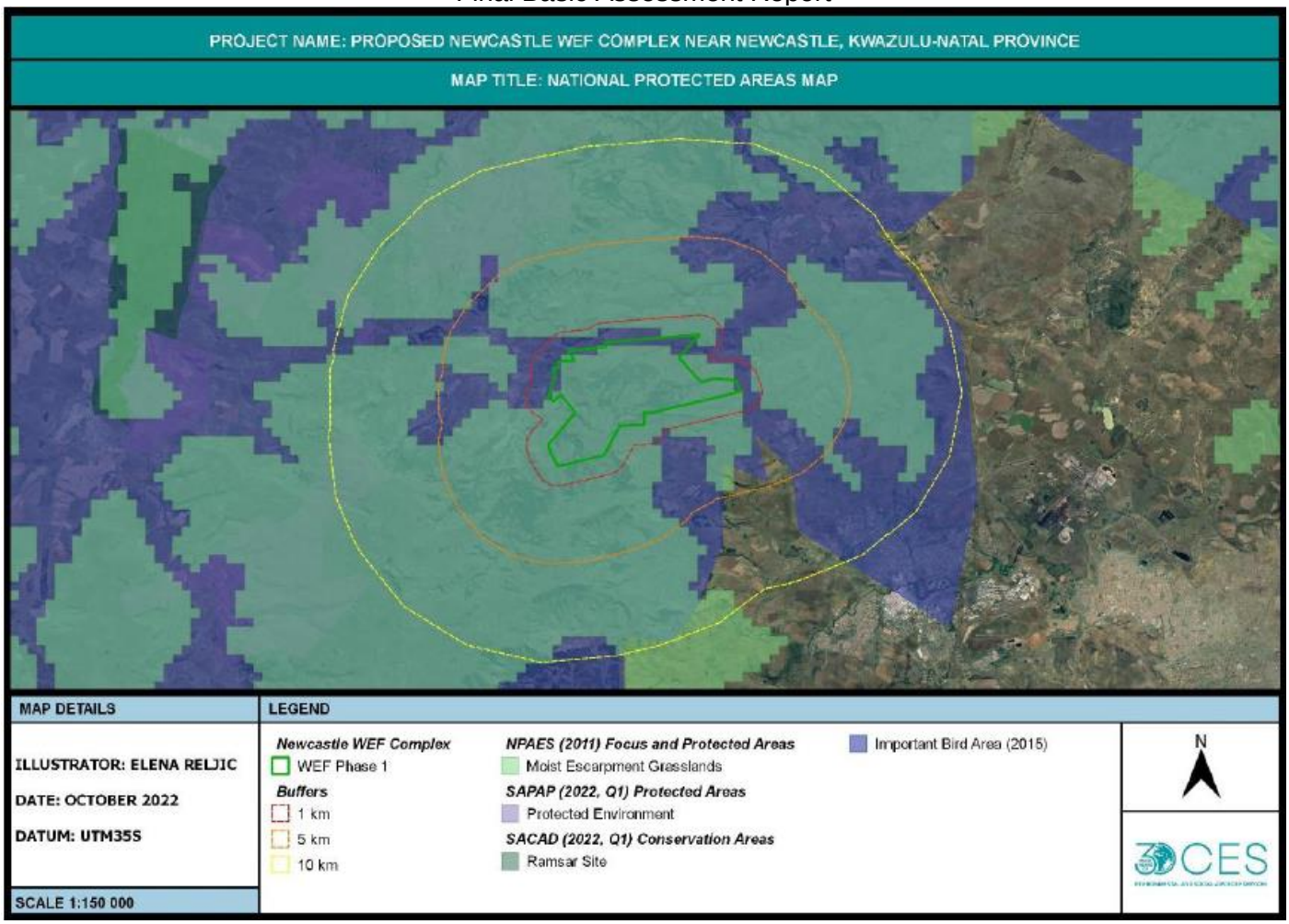


Figure 17: Legislated Protected Areas in or around the greater MNWP WEF area (CES 2024).

Ecosystem Threat Status

The National Environmental Management: Biodiversity Act, (Act No. 10 OF 2004) (NEM:BA) provides a National List of Ecosystems that are threatened and in need of protection – GN 1002 of 2011. According to the NEM:BA List of threatened ecosystems for the greater MNWP WEF study area:

- The Northern KwaZulu-Natal Moist Grassland is deemed a threatened ecosystem which is listed as Vulnerable.
- In addition, SANBI (2021) provides an updated Red List of South Africa's Terrestrial Threatened Ecosystems (RLEs). According to this report, Northern KwaZulu-Natal Moist Grassland is classified as Vulnerable (B1(i)) due to its restricted distribution and rate of loss and.
- According to this list all other vegetation units occurring within the study area, namely KwaZulu-Natal Highland Thornveld, Low Escarpment Moist Grassland and Southern Mistbelt Forest, are classified as Least Concern.

Fauna

A comprehensive desktop review was undertaken during the EIA for the MNWP WEF Project to assess the current threat status of the faunal species which may occur within the greater study area. The following discussion was extracted from the FEIAR of the MNWP WEF compiled by CES in 2024.

Amphibians and Reptiles

The KwaZulu-Natal Province is home to about two-hundred-and-eleven (211) native herpetofauna species, which includes sixty-two (62) amphibian species and one-hundred-and-forty-nine (149) reptile species (iNaturalist, 2021). Of these, approximately seventy (70) species may occur within the study area, according to their known distributions.

A total of twenty-four (24) amphibian species and forty-six (46) reptile species were identified using the IUCN (2021) and ADU (2011) databases. Of these, six (6) amphibian and twelve (12) reptile species are Endemic, and two (2) amphibians and eight (8) reptiles are Near Endemic. Of the herpetofauna identified in this report, one (1) species, Spotted Shovel-nosed Frog (*Hemisus guttatus*), is Threatened and listed as Vulnerable, and one (1) species, Striped Harlequin Snake (*Homoroselaps dorsalis*), is listed as Near Threatened. The study showed the likelihood of the Spotted Shovel-nosed Frog occurring within the study area is Low, while there is a Medium probability of occurrence for the Striped Harlequin Snake.

In addition, four (4) reptile species are protected by the PNCO (Act No. 15 of 1974), namely Cape Terrapin (*Pelomedusa galeata*), Rock Monitor (*Varanus albigularis*), Water Monitor (*Varanus niloticus*) and Southern African Rock Python (*Python natalensis*).

Mammals

The distribution of sixty-nine (69) native mammal species overlaps with the study area. The mammal species identified as potentially occurring within the study area have been assessed against the Regional Red List (2016 and subsequent updates), and it has been determined whether they are endemic, near endemic or not endemic, as well as their status in the PNCO (Appendix 2 of the Terrestrial Biodiversity Desktop Assessment).

Of these mammals, eight (8) species are Threatened and six (6) are Near Threatened. Of the Threatened species, five (5) are Vulnerable, namely Spotted-necked Otter

(*Hydrictis maculicollis*), Leopard (*Panthera pardus*), White-tailed Rat (*Mystromys albicaudatus*), Makwassie Musk Shrew (*Crocidura maquassiensis*) and Black-footed Cat (*Felis nigripes*), and three (3) are Endangered, namely Mountain Reedbuck (*Redunca fulvorufula fulvorufula*), Oribi (*Ourebia ourebi*) and Black Rhinoceros (*Diceros bicornis*). Near Threatened species include Grey Rhebok (*Pelea capreolus*), African Clawless Otter (*Aonyx capensis*), African Striped Weasel (*Poecilogale albinucha*), Brown Hyaena (*Parahyaena brunnea*), Vlei Rat (*Otomys auratus*) and White Rhinoceros (*Ceratotherium simum*).

The following list mentions the species that were assigned a Medium to High probability of occurrence in the FEIAR of the MNWP WEF Project:

- Black-footed Cat (*Felis Nigripes*) - Medium
- Mountain Reedbuck (*Redunca fulvorufula fulvorufula*) Medium
- Oribi (*Ourebia ourebi*) - Medium
- Grey Rhebok (*Pelea capreolus*) - Medium
- African Striped Weasel (*Poecilogale albinucha*) - Medium
- Vlei Rat (*Otomys auratus*) - High
- Leopard (*Panthera pardus*) - Medium
- White-tailed Rat (*Mystromys albicaudatus*) - Medium
- Makwassie Musk Shrew (*Crocidura maquassiensis*) Medium

HUMAN ENVIRONMENT:

ARCHAEOLOGICAL, CULTURAL AND HERITAGE ENVIRONMENT

(Also refer to Part A(1)(h)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Archaeological, Cultural and Heritage Environment)

The following baseline assessment of the heritage and archaeological features was obtained from the FEIAR of the MNWP WEF as compiled by CEM in 2024 and was based on the study of Umlando Archaeological Surveys and Heritage Management Services. The desktop study consisted of analysing various maps for evidence of prior habitation in the study area, as well as for previous archaeological surveys. Many archaeological sites occur in the general area. The archaeological sites tend to be open Stone Age and Iron Age sites of varying significance. Some historical buildings do exist in the general area. These are sites that have been recorded through systematic surveys. No known heritage sites occur within the study area, or nearby to be affected by a visual impact.

The Surveyor General Maps indicate that the farms were first surveyed between 1863 and 1908. This means the farms were rented beforehand and sold thereafter. No

buildings are shown on the Surveyor General maps; however, one can assume that buildings would have occurred once the farms were sold. Any buildings and/or ruins on the farms can thus be over 60 years in age and are protected by the heritage legislation. Similarly, any rubbish dumps associated with the older buildings would be protected as well.

The 1968 topographical map indicates that there are buildings, ruins and settlements within the study area. Human graves might be associated with some of these features. The graves, if they exist, can be avoided by 50 m buffers, or alternatively possibly removed.

Overall, the desktop heritage survey undertaken for the proposed Mulilo Newcastle WEF Complex area, determined that there are no previously recorded heritage sites within the study area. However, several buildings and human settlements with possible graves were noted that will be assessed during the site survey.

PALAEONTOLOGICAL ENVIRONMENT

(Also refer to Part A(1)(h)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Palaeontological Environment)

The palaeosensitivity of the greater MNWP WEF area is shown in the following figure. It is mostly grey, which is not fossiliferous, but also contains colour codes of red and yellow. According to SAHRIS, a Field Assessment is essential for the red shaded areas, and possibly for the yellow.

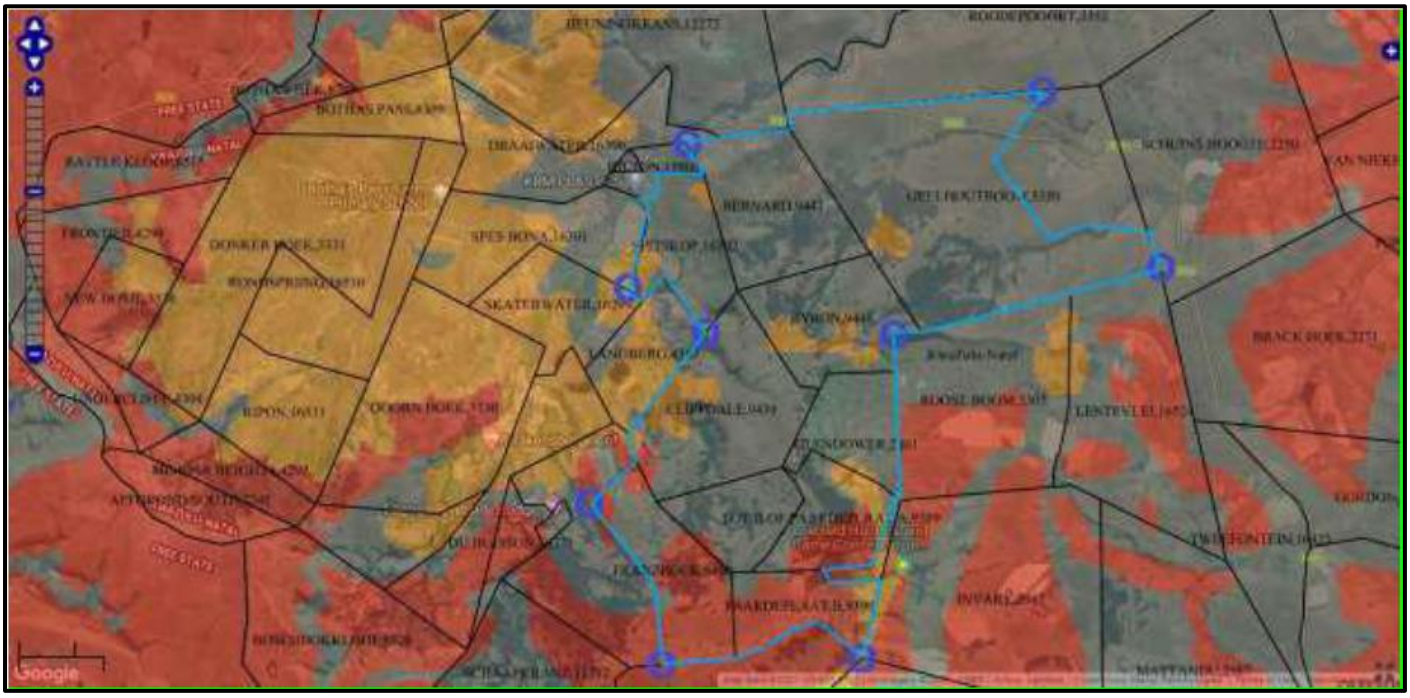


Figure 18: Palaeosensitivity of rocks in the greater MNWP WEF study area (CES 2024).

Most of the area within the site is dolerite (grey) and of no concern. However, the thickness of the dolerite is unknown. Evidence of trace fossil bioturbation is common within the Volksrust Formation siltstones and mudstones; however, the various trace fossil (ichnofossil) types are not always identifiable. These are common and of little Palaeontological Significance.

The Adelaide Subgroup may contain Permo-Triassic Boundary if it has been preserved. The Adelaide Subgroup comprises terrestrial sediments as sedimentary rocks and preservation requires many geological processes coming together, which is less likely to take place during terrestrial deposition. Present evidence indicates that the Permo-Triassic Boundary is unlikely to be in the development area but must be considered.

The Tarkastad Subgroup is an important fossil bearing rock and is considered highly paleontologically sensitive. This level is known to contain paleontologically important Early Triassic terrestrial fossils from the period around 252 million years old, or post PT Boundary (Groenewald & Kitching 1995, Rubidge 2005, Smith et al. 2012). This fauna is dominated by therapsids or “mammal-like reptiles” and other tetrapods. Rare vascular plants and some trace fossils are known.

Karoo Dolerite is also present but cannot be fossiliferous. Reworked palaeontological material could be found in the Quaternary alluvium sediments but is unlikely.

Overall, the greater MNWP WEF site is dominated by Karoo Dolerite which is not fossiliferous. Similarly, any alluvium can also be ignored. However, the remaining lithologies may be fossiliferous. The Volksrust Formation could be fossiliferous but is also unlikely to be so as significant fossils are rare. In contrast, the Adelaide and Tarkastad Subgroups might contain significant fossil material.

SOCIO-ECONOMIC ENVIRONMENT

(Information extracted from the FEIAR for the MNWP WEF Project compiled by CES, 2024)

Social Environment

The proposed MNWP WEF projects are located approximately 15 km north-west of the Newcastle CBD in the Newcastle Local Municipality (NLM) of KZN. The NLM is one of three (3) local municipalities in the Amajuba District Municipality (ADM).

Newcastle is the third-largest urban centre in KwaZulu-Natal and, with a population of 389 116 (CS 2016) it is categorized as a secondary city. The current annual population growth of 1.4%, translates to 5 176 people per year, and includes a significant increase

in the youth proportion of the population. Should this trend continue, Newcastle has a vision of becoming a city by the year 2035. The projected population for the year 2038 will be 502 988 (Newcastle LM IDP, 2021-22).

Population Size, Growth and Demographics

The population of Newcastle is spread unevenly over 34 wards. Most of the people (80%) within Newcastle reside within the Newcastle East area, which is predominantly township and semi-rural areas. At 844 km² Ward 1, where the Project is located, is the largest. Most of the land in the local study area is zoned Agriculture and with regards to agricultural potential. The study area and surrounds are characterized by farms and maize, livestock and dairy farms are the main farming activities. Farmsteads are located on the subject properties, albeit limited and scattered. The following table presents the population data of the NLM.

Table 11: Population data for the NLM (CES 2024)

Demographics	Amajuba DM	Newcastle LM	Ward 1
Population	531 328	389 116	10 768
Households	117 257	90 347	2 174
Average household size	4.5	4.3	5
People per km2	76.3	209.3	12.8
Age structure (2016)			
- Under 15 years	35.4%	33.9%	-
- 15 to 64 years	60.9%	62.5%	-
- Over 65 years	3.7%	3.6%	-
Population growth per annum	1.35%	1.56%	-
Poverty levels (2012)	50.9%	44.4%	-

Age and Gender Profile

The age and gender structure of the population is a key determinant of population change and dynamics. The shape of the age distribution is an indication of both current and future needs regarding educational provision for younger children, health care for the whole population and vulnerable groups such as the elderly and children, employment opportunities for those in the economic age groups, and provision of social security services such as pension and assistance to those in need.

The age and sex structure of smaller geographic areas are even more important to understand given the sensitivity of small areas to patterns of population dynamics such as migration and fertility. An increase in the young and the economically active population (EAP) of a Municipality would thus mean the potential increase in income

earnings. However, the growth would place pressure on educational resources and job opportunities as there is the possibility for smaller and slower growing economies to provide work to the increasing population.

Newcastle Local Municipality is characterized by youthful population, with the age group of under 15 years constituting 33.9% of the total population and the EAP (15-64 years) comprising 62.5%. The elderly population over 65 years comprises 3.6%. Population growth per annum is 1.56% and the poverty levels in 2012 were 44.4%

Economic Environment

Unemployment Rate and Employment Status

Employment status refers to whether a person is employed, unemployed or not economically active. The official unemployment rate thus gives the number of unemployed as a percentage of the labour force. The labour force in its turn is the part of the 15 – 64 year population that's ready to work and excludes persons not economically active (scholars, housewives, pensioners, disabled) and discouraged work-seekers. It is worth noting that, in South Africa, high unemployment coincides with low economic growth.

The NLM had a youth (15-34 years) unemployment rate of 49% in 2011, unemployment rate of 37.4% in 2011, which decreased to 31.8% in 2017.

Income

In 2011 the total number of households earning less than R 40 000 per annum was 68%, and it has since increased in 2018 to 70%, (Global Insight 2018; Newcastle LM IDP, 2021-22). This is significantly below the national average of household income (R 103 204 per annum) and has implications on the Indigent Support provided by the municipality to the community of Newcastle.

Employment and Economic Sectors

In terms of formal employment, the following sectors employ most of the population (Newcastle LM IDP, 2021-22):

Table 12: Number of people in Newcastle Local Municipality receiving formal employment (CES 2024)

Employment sector	Formal employment
Trade / retail	8 888
Government services	18 324
Manufacturing	6 419
Finance	5 375

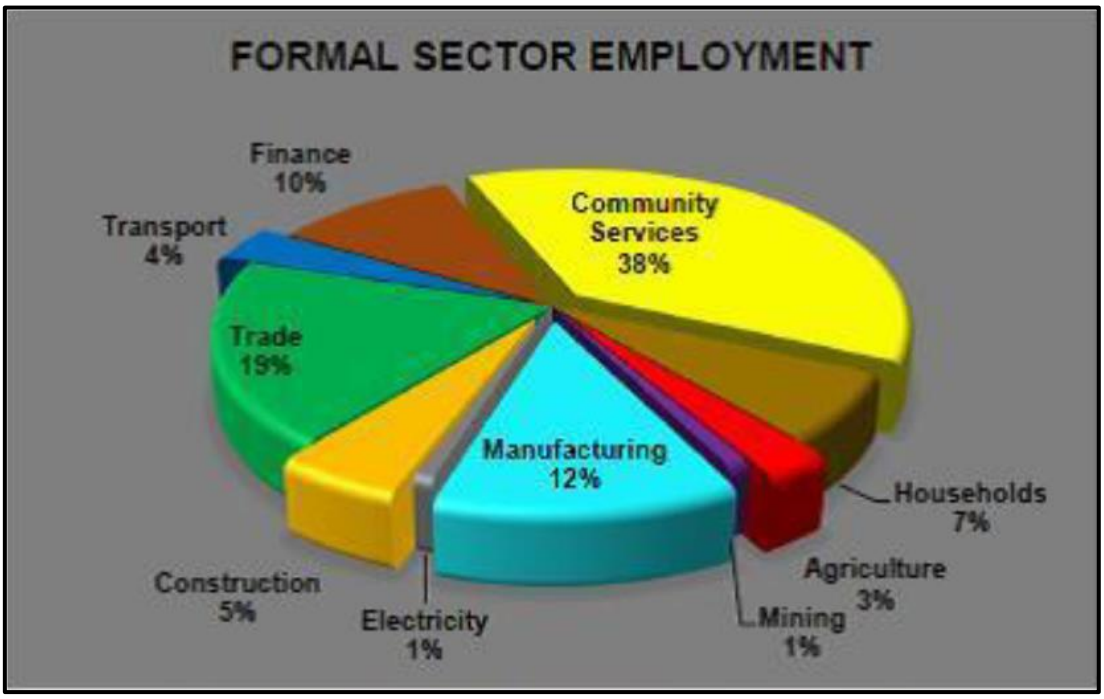


Figure 19: Pie chart of NLM formal sector employment (CES 2024).

Of concern is the diminishing growth of formal employment within the agriculture sector due to a decrease in the levels of precipitation (climate change). The manufacturing sector, the sector that once made a significant contribution towards formal employment within Newcastle, contributes 12.2% to total formal employment (6 617 people). The manufacturing sector has also experienced negative growth trends largely attributed to the current global financial outlook. These trends are alarming as they highlight the decline in employment within the primary and secondary sectors, two of the sectors that form the foundation of the economy.

The main economic drivers in Newcastle are trade (24.9%), community services (22.1%), finance (14.71%), manufacturing (13.7%), construction (6.9%), transport (6.7%), agriculture (3.8%), mining (1%) (ww.municipalities.co.za).

Local Economic Development

Through skills development and training the proposed MNWP WEF projects will enhance skills of locals and enable them to secure alternative employment at similar

developments. In line with Newcastle's vision, the proposed Project will contribute to Newcastle becoming a city by 2035 by assisting to create favourable conditions to attract more people (Newcastle Local Municipality 4th Generation Integrated Development Plan). This will be done through new employment opportunities, enhancement of economic opportunities, attracting investments and through the Enterprise Development (ED) and Socio-economic Development (SED) component aimed at local communities.

(b) Description of the current land uses.

BASELINE LAND USE

All the land on which the MNWP WEF Complex is proposed is grazing land. Woodlands or afromontane forests occur in the ravines. No cultivated land were recognised on any of the farms. Scars left from gully erosion occur in some areas. Most of the land consists of shallow and rocky soils that are not arable. Some attempts were made to establish pastures in the valleys where the soils are deeper and consists of colluvium or hill wash.

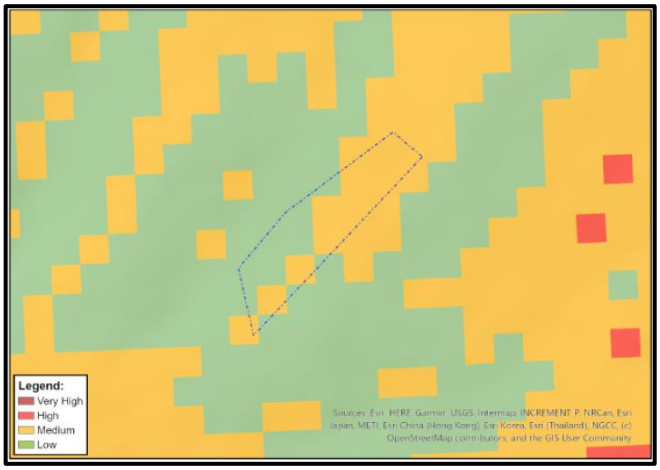
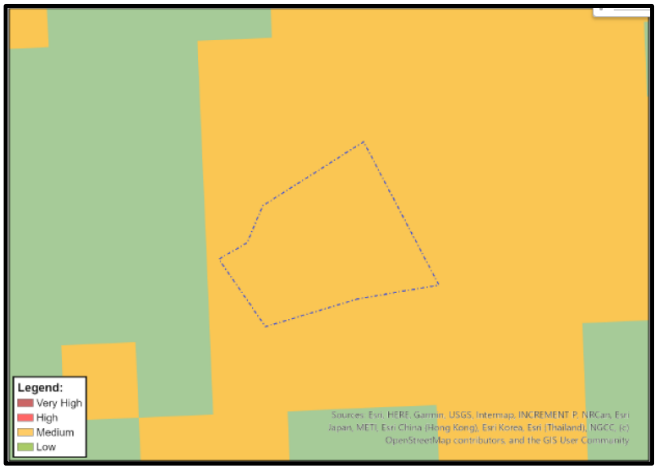
The current land-use of the greater MNWP WEF area includes agriculture in the form of livestock and game farming. Surrounding land-uses include game farms (photographic and hunting safaris), other proposed WEFs, roads, open space / natural areas, mining areas, and other agricultural land.

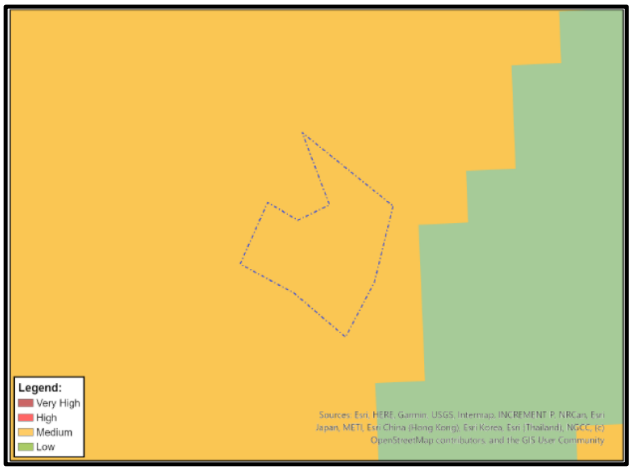
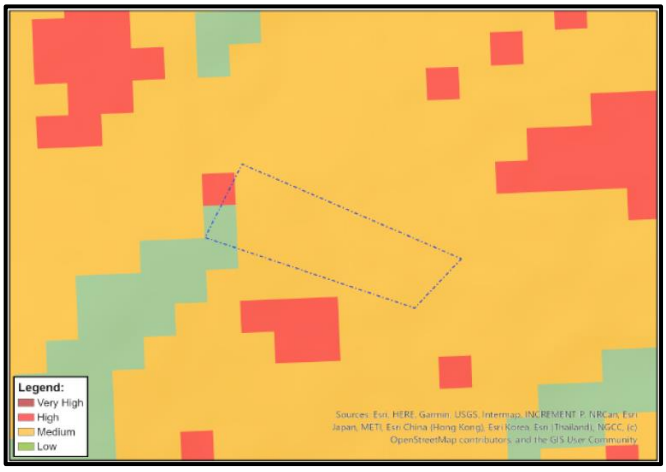
SITE SPECIFIC LAND USE

(Information extracted from the Agricultural Compliance Statement attached as Appendix E)

Digital Soils Africa (Pty) Ltd were tasked to undertake an Agricultural Compliance Statement (ACS) for this project according to the protocol for the specialist assessment and minimum report content requirements for environmental impacts on agricultural resources (GN320 of 2020). The ACS considered all five potential sites that were initially identified by the Applicant. The following table indicates the results of the DFFE Screening Tool Report regarding the agricultural theme sensitivity for the five potential site alternatives.

Table 13: Summary of the agricultural theme sensitivity for the five potential sites according to the DFFE Screening Report.

SITE NUMBER	SENSITIVITY FEATURE	DFFE SCREENING TOOL REPORT IMAGE
BP1 (Initial Layout)	Low & Medium	
BP1 (Final 5 ha layout as applied for)	Low & Medium	
BP2	Medium	

SITE NUMBER	SENSITIVITY FEATURE	DFFE SCREENING TOOL REPORT IMAGE
BP3	Medium	
BP4	Medium	
BP5	Low, Medium, High	

The ACS notes that any of the five potential site alternatives could be used to develop the proposed quarry site. Considering this, only the findings of BP1 are discussed in detail in this report as BP1 was identified as the preferred site alternative (see full specialist report and findings attached as Appendix E).

The ACS confirms that the preferred site (BP1) is outside all protected agricultural areas. BP1 comprises of land type Fa that is characterised by shallow soils (Mispah & Glenrosa forms), with little or no lime in the landscape. The ACS further notes that the soil capability of BP1 is Moderate (value 5), while the land capability is Very Low – Low (value 3) meaning it is only suitable for grazing and wilderness. Considering this, BP1 has a very high grazing capacity of 3 ha/LSU (large stock unit). The study area is used for grazing and does not enter into field crop boundaries or other cultivated areas. In light of the above, the ACS supports the Medium sensitivity of the DFFE screening report, however the specialist still recommends that the development may continue as the operation of the proposed quarry will not have a significant impact on the potential agricultural activities in the area nor pose a threat to food security.

The following table provides a description of the land uses and/or prominent features that currently occur within a 500 m radius of the proposed mining area:

Table 14: Land uses and/or prominent features that occur within 500 m radius of the proposed mining area (BP1).

LAND USE CHARACTER	YES	NO	DESCRIPTION
Natural area	**YES**	-	The study area is surrounded by natural areas used for agricultural purposes.
Low density residential	-	**NO**	-
Medium density residential	-	**NO**	-
High density residential	-	**NO**	-
Informal residential	-	**NO**	-
Retail commercial & warehousing	-	**NO**	-
Light industrial	-	**NO**	-
Medium industrial	-	**NO**	-
Heavy industrial	-	**NO**	-
Power station	-	**NO**	-
High voltage power line	-	**NO**	-
Office/consulting room	-	**NO**	-
Military or police base / station / compound	-	**NO**	-
Spoil heap or slimes dam	-	**NO**	-
Quarry, sand or borrow pit	-	**NO**	-
Dam or reservoir	-	**NO**	-
Hospital/medical centre	-	**NO**	-
School/ crèche	-	**NO**	-
Tertiary education facility	-	**NO**	-
Church	-	**NO**	-
Old age home	-	**NO**	-
Sewage treatment plant	-	**NO**	-
Train station or shunting yard	-	**NO**	-
Railway line	-	**NO**	-
Major road (4 lanes or more)	-	**NO**	-
Airport	-	**NO**	-
Harbour	-	**NO**	-

LAND USE CHARACTER	YES	NO	DESCRIPTION
Sport facilities	-	**NO**	-
Golf course	-	**NO**	-
Polo fields	-	**NO**	-
Filling station	-	**NO**	-
Landfill or waste treatment site	-	**NO**	-
Plantation	-	**NO**	-
Agriculture	**YES**	-	As mentioned earlier the proposed mining area is situated within an area used for grazing.
River, stream, or wetland	**YES**	-	A small stream passes ±90 m north-west of BP1, while an ever smaller drainage line is ±40 m south-west of the site.
Nature conservation area	-	**NO**	-
Mountain, hill or ridge	**YES**	-	BP1 is situated on the lower lying foot slopes of the mountain. The surrounding area is undulating/hilly.
Museum	-	**NO**	-
Historical building	-	**NO**	-
Protected Area	-	**NO**	-
Graveyard	**-**	**NO**	-
Archaeological site	-	**NO**	-
Other land uses (describe)	-	**NO**	-

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

<u>PLEASE NOTE</u>: WHERE APPLICABLE THE SITE SPECIFIC FEATURES OF THE VARIOUS SITE ALTERNATIVES (BP1 – BP5) WERE DISCUSSED. HOWEVER, IN THE REMAINING SECTIONS THE REPORT FOCUSSES ON THE SITE SPECIFIC FEATURES OF THE FINAL LAYOUT (5 HA) OF BP1.

<u>SPECIFIC ENVIRONMENTAL FEATURES</u>

SITE SPECIFIC TOPOGRAPHY

BP1 is situated on the lower lying foot slopes of the mountain and is dominated by a longitudinal low ridge from south-west to north-east and has a moderate slope from south-east to north-west.

The average elevation of the study area is ±1 626 masl with the southern corner being the highest at 1 662 masl from where the elevation drops to the north-eastern corner (1 596 masl) as presented in the following figure. The average loss of elevation from the highest to the lowest point is ~70.8 m with an average slope (northerly) of 15.5% (Max. Slope: 36%).

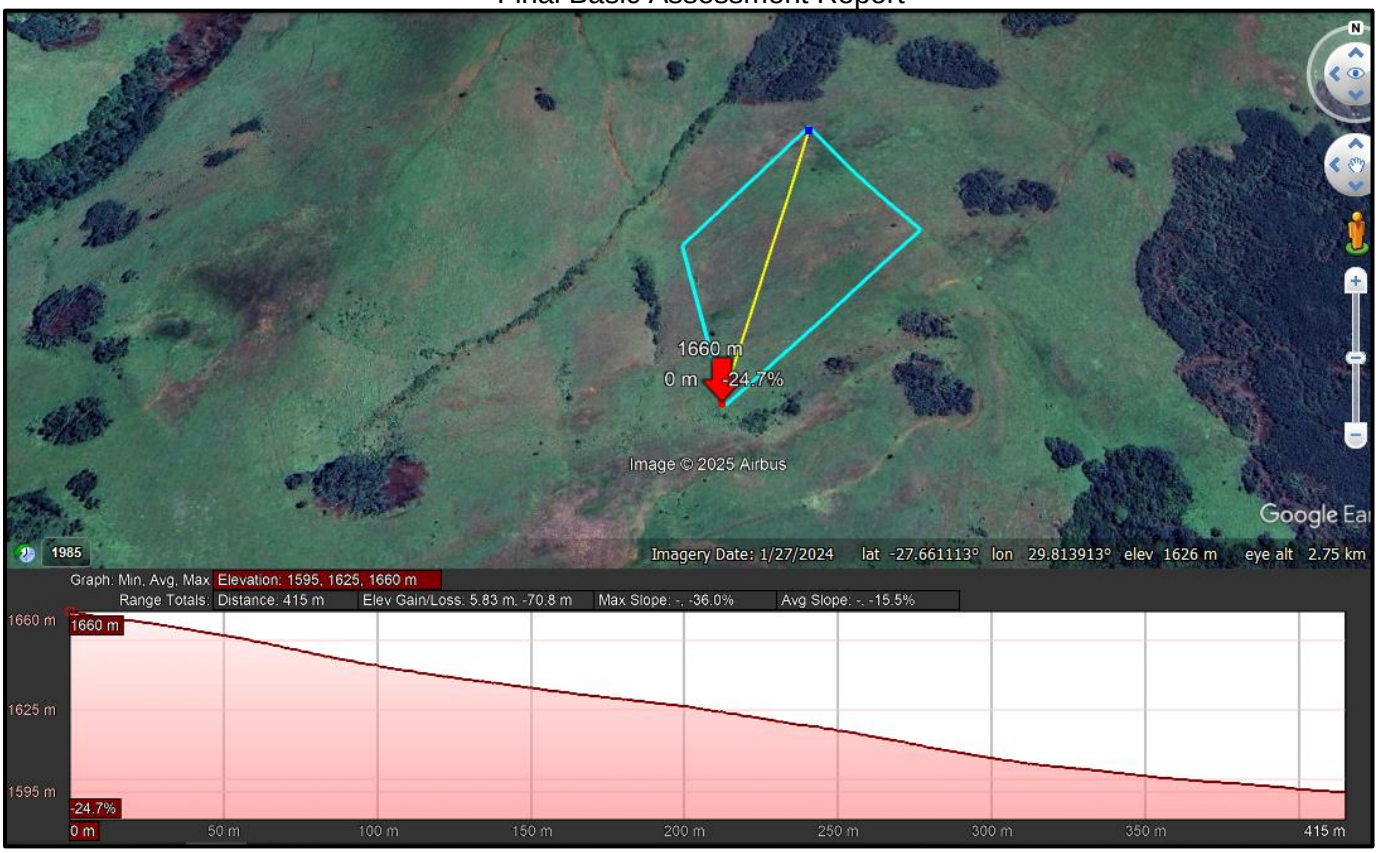


Figure 20: Elevation profile of BP1 (Image obtained from Google Earth).

Mining the proposed quarry into the western face of the hill should create an excavation with more or less three faces that will be benched as the mining depth increases. The MNWP WEF contractors may use the excavation, at the end of the pits life, as a spoil site for inert rubble and soil, but this may not be enough to refill the quarry pit. The rehabilitation proposal is therefore (upon closure) to render the quarry safe and leave it as a minor landscape feature. If the proposed closure actions, as prescribed in the EMPR, are implemented the impact on the topography of the specific area is deemed of low significance.

SITE SPECIFIC VISUAL CHARACTERISTICS

(Determined through desktop studies, and site investigation by EAP)

The following figure shows the viewshed analysis (according to Google Earth) for the footprint of BP1 within a ±10 km radius around the study area. The green shaded areas indicate the positions from where the quarry will be visible. The analysis shows that the proposed visual impact will be very low as the mining area will only be visible from the high laying areas north of the development. It must also be borne in mind that as the distance between the development and the observer increases the visual impact will decrease and perception of the 5 ha excavation will diminish to negligible at the periphery of 10 km.

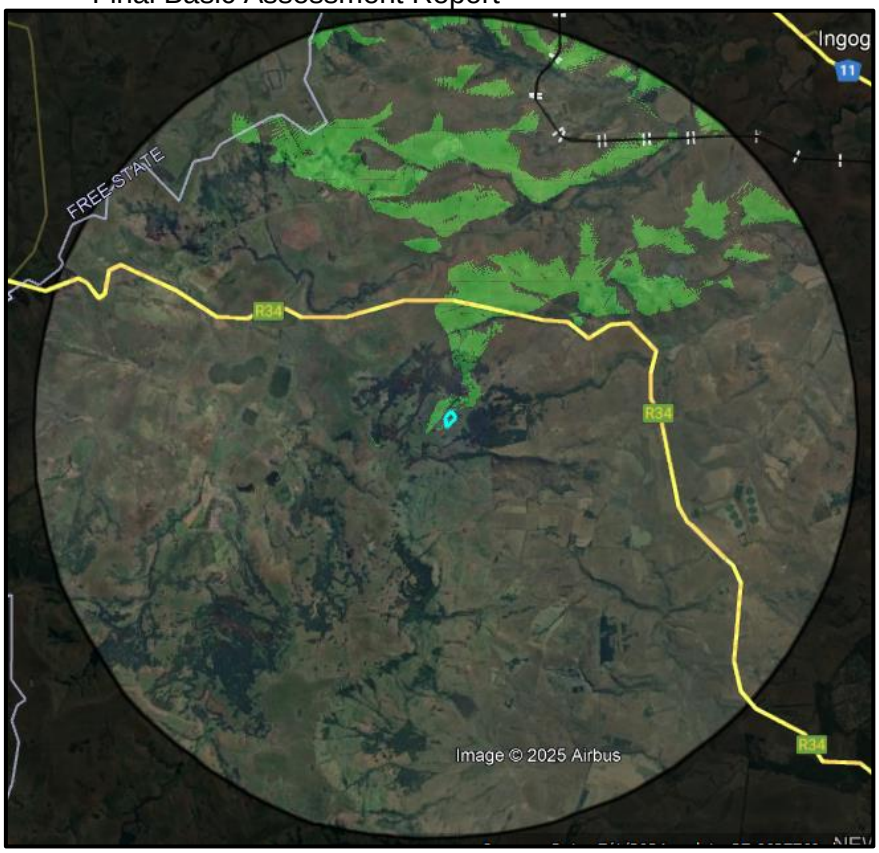


Figure 21: Viewshed analysis of the highest corner (C) of BP1 where the green shaded areas indicate the positions from where the excavation (blue polygon) will be visible. (Image obtained from Google Earth).

Should both the mining permit area and the MNWP WEF projects (separately authorised) be established on site, the cumulative visual impact that both projects may have on the receiving environment is deemed to be of medium significance.

SITE SPECIFIC AIR AND NOISE QUALITY

There are no dwellings or farm houses near (within 1 km) the proposed site. The nearest residential dwelling to the proposed footprint of BP1 is ±2.8 km to the north and opposite the R34 road with another farm house ±2.9 km to the south-east. As mentioned earlier, the traffic volumes along the R34 is relatively low and traffic influences the ambient sound levels within 500 m from the road.

Figure 22: Satellite image of the nearest dwellings to BP1 (blue polygon) (image obtained from Google Earth).

Emission into the atmosphere is controlled by the National Environmental Management: Air Quality Act, 2004. The proposed mining activity does not trigger an application in terms of the said act, and emissions to be generated is expected to mainly entail dust due to the displacement of soil, crushing and screening of hard rock, and the transport of material on gravel roads. Due to the distance of the proposed quarry from the nearest dwellings, and should the Applicant implement the mitigation measures proposed in this document and the EMPR the impact on the air quality of the surrounding environment is deemed to be of low significance.

The noise to be generated at the proposed quarry will contribute to the daily noise levels of the receiving environment through blasting, as well as the excavation, crushing/screening and transporting of material. As mentioned earlier, mining will take place from Monday – Fridays between 07:00 to 18:00 and no blasting will be done after hours or on weekends. The nuisance value of noise generated by heavy earthmoving equipment, to residence in the vicinity is deemed to be of low significance. The noise caused by blasting will be instantaneous and of short duration.

Although the proposed activity will have a cumulative impact on the ambient noise levels, the development will be temporary and take place in an area that was already approved for the construction of the MNWP WEF, and the impact is therefore deemed compatible with the future operations and of low-medium significance.

Should both the mining permit area and the construction of the MNWP WEF (separately authorised) take place simultaneously, the cumulative dust nuisance on the receiving environment (after mitigation) is deemed to be of low-medium significance.

SITE SPECIFIC GEOLOGY AND SOIL

The site specific geology resembles the geology as described under *Part A(h)(iv)(1)(a) Type of Environment Affected by the Proposed Activity – Geology and Soil*. The geology of the study area is dominated by the Karoo Dolerite Suite, which is dominated by a network of dolerite sills, sheets, and dykes, which are mainly intrusive into the Karoo Supergroup. The remaining geology is underlain by mudstones and sandstones deposited by a variety of fluvial systems.

Soils in the study area are dominated by Leptosols which are shallow soils that overlie continuous rock. These soils may also contain a high degree of gravel, rock and stones derived from the parent material. Such soils dominate the higher lying areas in the study area. Nitosols are deeper, well-drained, red, clayey soils that are generally found in hilly landscapes and occur in the lower lying areas of the study area. Such soils are partially present at Site 1.

According to the MNWP WEF geologist, the sloping topography of BP1 lends itself to the extraction of significant volumes of borrowed materials whilst maintaining daylighting of the excavation area for precipitation runoff. Mining in this manner will also contribute and simplify the rehabilitation of the excavation upon closure.

As mentioned earlier, BP1 shows widespread visible daylighting of in-tact, hard dolerite material at surface level indicating that the stripping of overburden material will be minimal, thus reducing the overall volume of materials to be moved and lowering the overall impact of the borrowing activities on the environment.

The geologist further confirmed that two of the other alternative sites showed signs of deeply weathered unsuitable materials while groundwater presence/seepage was indicated at another site. The geologist therefore supports mining at BP1 as the preferred site due to mineral occurrence, accessibility and layout.

SITE SPECIFIC HYDROLOGY

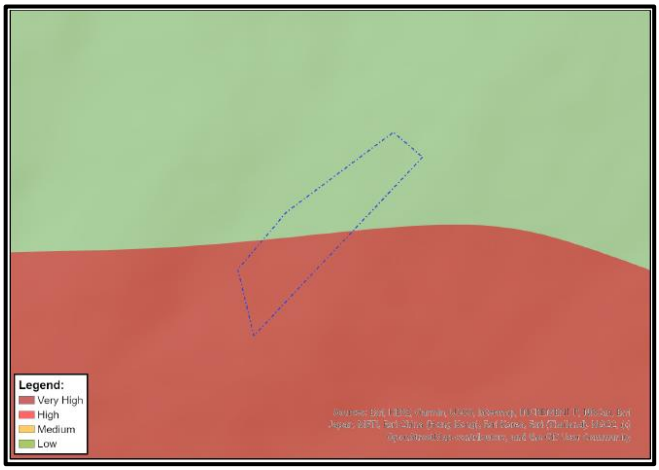
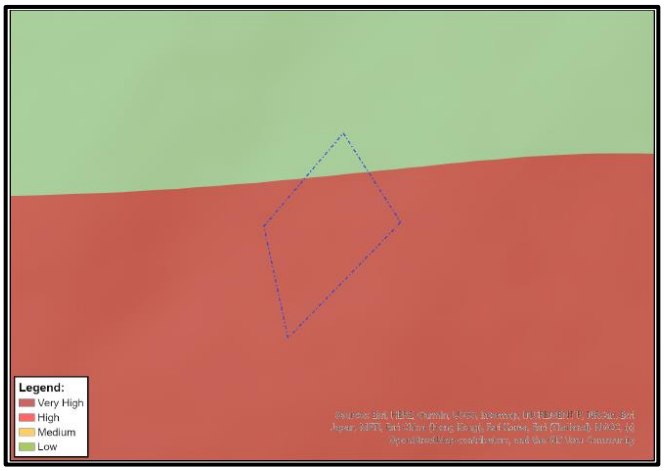
(Information extracted from the Vegetation and Wetland Assessment attached as Appendix F)

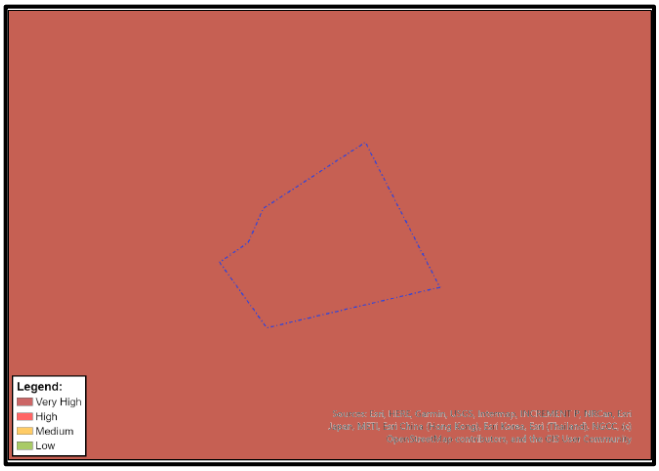
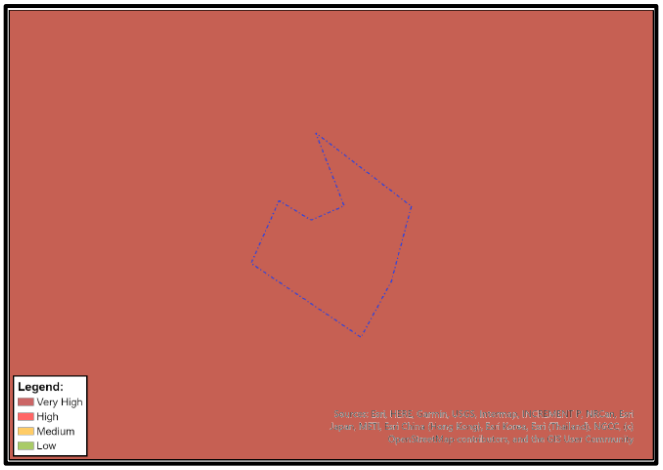
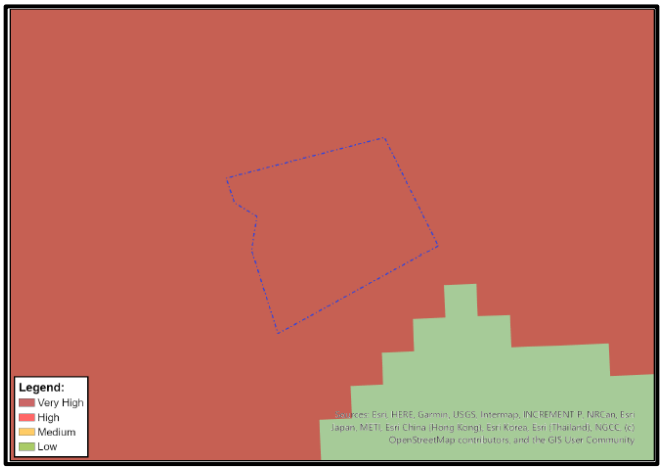
DFFE National Web Based Environmental Screening Tool:

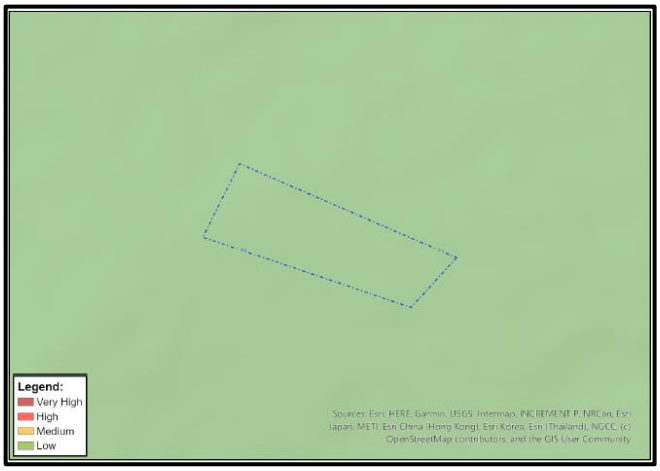
The Screening Tool, developed by the Department of Environmental Affairs ("DEA"), now Department Forestry and Fisheries of Environment, (DFFE), is a geospatial web-enabled application that aims to provide readily available information, known as 'spatial datasets', which enables applicants for Environmental Authorisation to screen their proposed site for environmental sensitivities.

According to the DFFE Screening Report the following aquatic biodiversity sensitivities were identified for the five alternative project areas (BP1 – BP5).

Table 15: Summary of the aquatic biodiversity sensitivity of the five potential sites according to the DFFE Screening Report.

SITE NUMBER	SENSITIVITY FEATURE	DFFE SCREENING TOOL REPORT IMAGE
BP1 (Initial Layout)	❖ Low ❖ Very High: SWSA – Northern Drakensberg	
BP1 (Final 5 ha layout as applied for)	❖ Low ❖ Very High: SWSA – Northern Drakensberg	

SITE NUMBER	SENSITIVITY FEATURE	DFFE SCREENING TOOL REPORT IMAGE
BP2	❖ Very High: FEPA subcatchment & SWSA – Northern Drakensberg.	
BP3	❖ Very High: FEPA subcatchment & SWSA – Northern Drakensberg.	
BP4	❖ Very High: FEPA subcatchment	

SITE NUMBER	SENSITIVITY FEATURE	DFFE SCREENING TOOL REPORT IMAGE
BP5	❖ Low	

Wetland and Watercourse Delineation

In general the VWA notes that the plateau of the mountain system in the area causes the formation of seepage wetland systems, which then drain downslope, resulting in the formation of fast flowing mountain streams. An overview of the wetlands and watercourses at all five alternative sites forms part of the VWA, though the following discussion focusses on the detailed assessment of BP1 as the preferred site and final project proposal.

The VWA notes that BP1 is devoid of any wetland systems and is dominated by dolerite outcrops. A prominent but small mountain stream is situated in the lower lying valley, ±90 m north-west of the site, while an even smaller drainage line is situated ±40 m to the south-west of the site, also flowing into, and forming a tributary, of the larger stream system (following figures). Both these watercourses are fairly fast flowing, draining from west to east and have a well-defined channel. The stream is clearly a strictly seasonal system, currently containing no connected main channel flow and will contain no flow during winter, while flowing strongly for short periods after rainfall events. As a result, wetland conditions are present, but not extensive.

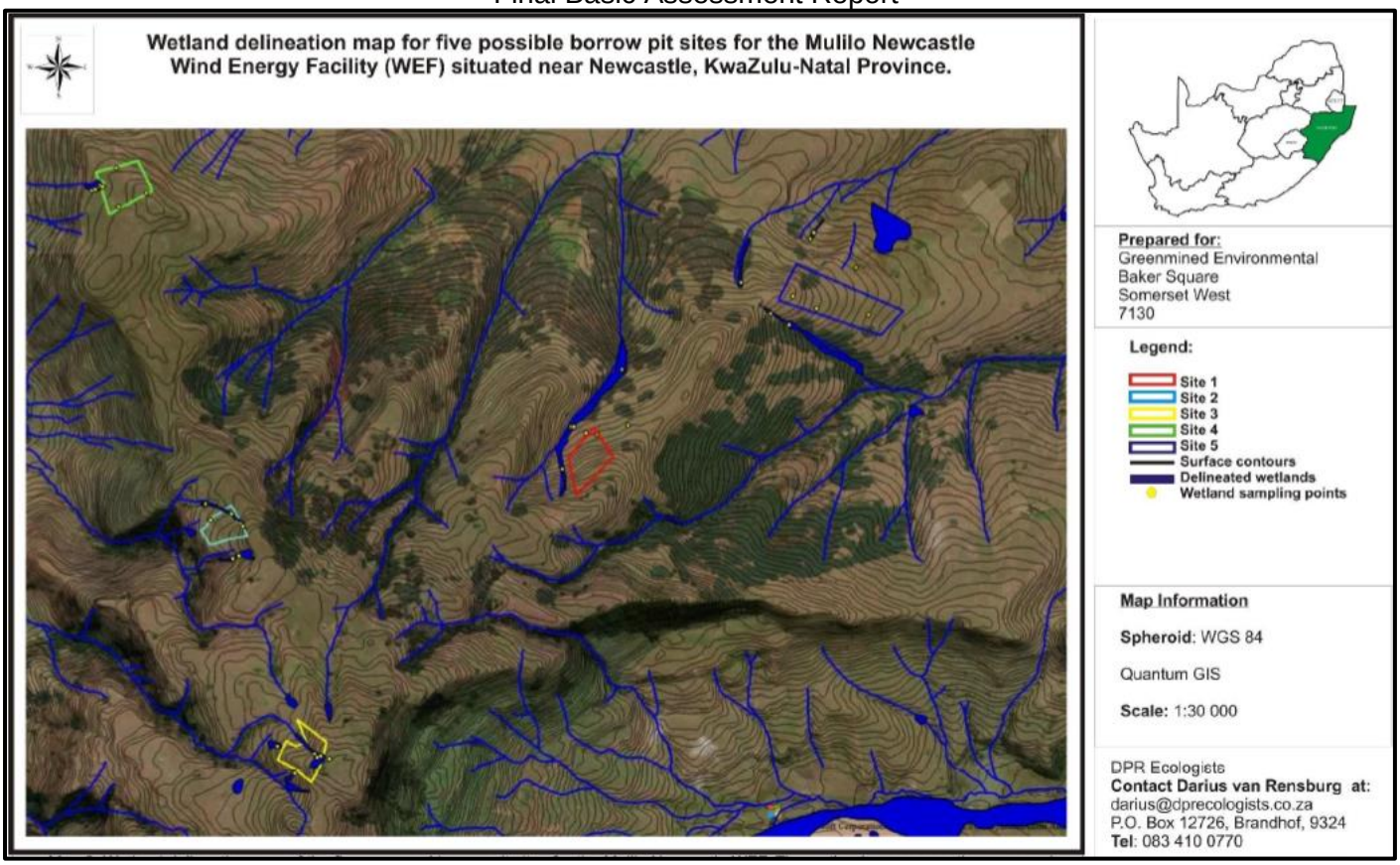


Figure 23: Wetland delineation map where the red polygon indicates the position of BP1 (DPR Ecologists).

Figure 24: Satellite image of the earmarked area (light blue polygon) in relation to the drainage line (dark blue line), and the small stream (green line) (image obtained from Google Earth).

Current Impacts on the Affected Wetlands

BP1 and the associated wetlands and watercourses are all situated within an area that is still largely natural. Consequently, the wetlands and watercourses will still be largely intact, and their functioning will also be fairly natural.

However, several significant impacts are present, and it was notable that wetlands and watercourses have been modified to a significant degree. Almost all of the surveyed seepage wetland areas contained some degree of head-cutting. This is erosion that takes hold at a nick point, resulting in progressive erosion taking place. Such erosion causes an increase in sedimentation of the system, destabilising the wetland system and is highly unlikely to be reversible.

One of the main impacts on wetlands and watercourses is the fairly severe infestation by invasive *Acacia mearnsii* (Black Wattle) which is especially prominent along the watercourses in the foot slopes in the area. These infestations result in a severe decrease in the grass layer, with an understorey being largely absent. This in turn results in much greater runoff, which increases erosion and will substantially increase sedimentation within watercourses. This infestation also results in a large loss of biodiversity, alters the riparian vegetation composition, and also contributes toward the modification of the hydrology and geomorphology of affected watercourses. These wattle infestations also result in a substantial increase in evapotranspiration and contribute to lowering of the groundwater table which may then also affect the flow regime within the affected watercourses.

At BP1, the current impacts on the stream and drainage line are largely concerned with a significant infestation of *Acacia mearnsii* which especially affects the lower section of the stream.

Site Specific Description

The stream and drainage line, near BP1, are both fairly well defined and their borders with the surrounding terrestrial areas are also fairly easily discerned. The system itself has a well-defined channel, with banks and clearly discharges by means of high velocity surface flows, though only after rainfall events and on a seasonal basis. Because the stream discharges by fast flows, the floodplain is quite narrow. The stream channel and floodplain contain ample obligate wetland vegetation as a variety of sedges, rushes, and herbaceous plant species occur. A prominent tree and shrub component is also present along the channel of the stream and drainage line. Soils do not contain prominent soil wetness indicators. The soils contain a dark red

colouration, without a prominent grey matrix though a few high chroma mottles were notable, indicating the presence of wetland conditions, though only on a seasonal basis. Both in terms of obligate wetland vegetation and soil wetness indicators, the drainage line is devoid of wetland conditions, though still forming a defined watercourse.

Both watercourses are a fair distance from the site footprint (BP1) though still within the regulated area and will require authorisation for the applicable water uses. The anticipated impact should however remain low as long as a suitable buffer zone is implemented and maintained, and suitable mitigation implemented to limit any indirect impacts that the proposed quarry will have.

Condition and Importance of the Identified Wetland

The VWA notes that the drainage line and stream form clearly defined watercourses, while the stream system also contains prominent wetland conditions. They are natural systems and though situated some distance from the site, are still likely to be affected to some degree by mining operations and the determination of their condition is therefore important.

The system was assessed as a whole though a separate Index of Habitat Integrity (IHI) was conducted for each. The results of the IHI indicated that the stream system has a Present Ecological State (PES) of Category C: Moderately Modified, while the drainage line has a PES of Category B/C: Largely Natural to Moderately Modified. The system will have a high conservation value as it forms the origin of the downslope stream system and performs important functions in terms of water transportation, storm water and groundwater recharge, bioremediation and flood attenuation. The entire system should therefore still be considered as sensitive, and the proposed development should not lead to altering it any further.

The ecological importance and sensitivity categories (EIS) of the affected stream and drainage line has been rated as being High: Wetlands that are considered to be ecologically important and sensitive. The biodiversity of these wetlands may be sensitive to flow and habitat modifications. This is largely a result of the system still being relatively natural and therefore being more susceptible to changes in hydrology and water quality. In addition, the system forms part of the Northern Drakensberg SWSA, further increasing its importance.

Buffer Zone Determination

The VWA notes that the stream and associated drainage line should be treated as no-go areas and no construction or operational activities, vehicle movement, laydown areas, vegetation clearing or any other associated activities should occur in or near these watercourses. In addition, where vehicles require crossing these watercourses, only existing roads and tracks should be utilised. The VWA determined that a buffer of 47 m for the stream and 44 m for the drainage line should be adequate (refer to Figure 25). Should mining operations be able to exclude these watercourses and operations within the determined buffer zone, it will result in the lowest impacts, while the anticipated risk will increase as mining encroaches into the buffer.

Risk Assessment

A risk assessment was undertaken according to the DWS's requirements for risk assessment and the provisional Risk Assessment Matrix for Section 21 (c) and (i) water use. The outcome of the risk assessment showed that the proposed project will have a Low Risk that is acceptable as is or consider requirement for mitigation. The VWA notes that the impact to watercourses and resource quality is small and easily mitigated.

Conclusion and Recommendations

The seasonal stream and drainage line adjacent to BP1 form part of the Northern Drakensberg SWSA. Their continued preservation and conservation are therefore of utmost importance and the VWA therefore recommended that they be excluded from mining operations:

- The seasonal stream and drainage line adjacent to BP1 should be treated as no-go areas and no mining activities, including construction or operational activities, vehicle movement, laydown areas, vegetation clearing or any other associated activities should occur in or near these watercourses. Given the nature of the mining operations and limited disturbance footprint (5 hectares), this should be easily attainable.

- In order to prevent any further impacts on the identified watercourses, a buffer of 47 m should also be maintained from the edge of the riparian zone along these watercourses. This buffer area should also be treated as a no-go area.

- Where mining operations require crossing of the watercourses only existing roads and tracks should be utilised. The study area already contains a network of dirt tracks, which will also be upgraded and utilised for the broader Wind Energy Facility (WEF) and it should therefore be possible to avoid the construction of new access roads through watercourses.

- A natural vegetation layer should be re-instated where this was disturbed/removed.

- Adequate storm water management measures should be implemented and should include diverting storm- and floodwater around operational and excavation areas and preventing sediment and silt from entering any of the delineated watercourses.

- The necessary authorisations must be acquired from the Department of Water and Sanitation (DWS) for mining activities within 100 metres of any of the delineated watercourses around the site.

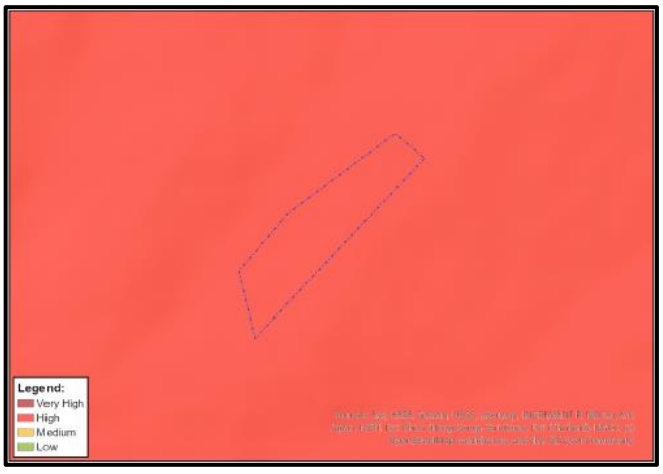
SITE SPECIFIC TERRESTRIAL BIODIVERSITY (INCLUDING FAUNA AND FLORA)

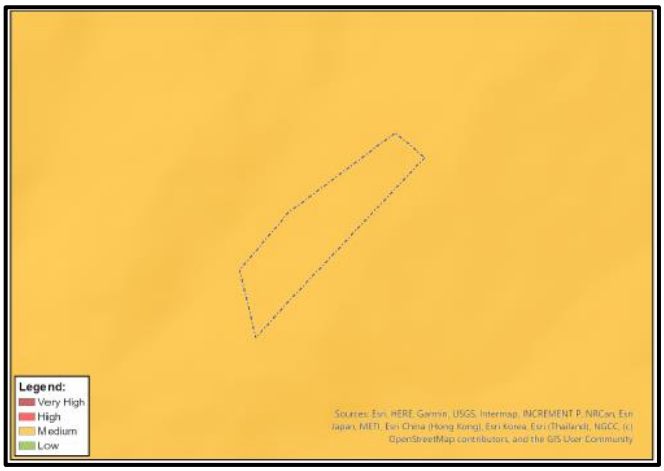
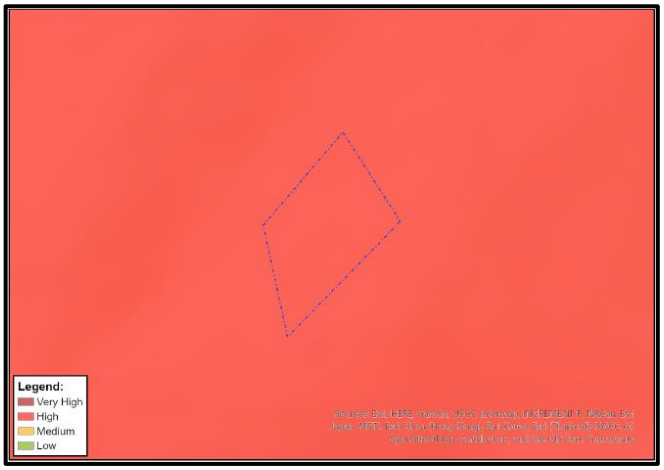
(Information extracted from the Vegetation and Wetland Assessment attached as Appendix F)

DFFE National Web Based Environmental Screening Tool:

According to the DFFE Screening Report the following animal, plant, and terrestrial biodiversity sensitivities were identified for the five alternative project areas (BP1 – BP5).

Table 16: Summary of the animal-, plant-, and terrestrial biodiversity sensitivity of the five potential sites according to the DFFE Screening Report.

SITE NUMBER	SENSITIVITY FEATURE	DFFE SCREENING TOOL REPORT IMAGE
BP1 (Initial Layout)	❖ High: Protected Species.	**ANIMAL SPECIES THEME** 

SITE NUMBER	SENSITIVITY FEATURE	DFFE SCREENING TOOL REPORT IMAGE
	❖ Medium: Sensitive species.	**PLANT SPECIES THEME** 
	❖ Low ❖ Very High: CBA: Irreplaceable & NPAES.	**TERRESTRIAL BIODIVERSITY THEME** 
BP1 (Final 5 ha layout as applied for)	❖ High: Protected Species.	**ANIMAL SPECIES THEME** 
	❖ Medium: Sensitive species.	**PLANT SPECIES THEME**

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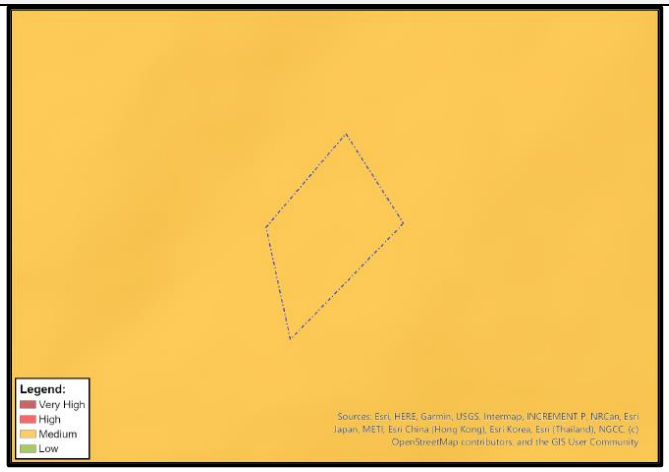
<tr><td rowspan="2"></td><td></td><td> 
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 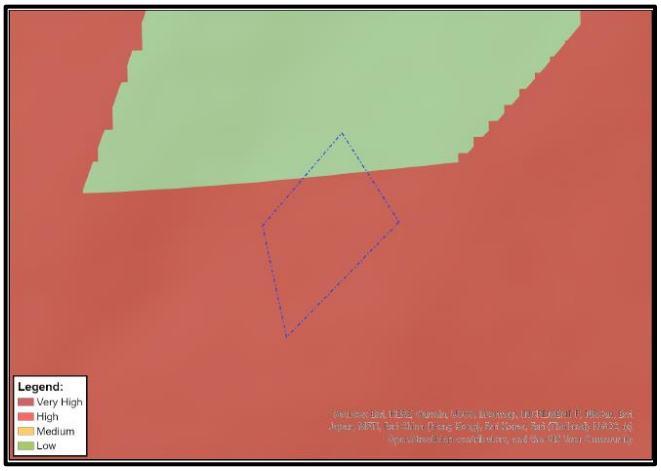
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 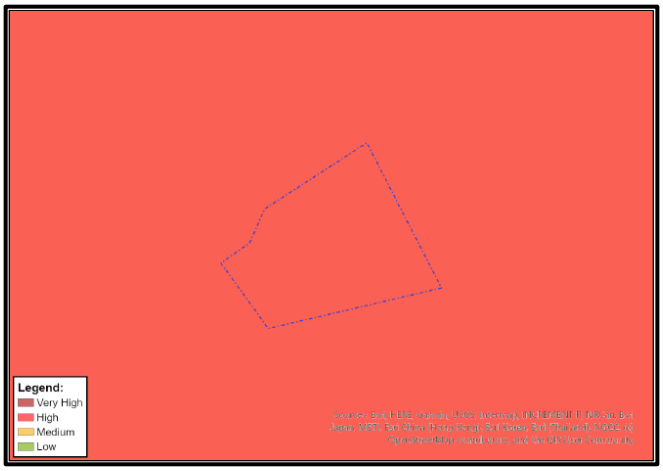
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<tr><td>❖ Medium: Sensitive species.</td><td>PLANT SPECIES THEME</td></tr>
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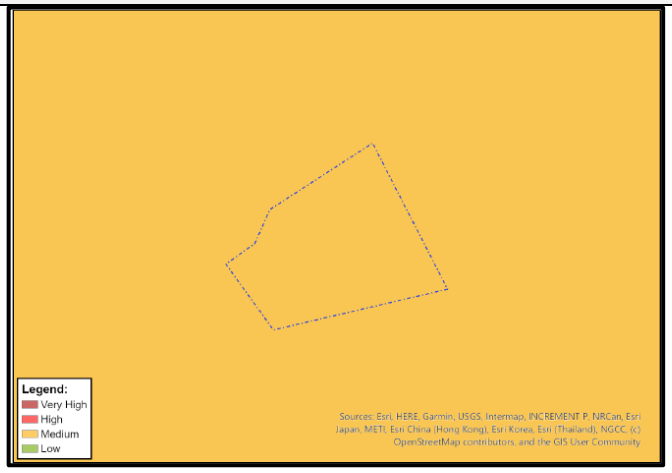
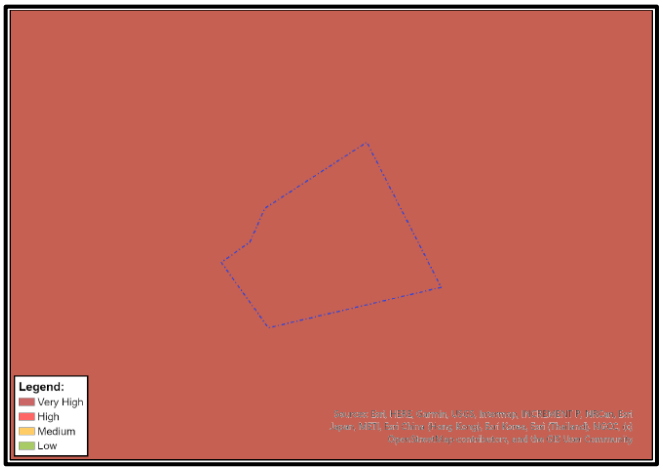
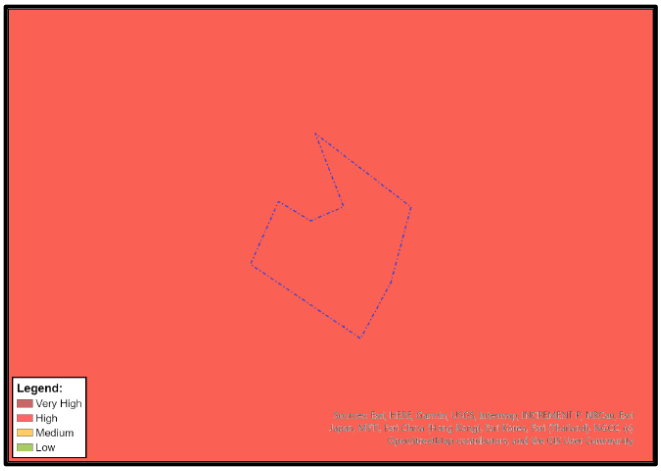
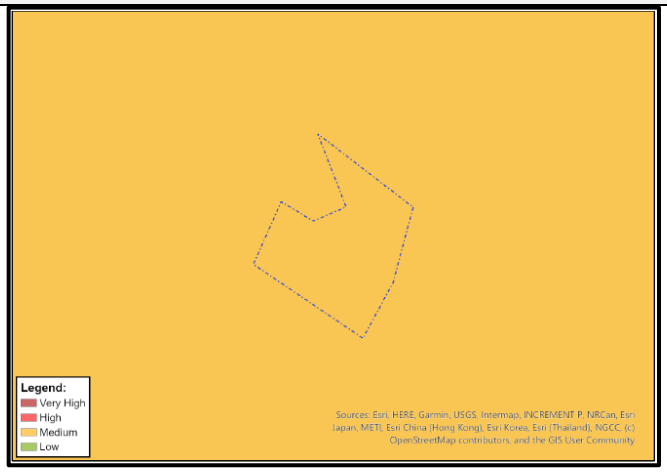
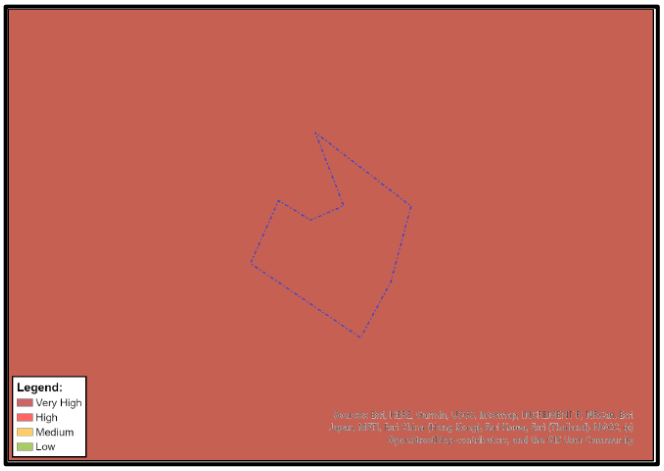
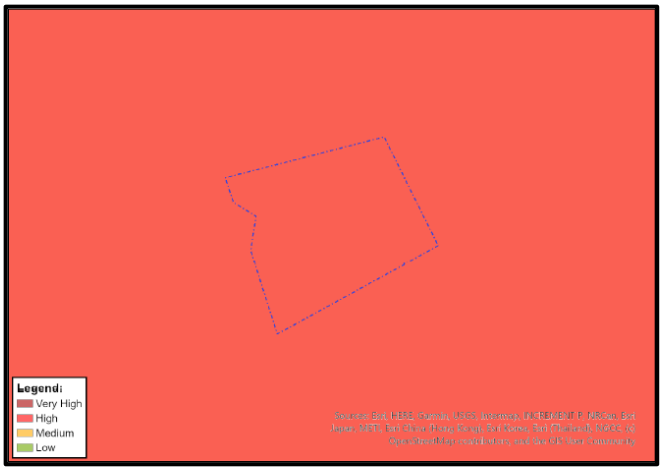
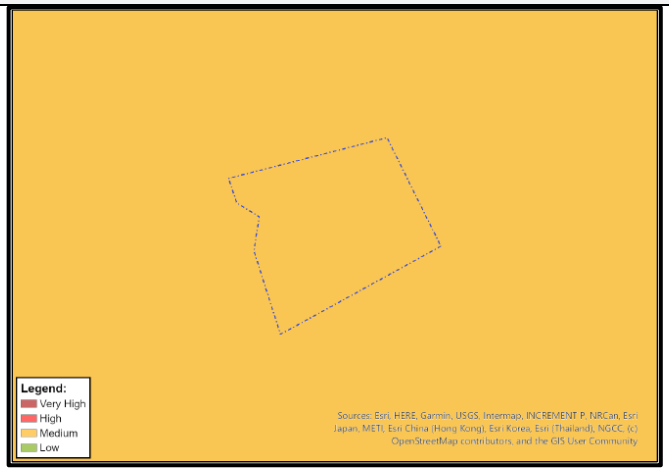
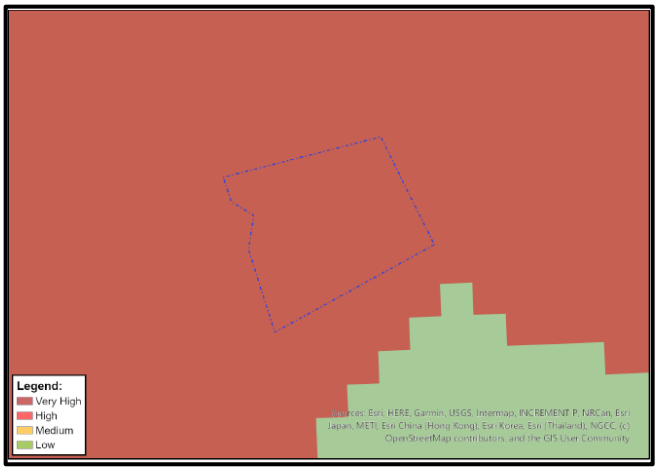
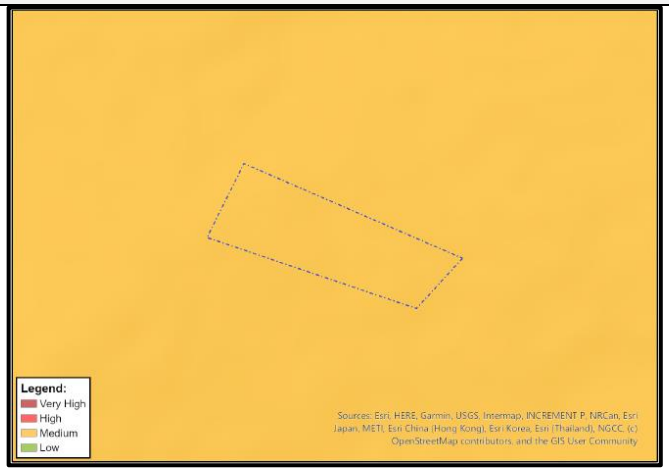
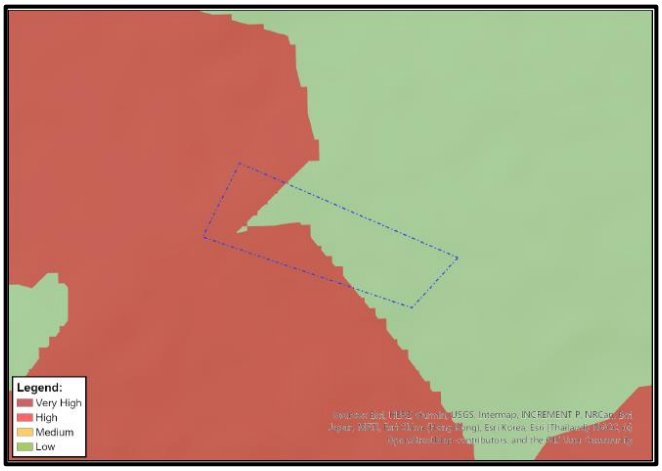
SITE NUMBER	SENSITIVITY FEATURE	DFFE SCREENING TOOL REPORT IMAGE
		
	❖ Very High: CBA: Irreplaceable & NPAES.	**TERRESTRIAL BIODIVERSITY THEME** 
BP3	❖ High: Protected Species.	**ANIMAL SPECIES THEME** 
	❖ Medium: Sensitive species.	**PLANT SPECIES THEME**

SITE NUMBER	SENSITIVITY FEATURE	DFFE SCREENING TOOL REPORT IMAGE
		
	❖ Very High: FEPA subcatchment & SWSA – Northern Drakensberg (no CBA or NPAES according to screening report)	**TERRESTRIAL BIODIVERSITY THEME** 
BP4	❖ High: Protected Species.	**ANIMAL SPECIES THEME** 
	❖ Medium: Sensitive species.	**PLANT SPECIES THEME**

SITE NUMBER	SENSITIVITY FEATURE	DFFE SCREENING TOOL REPORT IMAGE
		
	❖ Very High: FEPA subcatchment (no CBA or NPAES according to screening report)	**TERRESTRIAL BIODIVERSITY THEME** 
BP5	❖ High: Protected Species.	**ANIMAL SPECIES THEME** 
	❖ Medium: Sensitive species.	**PLANT SPECIES THEME**

SITE NUMBER	SENSITIVITY FEATURE	DFFE SCREENING TOOL REPORT IMAGE
		
	❖ Low ❖ Very High: CBA: Irreplaceable & NPAES	**TERRESTRIAL BIODIVERSITY THEME** 

Overview of Ecology and Vegetation Types

The following discussion focusses on the detailed assessment of BP1 as the preferred site and final project proposal. According to Mucina & Rutherford (2006) the area consists of Low Escarpment Moist Grassland that is currently listed as being of Least Concern (LC).

According to the EKZNW (2010/2016) Terrestrial Systematic Conservation Plan (TSCP) the study area consists of natural biodiversity areas, though large portions also consist of Critical Biodiversity Areas (CBA). According to the refined mapping of CBA areas (Hawley & Reeves 2023), BP1 does not fall within any CBA / ESA area. As mentioned earlier, the site is within the Northern Drakensberg SWSA as well as the National Protected Areas Expansion Strategy (NPAES): Moist Escarpment Grassland Focus Area. The VWA notes that in both instances, the proposed quarry development is unlikely to have any significant impact, both in terms of the regional water source and any future expansion of protected areas, largely as a result of its small footprint

and therefore limited impact. The quarry will avoid the surrounding watercourses and wetland, incorporating a suitable buffer and should therefore not have an effect on the strategic surface water resources. Being a quarry, it may have some impact on the groundwater source, though as long as adequate storm water management principles are implemented, should not have a significant impact on the resource.

Likewise, the footprint (5 hectares) will be so small as not to have any significant impact in terms of any proposed future protected area. In addition, the broader Wind Energy Facility (WEF) has also considered management measures in order to preserve and maintain the remaining natural areas.

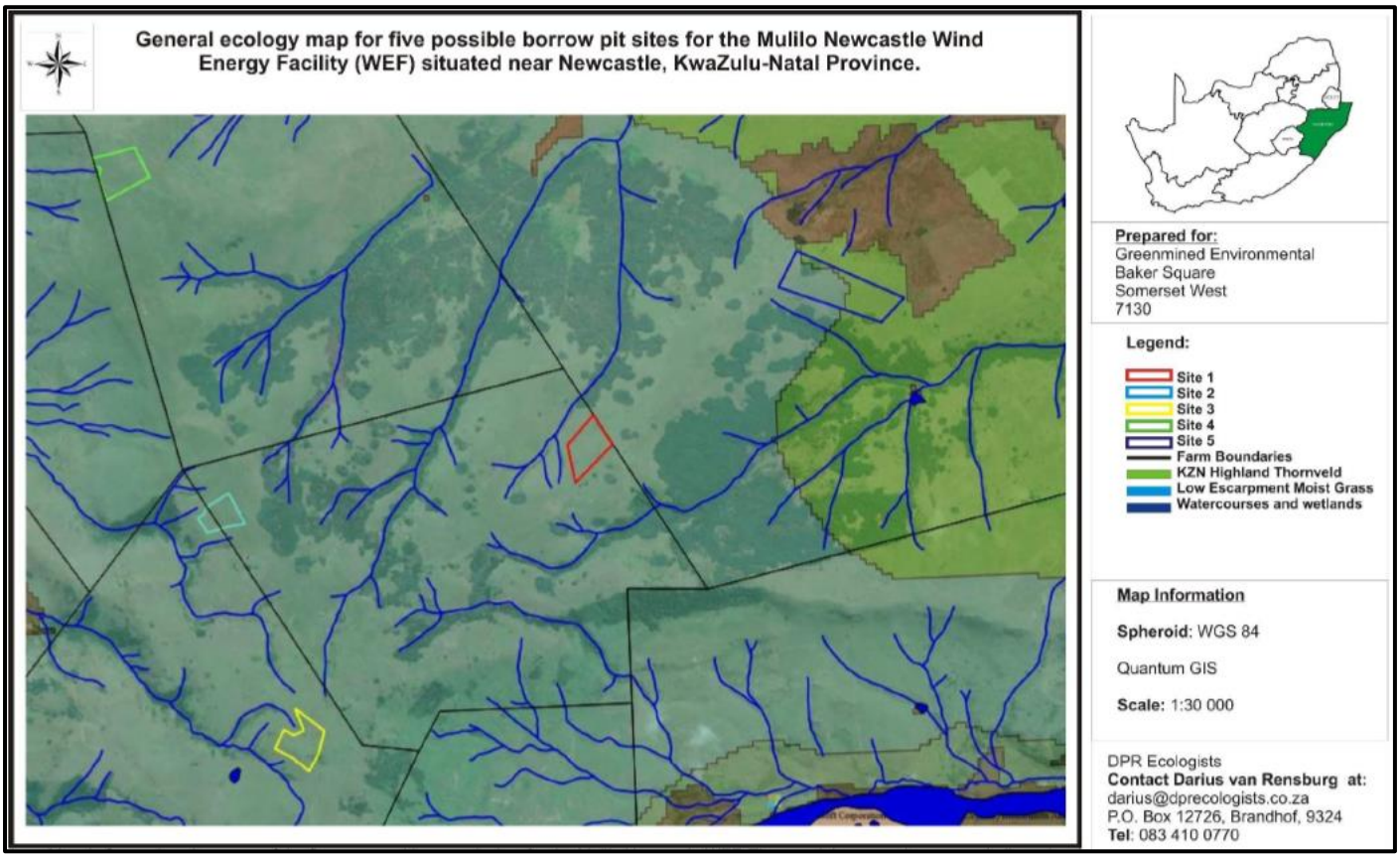


Table 17: General ecology map where the red polygon indicates BP1 (DPR Ecologists).

Description of the Vegetation Composition of BP1

The vegetation composition indicates a largely natural area which is still relatively unmodified. The grass layer consists of a diversity of species, with the majority being climax species.

The grass composition includes *Cymbopogon pospischillii, Themeda triandra, Eragrostis curvula, Tristachya leucothrix* and *Melinis nerviglumis*. Species diversity on

the site is significant due to a variety of micro-habitats, though still considered as moderate. As a result, a variety of different growth forms is present which includes many herbaceous species such as *Scabiosa columbaria, Berkheya echinacea, Acalypha peduncularis, Ocimum odoratum, Euryops laxus, Berkheya setifera, Gerbera ambigua, Cyanotis speciosa, Pentanisia angustifolia, Dyschoriste setigera, Eriosema cordatum* and *Pseudopegolettia tenella*. Other prominent growth forms include terrestrial ferns, *Cheilanthes virides, creepers, Cucumis hirsutus, Ipomoea crassipes, Sedges, Cyperus obtusiflorus* and succulents, *Euphorbia clavaroides, Aloe maculata*.

Another prominent component within the grass layer consists of geophytic species (plants with underground storage organs) which include *Hypoxis rigidula, Pelargonium luridum, Schizocarpus nervosus, Hypoxis multiceps, Crinum macowanii, Tulbaghia acutiloba, Gladiolus ecklonii, Raphionacme hirsuta, Dierama galpinii* and *Ledebouria ovatifolia*. Several of these geophytic species are also listed as protected and have a significant conservation value. Surface rock is present as boulders, and this also creates suitable habitat for scattered trees and shrubs to establish and these include *Diospyros lycioides, Searsia dentata, Buddleja salviifolia, Gymnosporia buxifolia* and *Searsia discolor*. Exotic weeds are present on the site but in low abundance and are also indicative of low levels of disturbance and include species such as *Richardia braziliensis*. This is a common weed, which is not considered invasive. Though not present on the site, several clumps of invasive *Acacia mearnsii* (Wattle) are present in the surroundings, especially the stream systems situated on the downslope of the site.

From the description of the vegetation composition on the site it would seem to be largely intact and in a fairly good condition. The species diversity is moderate although the area does contain a significant number of protected plant species which will contribute towards its conservation value. The site would therefore be regarded as generally of Moderate sensitivity (following figure).

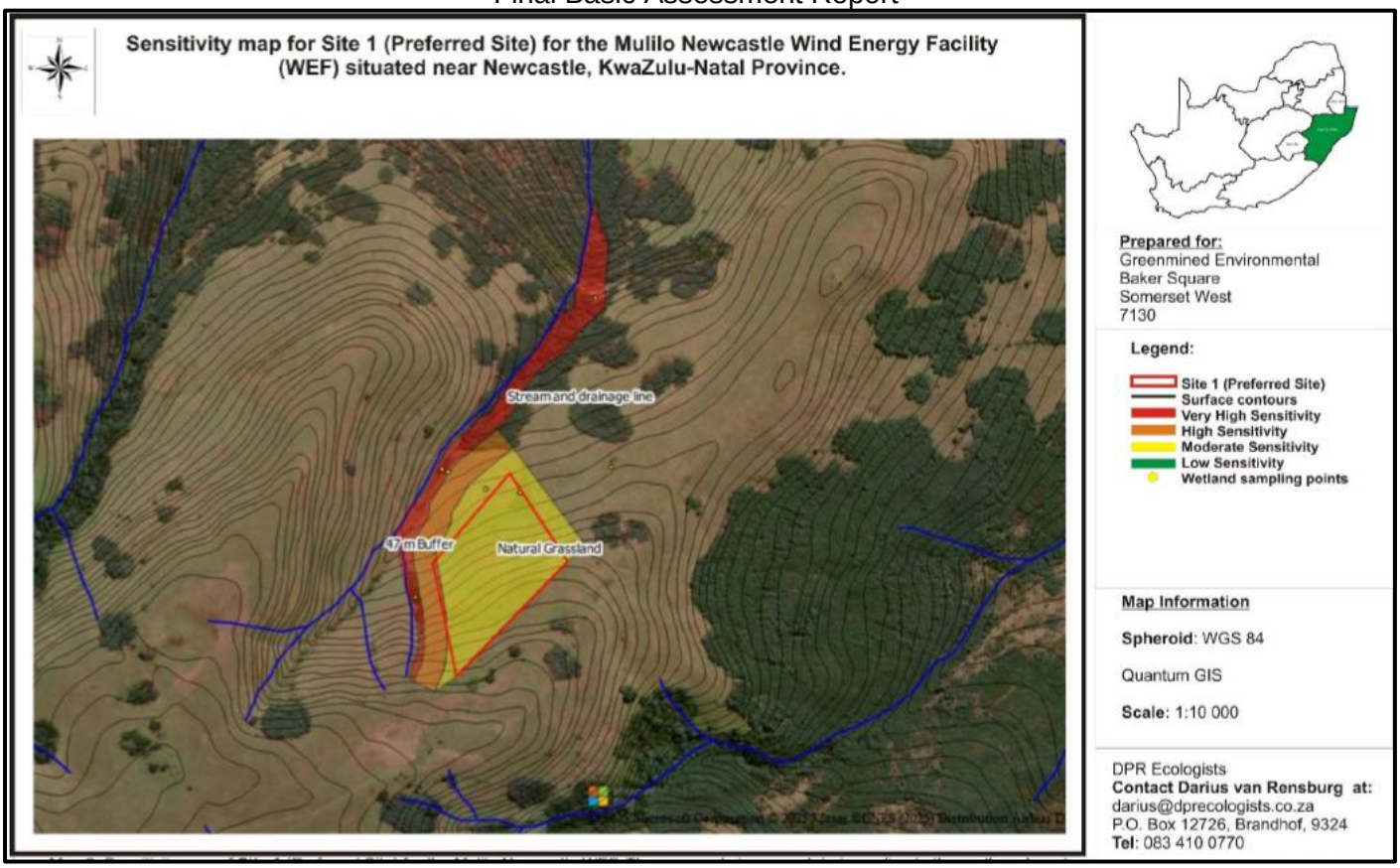


Figure 25: Sensitivity map as compiled by the ecologist in the VWA (DRP Ecologists). The 47 m buffer is indicated by the red shading (Very High Sensitivity).

Biodiversity Sensitivity Rating (BSR)

The habitat diversity for the study area is quite high, containing a highly variable topography and mountainous terrain, with habitats and vegetation communities also varying greatly. However, due to the limited extent of the proposed borrow sites (5 ha), this limits the localised habitat diversity to moderate. Likewise, the local species diversity is quite high, though considered moderate for the quarry site, given its small extent.

BP1 contains numerous protected plant species though all are considered fairly widespread and common.

The site functions as habitat for a variety of fauna, supports a specific vegetation type and also functions as part of the catchment of the wetlands and watercourses. However, due to the small extent of the quarry site (5 ha) the loss of ecological function should remain limited. This is however dependent on the quarry footprint, excluding all wetlands and watercourses, maintaining a suitable buffer zone, and implementing adequate storm water management in which case the impact on the ecological functioning should remain limited.

The VWA assigns a moderate conservation value to BP1. The site is not listed as a CBA, ESA or important habitat for threatened species and is not considered essential for meeting conservation target.

Percentage ground cover is moderate in the area and dominated by a grassland layer. The ground cover is considered to be somewhat decreased from the natural condition, most probably as a result of overgrazing by domestic stock.

Signs and tracks of mammal species on the site are present. The mammal population is anticipated to be largely natural, however, due to the small extent of the selected quarry, the impact on the mammal population should remain limited.

Conclusion and Recommendations

The VWA concludes that the site and surroundings contain numerous protected species which have significant conservation value and will require mitigation:

- Many of the affected protected species are cryptic and inconspicuous and have a winter dormancy, when they will be nearly impossible to identify. It is recommended that a walkthrough survey be conducted prior to the site being mined. This should include identification and marking of all protected plants on the site and should be performed by an ecologist or botanist.

- Species occurring on the site that may be affected by the development include *Gladiolus ecklonii, Raphionacme hirsuta, Dierama galpinii, Aloe maculata, Schizocarpus nervosus* and *Crinum macowanii.* Where development will affect these species, the necessary permits should be obtained and a significant proportion of these transplanted to adjacent areas where they will remain unaffected. These geophytic species are easily transplanted with a high success rate.

- The surrounding proposed Wind Energy Facility (WEF) has already initiated a protected species transplanting process and the mining permit application area can therefore also be incorporated into this process.

Though the site itself does not currently contain any significant weed or invasive plant infestations, mining will increase disturbance in the area, and this will pose a risk of weeds and invasive species establishing and spreading into surrounding natural areas. This is particularly relevant to invasive *Acacia mearnsii* (Wattle), present in several clumps in the surroundings, which should be the main focus of eradication efforts. The

proposed development will therefore have to implement a comprehensive monitoring and eradication programme to ensure that invasive plant species are removed from the area and prevented from re-establishing.

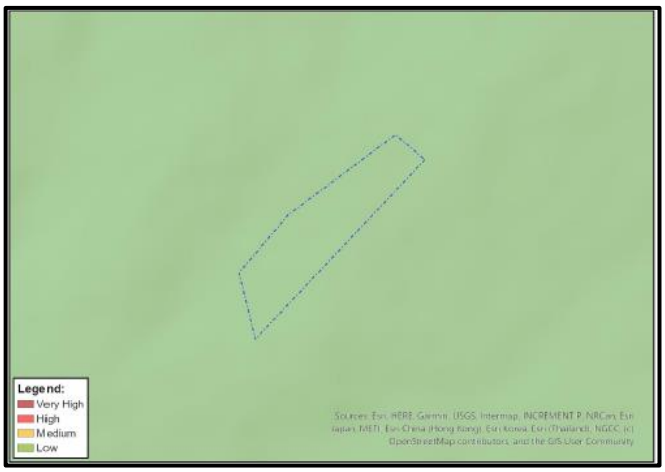
SITE SPECIFIC CULTURAL AND HERITAGE ENVIRONMENT

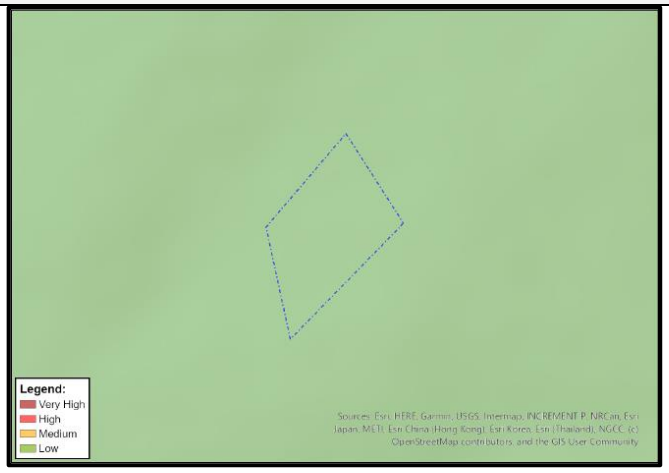
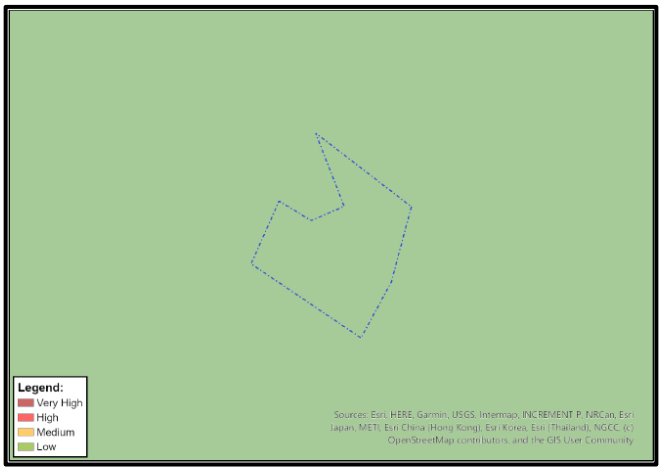
(Information extracted from the Desktop Heritage Impact Assessment for the Proposed Mulilo Newcastle Wind Power Borrow Pits, October 2024)

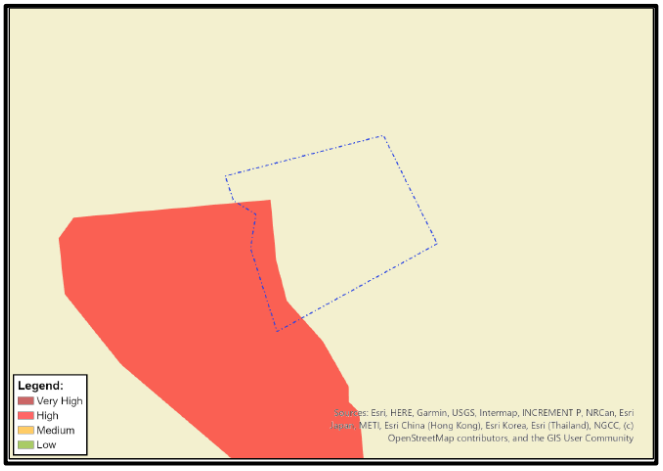
DFFE National Web Based Environmental Screening Tool:

According to the DFFE Screening Report the following archaeological and cultural heritage and/or palaeontological sensitivities were identified for the five alternative project areas (BP1 – BP5).

Table 18: Summary of the archaeological and cultural heritage and/or palaeontological sensitivities of the five potential sites according to the DFFE Screening Report.

SITE NUMBER	SENSITIVITY FEATURE	DFFE SCREENING TOOL REPORT IMAGE
BP1 (Initial Layout)	❖ Low	**ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME** 
BP1 (Final 5 ha layout as applied for)	❖ Low	**ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME**

SITE NUMBER	SENSITIVITY FEATURE	DFFE SCREENING TOOL REPORT IMAGE
		
BP2	❖ Low	**ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME** 
BP3	❖ Low	**ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME** 

SITE NUMBER	SENSITIVITY FEATURE	DFFE SCREENING TOOL REPORT IMAGE
BP4	❖ Low	**ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME** 
	❖ High: Features with high palaeontological sensitivity.	**PALAEONTOLOGY THEME** 
BP5	❖ Low	**ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME** 

Desktop Study Results – Archaeology & Cultural Heritage

Umlando: Archaeological Surveys and Heritage Management ("Umlando") was appointed to undertake a desktop study of the proposed development and decide whether further mitigation is required. All five potential borrow pit/quarry areas had to be assessed for the best option that has the least impact on heritage sites, and a management plan had to be compiled for each site.

The survey results of the MNWP WEF projects (Anderson 2022) were compared to the location of the proposed borrow pits (BP1 – BP5), and the specialist found that only BP5 is located near heritage sites (see following figure). These sites are MUL02 and MUL03. MUL02 is a two-roomed house, with a rectangular kraal and smaller rectangular foundations. There are probably graves associated with this settlement. This settlement will be of high significance if graves occurred. The vegetation was too dense during the survey to note graves. MUL03 is an old dip of low significance.

Figure 26: Satellite view of the heritage features in relation to BP1 (light blue polygon) and BP5 (dark blue polygon) (image obtained from Google Earth).

The specialist concluded that BP1 – BP4 are clear of heritage sites and either of these could be chosen.

Desktop Study Results – Palaeontological Sensitivity

Dr Alan Smith undertook the desktop palaeontological impact assessment (PIA) and fieldwork study for this project as some of the land was considered to be of high palaeontological significance. Regarding the MNWP WEF development he stated that: "This site is dominated by Karoo Dolerite, which is an intrusive igneous rock and not fossiliferous. However the remaining lithologies may be fossiliferous. The areas underlain by significant fossiliferous lithologies are restricted to deep depressions and steep slopes, areas where turbine construction is very unlikely. These lithologies are adequately catered for by the "Chance find protocol". The gridlines will cross Vryheid Formation. Although this is considered sensitive by the SAHRIS Palaeosensitivity Map, in practice no significant palaeontological material has been encountered. The gridlines follow existing industrial corridors (railway and Eskom powerline routes). For this reason it is the recommendation of this Field Report that no further palaeontological work needs to be undertaken, unless the "Chance Find Protocol" is triggered." (Smith 2022).

Dr Smith noted that the type of material that will be mined at the proposed quarry will be dolerite, and as dolerite is a non-fossiliferous material no PIA mitigation will be required.

Conclusion

The specialist concluded that the chances of heritage sites occurring within the study area are very low and no further mitigation is required. However, a Chance Find Protocol must be initiated and needs to form part of the EMPr

SITE SPECIFIC INFRASTRUCTURE

No infrastructure exists in the proposed 4.9 ha footprint of BP1, nor are there infrastructure in proximity to the proposed footprint apart from the boundary fence. Should the mitigation measures proposed in this document be implemented the existing infrastructure on the farm will be safeguarded against mining related impacts.

(d) Environmental and current land use map.

(Show all environmental and current land use features)

The environmental and current land use map is attached as Appendix B.

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

(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.)

The following potential impacts were identified of each main activity in each phase of the final project proposal (BP1) as the other four potential sites were all ruled unattainable by at least one of the specialist studies.

The significance rating was determined using the methodology as explained under *vi) Methodology Used in Determining and Ranking the Significance*. The impact rating listed below was determined for each impact **prior** to bringing the proposed mitigation measures into consideration and keeping in mind that the surrounding area is already approved for the development of the MNWP WEF projects. The degree of mitigation indicates the possibility of partial, full or no mitigation of the identified impact.

SITE ESTABLISHMENT & INFRASTRUCTURE DEVELOPMENT

Loss of grazing for duration of mining

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**		**Degree of Mitigation: None**		
1	4	1	2	5	5	5	**10**

Visual intrusion because of site establishment

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low- Medium			**Final Project Proposal**		**Degree of Mitigation: Partial**		
1	4	1	2	2	5	3.5	**7**

Impact on vegetation structure and plant species composition

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**		**Degree of Mitigation: Partial**		
4	4	4	4	4	2	3	**12**

Impact on protected plant species within mining footprint

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: High			**Final Project Proposal**		**Degree of Mitigation: Full**		
4	4	4	4	5	5	5	**20**

Potential change of natural runoff and drainage patterns

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
2	4	2	3.2	4	5	4.5	**14.4**

Additional job opportunities because of the mining operation **(Positive Impact)**

			Consequence			Likelihood	**Significance (+)**
Severity (+)	Duration	Extent		Probability	Frequency		
Rating: High (+)			**Final Project Proposal**		**Degree of Mitigation: N/A**		
4	4	5	4.3	5	5	5	**21.5**

STRIPPING AND STOCKPILING OF TOPSOIL AND/OR OVERBURDEN

Visual intrusion caused by mining activities

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**		**Degree of Mitigation: Partial**		
1	4	1	2	2	5	3.5	**7**

Loss of stockpiled topsoil during mining and stockpiling

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
3	4	1	2.6	4	1	2.5	**6.5**

Dust nuisance because of the disturbance of soil

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
3	1	2	2	5	5	5	**10**

Noise nuisance generated by earthmoving machinery

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Partial**		
1	1	2	1.3	2	5	3.5	**4.5**

Infestation of the topsoil heaps and mining area with weeds or invader plant species

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
3	4	2	3	5	2	3.5	**10.5**

Potential increase in runoff from bare areas and associated accelerated erosion

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
3	4	1	2.6	5	2	3.5	**9.1**

Potential contamination of footprint area and surface runoff because of hydrocarbon spillages/bad waste management practices.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
4	4	2	3.3	4	4	4	**13.2**

DRILLING AND BLASTING

Health and safety risk posed by blasting activities

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
4	4	1	3	4	3	3.5	**10.5**

Dust nuisance caused by blasting activities

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**		**Degree of Mitigation: None**		
2	1	2	1.6	5	3	4	**6.4**

Noise nuisance because of blasting

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**		**Degree of Mitigation: Partial**		
2	1	2	1.6	4	3	3.5	**5.6**

EXCAVATION, LOADING AND HAULING TO THE PROCESSING PLANT

Visual intrusion associated with the excavation activities

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**		**Degree of Mitigation: Partial**		
1	4	1	2	2	5	3.5	**7**

Dust nuisance due to excavation and from loading and vehicles transporting the material

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
2	4	2	2.6	5	5	5	**13**

Noise nuisance because of the mining activities

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**		**Degree of Mitigation: Partial**		
1	4	2	2.3	2	5	3.5	**8**

Unsafe working environment for employees

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
4	4	1	3	4	5	4.5	**13.5**

Soil contamination from hydrocarbon spills and/or littering

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
3	4	1	2.6	4	5	4.5	**11.7**

Facilitation of erosion due to mining activities

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
3	4	1	2.6	4	3	3.5	**9.1**

CRUSHING, WASHING, STOCKPILING AND TRANSPORTING OF MATERIAL

Dust nuisance generated at the processing plant

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
2	4	2	2.6	5	5	5	**13**

Noise nuisance stemming from operation of the processing plant

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**		**Degree of Mitigation: Partial**		
1	4	2	2.3	2	5	3.5	**8**

Potential contamination of environment due to improper waste management

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
3	4	1	2.6	4	4	4	**10.4**

Infestation of the area with invader plant species

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			**Final Project Proposal**		**Degree of Mitigation: Full**		
3	4	5	4	4	5	4.5	**18**

Potential increase in runoff from bare areas and associated accelerated erosion

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
3	4	1	2.6	5	2	3.5	**9.1**

Loss of stockpiled material due to ineffective stormwater control

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
3	4	2	3	4	2	3	**9**

Increased fire risk due to mining activities

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
4	4	4	4	3	1	2	**8**

CUMULATIVE IMPACTS:

Direct physical loss or modification of the watercourses and/or wetland should the buffer zone not be maintained

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
4	5	4	4.3	3	1	2	**8.6**

Cumulative dust nuisance when quarry is operational and construction of the MNWP WEF commences

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			**Final Project Proposal**		**Degree of Mitigation: Full**		
3	4	2	3	5	5	5	**15**

Cumulative noise nuisance when quarry and construction of the MNWP WEF occur simultaneously

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**		**Degree of Mitigation: Partial**		
2	4	2	2.6	3	5	4	**10.4**

Cumulative visual impact when the quarry and MNWP WEF is developed

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**		**Degree of Mitigation: Partial**		
3	4	2	3	3	5	4	**12**

Cumulative impact on overall species and ecosystem diversity

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
4	4	1	3	3	3	3	**9**

Cumulative impact of invader plants in both the quarry and MNWP WEF footprints

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: High			**Final Project Proposal**		**Degree of Mitigation: Full**		
4	4	5	4.3	5	5	5	**21.5**

Presence of mining contractor negatively affecting safety and security of the surrounding properties.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			**Final Project Proposal**		**Degree of Mitigation: Full**		
4	4	4	4	3	5	4	**16**

Cumulative impact on job opportunities when quarry and MNWP WEF is in construction

			Consequence			Likelihood	**Significance (+)**
Severity (+)	Duration	Extent		Probability	Frequency		
Rating: High (+)			**Final Project Proposal**		**Degree of Mitigation: N/A**		
5	4	5	4.6	5	5	5	**23**

SLOPING AND LANDSCAPING DURING REHABILITATION:

Safety risk posed by un-sloped areas

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
3	5	1	3	4	5	4.5	**13.5**

Erosion of returned topsoil after rehabilitation

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
3	4	1	2.6	4	5	4.5	**11.7**

Infestation of the reinstated areas by weeds and invader plant species

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			**Final Project Proposal**		**Degree of Mitigation: Full**		
3	5	3	3.6	5	5	5	**18**

Potential impact associated with litter/waste left at the mining area

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
3	5	1	3	4	5	4.5	**10.5**

Use of the excavation as spoil site for natural materials **(Positive Impact)**

			Consequence			Likelihood	**Significance (+)**
Severity (+)	Duration	Extent		Probability	Frequency		
Rating: Medium-High			**Final Project Proposal**		**Degree of Mitigation: N/A**		
3	5	1	3	5	5	5	**15**

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.)

Methodology for the assessment of the potential environmental, social and cultural impacts

DEFINITIONS AND CONCEPTS:

Environmental significance:

The concept of significance is at the core of impact identification, evaluation and decision-making. The concept remains largely undefined and there is no international consensus on a

single definition. The following common elements are recognised from the various interpretations:

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

Significance can be differentiated into impact magnitude and impact significance. Impact magnitude is the measurable change (i.e. intensity, duration and likelihood). Impact significance is the value placed on the change by different affected parties (i.e. level of acceptability) (DEAT (2002) Impact Significance, Integrated Environmental Management, Information Series 5).

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

Impact

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

Consequence

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

Likelihood

A qualitative term covering both probability and frequency.

Frequency

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

Probability

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

Environment

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

Methodology that will be used

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

Environmental Significance = Overall Consequence X Overall Likelihood

Determination of Overall Consequence

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

Determination of Severity / Intensity

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

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

Table 19: Table to be used to obtain an overall rating of severity, taking into consideration the various criteria.

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

Determination of Duration

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

Table 20: Criteria for the rating of duration

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

Determination of Extent/Spatial Scale

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

Table 21: Criteria for the rating of extent / spatial scale.

RATING	DESCRIPTION
1	Immediate, fully contained area
2	Surrounding area
3	Within Business Unit area of responsibility
4	Within the farm/neighbouring farm area
5	Regional, National, International

Determination of Overall Consequence

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

Table 22: Example of calculating overall consequence.

CONSEQUENCE	RATING
Severity	Example 4
Duration	Example 2
Extent	Example 4
SUBTOTAL	**10**
TOTAL CONSEQUENCE: (Subtotal divided by 3)	**3.3**

Determination of Likelihood:

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

Determination of Frequency

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

Table 23: Criteria for the rating of frequency.

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

Determination of Probability

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

Table 24: Criteria for the rating of probability.

RATING	DESCRIPTION
1	Almost never / almost impossible
2	Very seldom / highly unlikely
3	Infrequent / unlikely / seldom
4	Often / regularly / likely / possible
5	Daily / highly likely / definitely

Overall Likelihood

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

Table 25: Example of calculating overall likelihood.

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

Determination of Overall Environmental Significance:

The multiplication of overall consequence with overall likelihood will provide the environmental significance, which is a number that will then fall into a range of **LOW**, **LOW-MEDIUM**, **MEDIUM**, **MEDIUM-HIGH** or **HIGH**, as shown in the table below.

Table 26: Determination of overall environmental significance.

SIGNIFICANCE OR RISK	LOW	LOW-MEDIUM	MEDIUM	MEDIUM-HIGH	HIGH
Overall Consequence X Overall Likelihood	1 – 4.9	5 – 9.9	10 – 14.9	15 – 19.9	20 – 25

Qualitative description or magnitude of Environmental Significance

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

Table 27: Description of environmental significance and related action required.

SIGNIFICANCE	LOW	LOW-MEDIUM	MEDIUM	MEDIUM-HIGH	HIGH
Impact Magnitude	Impact is of very low order and therefore likely to have very little real effect. Acceptable.	Impact is of low order and therefore likely to have little real effect. Acceptable.	Impact is real, and potentially substantial in relation to other impacts. Can pose a risk to company	Impact is real and substantial in relation to other impacts. Pose a risk to the company. Unacceptable	Impact is of the highest order possible. Unacceptable. Fatal flaw.
Action Required	Maintain current management measures. Where possible improve.	Maintain current management measures. Implement monitoring and evaluate to determine potential increase in risk. Where possible improve	Implement monitoring. Investigate mitigation measures and improve management measures to reduce risk, where possible.	Improve management measures to reduce risk.	Implement significant mitigation measures or implement alternatives.

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

High — Of the highest order possible within the bounds of impacts which could occur. In the case of negative impacts, there would be no possible mitigation and / or remedial activity to offset the impact at the spatial or time scale for which it was predicted. In the case of positive impacts, there is no real alternative to achieving the benefit.

Medium-High — Impacts of a substantial order. In the case of negative impacts, mitigation and / or remedial activity would be feasible but difficult, expensive, time-consuming or some combination of these. In the case of positive impacts, other means of achieving this benefit would be feasible, but these would be more difficult, expensive, time-consuming or some combination of these.

Medium — Impact would be real but not substantial within the bounds of those, which could occur. In the case of negative impacts, mitigation and / or remedial activity would be both feasible and fairly easily possible, In case of positive impacts; other means of achieving these benefits would be about equal in time, cost and effort.

Low-Medium	Impact would be of a low order and with little real effect. In the case of negative impacts, mitigation and / or remedial activity would be either easily achieved of little would be required, or both. In case of positive impacts alternative means for achieving this benefit would likely be easier, cheaper, more effective, less time-consuming, or some combination of these.
Low	Impact would be negligible. In the case of negative impacts, almost no mitigation and or remedial activity would be needed, and any minor steps, which might be needed, would be easy, cheap and simple. In the case of positive impacts, alternative means would almost all likely be better, in one or a number of ways, than this means of achieving the benefit
Insignificant	There would be a no impact at all – not even a very low impact on the system or any of its parts.

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)

POSITIVE IMPACTS ASSOCIATED WITH THE FINAL PROJECT PROPOSAL

- Mining the required fill material from an on-site quarry will reduce the need to transport raw materials along public roads, that will in turn reduce the probability of traffic incidents usually associated with delivery vehicles turning into/exiting construction sites.
- The use of materials from the immediate surroundings will reduce the need to import foreign materials to the construction sites. This is advantageous in that the distribution of plant species is controlled.
- Reduced transport costs will directly affect material costs and project feasibility.
- Reduced CO_2 emissions as the material will be transported over shorter distances.
- Impacts such as dust generation, noise and produce spillage is contained to an already approved construction site controlled through an EMPR.
- Improved security of the mining equipment and reduction in unauthorized entry of the mining area as the quarry is encircled by the MNWP WEF projects.
- The potential impact that overloading may have on the public roads is eliminated.
- Containing mining related impacts associated with blasting, crushing, screening and the washing of materials within the perimeters of a larger operation construction site lessens

the potential of public complaints as the mining area will not occur near residences nor a pristine rural environment.

- The excavation can at the end of the life of mine be used as spoil site for all spoil rock, sand, and/or soil (from the MNWP WEF construction sites) and this will assist in the rehabilitation of the quarry pit and supply the WEF contractors with a responsible spoil site within proximity of the construction sites, without the need of spoiling material at registered landfill sites.

- The landowner of the farm Byron No 9448 will be compensated for the use of the material mined from the proposed quarry.

- At least fifteen new job opportunities will be created by the proposed activity.

POTENTIAL NEGATIVE IMPACTS ASSOCIATED WITH THE FINAL PROJECT PROPOSAL

The following table shows the potential negative impacts associated with the final project proposal that were identified during the EIA:

Table 28: List of potential negative impacts associated with the final project proposal.

ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION)	SIGNIFICANCE (AFTER MITIGATION)
❖ Site establishment and infrastructure development.	❖ Loss of grazing for duration of the project.	❖ Medium	❖ Medium
❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Excavation, loading and hauling to the processing plant. ❖ Cumulative impact.	❖ Visual intrusion because of site establishment. ❖ Visual intrusion caused by mining activities. ❖ Visual intrusion associated with the excavation activities. ❖ Cumulative visual impact when quarry and MNWP WEF is developed.	❖ Medium ❖ Low-Medium ❖ Low-Medium ❖ Medium	❖ Low-Medium ❖ Low-Medium ❖ Low-Medium ❖ Medium
❖ Site establishment and infrastructure development. ❖ Cumulative impacts.	❖ Impact on vegetation structure and plant species composition. ❖ Impact on protected plant species within mining footprint. ❖ Cumulative impact on overall species and ecosystem diversity.	❖ Medium ❖ High ❖ Low-Medium	❖ Low-Medium ❖ Low ❖ Low

ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION)	SIGNIFICANCE (AFTER MITIGATION)
❖ Stripping and stockpiling of topsoil and overburden. ❖ Excavation, loading and hauling to the processing plant. ❖ Crushing, washing, stockpiling and transporting of material. ❖ Sloping and landscaping during rehabilitation.	❖ Loss of stockpiled topsoil during mining and stockpiling. ❖ Potential increase in runoff from bare areas and associated accelerated erosion. ❖ Facilitation of erosion due to mining activities. ❖ Potential increase in runoff from bare areas and associated accelerated erosion. ❖ Loss of stockpiled material due to ineffective stormwater control. ❖ Erosion of returned topsoil after rehabilitation.	❖ Low-Medium ❖ Low-Medium ❖ Low-Medium ❖ Low-Medium ❖ Low-Medium ❖ Medium	❖ Low ❖ Low ❖ Low ❖ Low ❖ Low ❖ Low
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Drilling and blasting. ❖ Excavation, loading and hauling to the processing plant. ❖ Crushing, washing, stockpiling and transporting of material. ❖ Cumulative impacts.	❖ Dust nuisance because of the disturbance of soil. ❖ Dust nuisance caused by blasting activities. ❖ Dust nuisance due to excavation and from loading and vehicles transporting the material. ❖ Dust nuisance generated at the processing plant. ❖ Cumulative dust nuisance when quarry is operational and construction of the MNWP WEF commences.	❖ Medium ❖ Low-Medium ❖ Medium ❖ Medium ❖ Medium-High	❖ Low ❖ Low-Medium ❖ Low ❖ Low ❖ Low-Medium
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Drilling and blasting. ❖ Excavation, loading and hauling to the processing plant. ❖ Crushing, washing, stockpiling and transporting of material. ❖ Cumulative impacts	❖ Noise nuisance generated by earthmoving machinery. ❖ Noise nuisance because of blasting. ❖ Noise nuisance because of the mining activities. ❖ Noise nuisance stemming from operation of the processing plant. ❖ Cumulative noise nuisance when quarry and construction of the MNWP WEF occur simultanously.	❖ Low ❖ Medium ❖ Low-Medium ❖ Low-Medium ❖ Medium	❖ Low ❖ Low-Medium ❖ Low ❖ Low ❖ Low-Medium
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Crushing, washing, stockpiling and transporting of material. ❖ Cumulative impacts. ❖ Sloping and landscaping during rehabilitation phase.	❖ Infestation of the topsoil heaps and mining area with weeds or invader plant species. ❖ Infestation of the area with invader plant species. ❖ Cumulative impact of invader plants in both the quarry and MNWP WEF footprints. ❖ Infestation of the reinstated areas by weeds and invader plant species.	❖ Medium ❖ Medium-High ❖ High ❖ Medium-High	❖ Low ❖ Low ❖ Low-Medium ❖ Low

ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION)	SIGNIFICANCE (AFTER MITIGATION)
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Excavation, loading and hauling to the processing plant. ❖ Crushing, washing, stockpiling and transporting of material. ❖ Sloping and landscaping during rehabilitation phase.	❖ Potential contamination of footprint area and surface runoff because of hydrocarbon spillages/bad waste management practices. ❖ Soil contamination from hydrocarbon spills and/or littering. ❖ Potential contamination of environment due to improper waste management. ❖ Potential impact assocated with litter/waste left at the mining area.	❖ Medium ❖ Medium ❖ Medium ❖ Medium	❖ Low ❖ Low ❖ Low ❖ Low
❖ Site establishment & infrastructure development. ❖ Cumulative Impacts	❖ Potential change of natural runoff and drainage patterns. ❖ Direct physical loss or modification of the watercourses and/or wetland should the buffer zone not be maintained.	❖ Medium ❖ Low-Medium	❖ Low ❖ Low
❖ Drilling and blasting. ❖ Excavation, loading and hauling to the processing plant. ❖ Sloping and landscaping during rehabilitation phase.	❖ Health and safety risk posed by blasting activities. ❖ Unsafe working environment for employees. ❖ Safety risk posed by un-sloped areas.	❖ Medium ❖ Medium ❖ Medium	❖ Low ❖ Low ❖ Low
❖ Cumulative Impacts	❖ Presence of mining contractor negatively affecting safety and security of the surrounding properties.	❖ Medium-High	❖ Low
❖ Crushing, washing, stockpiling and transporting of material.	❖ Increased fire due to mining activities.	❖ Low-Medium	❖ Low

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 mitigation 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)

The following mitigation measures are proposed to address/minimize the impact of the proposed activity on the surrounding environment:

TOPOGRAPHY

Rehabilitating/Landscaping of Mining Area:

- The excavated area must serve as a final depositing area for the placement of overburden.
- Rocks and coarse material removed from the excavation must be dumped into the excavation.
- Coarse natural material used for the construction of ramps must be removed and dumped into the excavations.
- Stockpiles must be removed during the decommissioning phase, the area ripped, and the topsoil returned to its original depth to provide a growth medium.
- No waste may be permitted to be deposited in the excavations.
- Once overburden, rocks and coarse natural materials have been added to the excavation and it was profiled with acceptable contours and erosion control measures, the topsoil previously stored must be returned to its original depth over the area. Only removed topsoil (during site establishment phase) may be utilised to rehabilitate the disturbed surface.
- The area must be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within six months from closure of the site.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.
- On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002).
- On completion of mining operations, the surface of all plant-, stockpiling-, and/or office areas, if compacted due to hauling and dumping operations, shall be scarified to a depth

of at least 200 mm and graded to an even surface condition. Where applicable/possible topsoil needs to be returned to its original depth over the area.

VISUAL CHARACTERISTICS

Visual Mitigation:

- The site must have a neat appearance and at all times kept in good condition.
- Mining equipment must be stored neatly in dedicated areas when not in use.
- The permit holder must limit vegetation removal, and stripping of topsoil may only be done immediately prior to the mining/use of a specific area.
- The excavation must be contained within the approved footprint of the permitted area.
- Upon closure the site must be rehabilitated to ensure that the visual impact on the aesthetic value of the area is reduced to the minimum.

AIR AND NOISE QUALITY

Fugitive Dust Emission Mitigation Measures:

- The liberation of dust into the surrounding environment must be effectively controlled using, inter alia, water spraying and/or environmentally friendly dust-allaying agents that contains no PCB's (e.g. DAS products).
- The site manager must daily assess the efficiency of all dust suppression equipment.
- Speed on the haul roads must be limited to 20 km/h and 40 km/h on the access road to prevent the generation of excess dust.
- Areas devoid of vegetation, which could act as a dust source, must be minimized and vegetation removal may only be done immediately prior to mining.
- The crusher plant must have operational water sprayers to alleviate dust generation from the conveyor belts.
- Fines, blowing from the drop end of the crusher plant, can be minimized by attaching strips of used conveyor belts to the conveyor's end.
- Compacted dust must weekly be removed from the crusher plant to eliminate the dust source.
- Weather conditions must be taken into consideration upon commencement of daily operations. Limiting operations during very windy periods would reduce airborne dust and resulting impacts.
- All dust generating activities shall comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM:AQA (Act 39 of 2004) and ASTM D1739 (SANS 1137:2012).

- Best practice measures shall be implemented during the stripping of topsoil, excavation, and transporting of material from site to minimize potential dust impacts.

Noise Handling:

- The permit holder must ensure that employees and staff conduct themselves in an acceptable manner while on site.
- No loud music may be permitted at the mining area.
- All mining vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996 (Act No 93 of 1996).
- The type, duration and timing of the blasting procedures must be planned with due cognizance of other land users and structures in the vicinity. Surrounding landowners must be notified in writing prior to each blasting occasion.
- A qualified occupational hygienist must be contracted to quarterly monitor and report on the personal noise exposure of the employees working at the mine. The monitoring must be done in accordance with the SANS 10083:2004 (Edition 5) sampling method as well as NEM:AQA, 2004, SANS 10103:2008.
- Site management must strive to minimise the noise caused by generators. All generators must be maintained and equipped with sound mufflers. If possible, the generators must be pointed away from the neighbouring land users. Further to this, all generators must be placed on a level area/footing to minimise vibration noise.
- Best practice measures shall be implemented to minimize potential noise impacts.
- Mining must be from 07:00 to 18:00 Monday to Friday. No blasting may be allowed after hours or on weekends.

GEOLOGY AND SOIL

Topsoil Management:

- The upper 300 mm of the soil must be stripped and stockpiled before mining.
- Topsoil is a valuable and essential resource for rehabilitation, and it must therefore be managed carefully to conserve and maintain it throughout the stockpiling and rehabilitation processes.
- Topsoil stripping, stockpiling, and re-spreading must be done in a systematic way. The mining plan must be such that topsoil is stockpiled for the minimum possible time.
- The topsoil must be placed on a levelled area, within the mining footprint. No topsoil may be stockpiled in undisturbed areas.
- Topsoil stockpiles must be protected against losses by water- and wind erosion. Stockpiles must be positioned so as not to be vulnerable to erosion by wind and water.

The establishment of plants (indigenous grass) on the stockpiles will help to prevent erosion.

- Topsoil heaps may not exceed 1.5 m in height and are not to be sloped more than 1:2 to avoid collapse.
- The temporary topsoil stockpiles must be kept free of invasive plant species.
- Topsoil heaps to be stored longer than a period of 3 months needs to be vegetated with an indigenous grass seed mix if vegetation does not naturally germinate within the first growth season.
- Storm- and runoff water must be diverted around the on-site stockpile area to prevent erosion.
- The stockpiled topsoil must be evenly spread, to a depth of 300 mm, over the rehabilitated area upon closure of the site.
- Only removed topsoil (during site establishment phase) may be utilised to rehabilitate the disturbed surface.
- The permit holder must strive to re-instate topsoil at a time of year when vegetation cover can be established as quickly as possible afterwards, so that erosion of returned topsoil by both rain and wind, before vegetation is established, is minimized. The best time of year is at the end of the rainy season, when there is moisture in the soil for vegetation establishment and the risk of heavy rainfall events is minimal.
- An indigenous grass layer must be planted and established immediately after spreading of topsoil, to stabilize the soil and protect it from erosion. The grass layer must be fertilized for optimum biomass production. It is important that rehabilitation be taken up to the point of stabilization. Rehabilitation cannot be considered complete until the first grass layer is well established.
- Run-off water must be controlled via temporary berms, where necessary, on the slopes to ensure that accumulation of run-off does not cause down-slope erosion.
- The rehabilitated area must be monitored for erosion, and appropriately stabilized if any erosion occurs for at least 12 months after reinstatement.

HYDROLOGY

Erosion Control and Storm Water Management:

- A storm water management plan must be implemented for the duration of the mining activities.
- Clearing of vegetation must be limited to the proposed mining footprint and associated infrastructure. No clearing outside of the minimum required footprint to take place.
- Vegetation clearing activities must be put on hold when heavy rains are expected.

- Stormwater must be diverted around the topsoil heaps and mining areas to prevent erosion.
- Stockpiles must be protected from erosion, stored on flat areas where possible, and be surrounded by appropriate berms.
- When mining within steep slopes, it must be ensured that adequate slope protection is provided.
- During mining, the outflow of run-off water from the mining excavation must be controlled to prevent down-slope erosion. This must be done by way of the construction of temporary banks and ditches that will direct run-off water (if needed). These must be in place at any points where overflow out of the excavation might occur.
- No dirty water emanating from the quarry shall be discharged into the natural environment or any watercourse. All run-off must be channelled into the stormwater system.
- Roads and other disturbed areas within the project area must be regularly monitored for erosion and problem areas must receive follow-up monitoring to assess the success of the remediation.
- Any erosion problems within the mining area because of the mining activities observed must be rectified immediately (within 48 hours) and monitored thereafter to ensure that it does not re-occur.
- Silt/sediment traps/barriers must be used where there is a danger of topsoil or material stockpiles eroding and entering downstream drainage lines and other sensitive areas. These sediment/silt barriers must regularly be maintained and cleared to ensure effective drainage of the areas.
- Mining must be conducted only in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water and Sanitation (DWS), and any other conditions which that Department may impose:
  - Clean water (e.g. rainwater) must be kept clean and be routed to a natural watercourse by a system separate from the dirty water system. You must prevent clean water from running or spilling into dirty water systems.
  - Dirty water must be collected and contained in a system separate from the clean water system.
  - Dirty water must be prevented from spilling or seeping into clean water systems.
  - A storm water management plan must apply for the entire life cycle of the mining activity and over different hydrological cycles (rainfall patterns).
  - The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into a storm water management plan.

- All fuels and chemicals stored or used on site must be contained within fit for purpose containers and stored within designated storage areas. To prevent pollution of the surrounding environment during an accidental spillage, the designated storage areas must be situated on an impermeable surface and must feature a perimeter bund and a drainage sump. The volume of the bund and sump must be sized to contain at least 110% of the total volume of the fuel and chemicals being stored within the designated storage area. The storage areas must feature a roof to prevent inflow of rainwater, which would require the sump to be emptied more frequently.
- Once shaped, all exposed/bare surfaces and embankments must be re-vegetated immediately. If revegetation of exposed surfaces cannot take place immediately, temporary erosion, and sediment control measures must be installed and maintained until such time that revegetation can commence.
- All erosion and sediment control measures must be monitored (weekly) for the life of the operation and repaired immediately when damaged. The erosion and sediment control structures may only be removed once vegetation cover has successfully recolonised the affected areas.
- After heavy rainfall events, the contractor must check the site for erosion damage and rehabilitate this damage immediately. Erosion rills and gullies must be filled-in with appropriate material and/or silt fences until vegetation has recolonised the rehabilitated area.
- The water sump of the washing plant must be checked every month to assess the amount of sediment collected. Sediment must be removed at a predetermined depth of sediment and stockpiled separately or deposited into the excavation.

Mitigating the potential impact on the hydrology related features:

- The necessary authorisations must be acquired from the DWS for mining activities within 100 metres of any of the delineated watercourses around the site.
- The seasonal stream and drainage line adjacent to BP1, as identified by the hydrologist, must be treated as no-go areas and no mining activities, including construction or operational activities, vehicle movement, laydown areas, vegetation clearing or any other associated activities may occur in or near these watercourses.
- To prevent any further impacts on the identified watercourses, a buffer of 47 metres must be maintained from the edge of the riparian zone along these watercourses. This buffer area must also be treated as a no-go area.
- Where mining operations require crossing of the watercourses only existing roads and tracks may be utilised.
- A natural vegetation layer must be re-instated where it was disturbed/removed.

- Adequate storm water management measures must be implemented and must include diverting storm- and floodwater around operational and excavation areas and preventing sediment and silt from entering any of the delineated watercourses.
- To prevent an increase in surface water flow velocity:
  - Ensure that an approved storm water plan is compiled and implemented;
  - The flow of storm water onto the buffer and wetland features must be moderated.
- To prevent the contamination of the nearby watercourses:
  - The contractor must notify the CM and ECO immediately of any pollution incidents on site.
  - The contractor must prevent discharge of any pollutants, such as cement, concrete, lime chemicals and fuels into any water source.
- Ensure that structures like berms are built to prevent soil from entering wetlands as this can result in sedimentation.

TERRESTRIAL BIODIVERSITY (INCLUDING FAUNA AND FLORA)

Management of Vegetation Removal:

- The mining boundaries must be clearly demarcated, and all operations must be contained to the approved mining area. The area outside the mining boundaries must be declared a no-go area, and all staff must be educated accordingly.
- The Applicant must be committed to a conservation approach and the actual footprint of disturbance must be kept to a minimum.
- A pre-commencement environmental induction for all site staff must be provided to ensure that basic environmental principles are adhered to. This includes awareness of no littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, minimising wildlife interactions, remaining within demarcated construction areas, etc.
- A pre-commencement walkthrough must be done by an ecologist to identify and demarcate important species to be relocated and sub habitats not to be disturbed.
- Species occurring on the site that may be affected by the development include *Gladiolus ecklonii, Raphionacme hirsuta, Dierama galpinii, Aloe maculata, Schizocarpus nervosus* and *Crinum macowanii*. Where development will affect these species, the necessary permits must be obtained and a significant proportion of these transplanted to adjacent areas where it will remain unaffected.
- The surrounding proposed Wind Energy Facility (WEF) has already initiated a protected species transplanting process and the mining permit area must be incorporated into this process.
- Bush-clearance may only commence once the plant permits were received, and the important plants were relocated by a suitably qualified person.

- Grubbing is not permitted as a method of clearing vegetation. Any trees needing clearing must be cut down using chain saws and hauled from the site using appropriate machinery where practically possible.
- Cleared vegetation to be retained at any time may not be burned but can be mulched and stockpiled. Ideally the heaps can be covered with stockpiled topsoil and the material be retained for future site rehabilitation purposes.
- The ECO must provide supervision and oversight of vegetation clearing activities and other activities which may cause damage to the environment, especially during the site establishment phase, when most of the vegetation clearing is taking place.
- All vehicles must remain on demarcated roads and no unnecessary driving in the veld outside these areas may be allowed.
- No plants may be translocated or otherwise uprooted or disturbed for rehabilitation or other purposes without express permission from the ECO and without the relevant permits.
- No fires must be allowed on-site.
- Spoil heaps and topsoil stockpiles must be provided with a vegetation cover of indigenous grasses.
- A biodiversity protocol and rehabilitation plan must be in place that can be implemented upon closure.

Management of Invasive Plant Species:

- An invasive plant species management plan (Appendix L) must be implemented at the site to ensure the management and control of all species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto). Weed/alien clearing must be done on an ongoing basis throughout the life of the mining activities.
- No planting or importing of any alien species to the site for landscaping, rehabilitation or any other purpose may be allowed.
- All stockpiles (topsoil & overburden) must be kept free of invasive plant species.
- Management must take responsibility to control declared invader or exotic species on the rehabilitated areas. The following control methods can be used:
  - The plants can be uprooted, felled, or cut off and can be destroyed completely.
  - The plants can be treated chemically by a registered pest control officer (PCO) using an herbicide recommended for use by the PCO in accordance with the directions for the use of such an herbicide. Only herbicides which have been certified safe for use in aquatic environments by independent testing authority are to be used.

Fire Management:

- No open fires to be permitted on site.
- Fire prevention facilities must be present at all hazardous storage facilities.
- Ensure adequate fire-fighting equipment is available and train workers on how to use it.
- Ensure that all workers on site know the proper procedure in case of a fire occurring on site.
- Smoking must not be permitted in areas considered to be a fire hazard.

FAUNA

Protection of Fauna:

- The site manager must ensure no fauna is caught, killed, harmed, sold, or played with.
- Any fauna directly threatened by the operational activities must be removed to a safe location by the ECO or other suitably qualified person.
- The handling and relocation of any animal perceived to be dangerous/venomous/poisonous must be undertaken by a suitably trained individual.
- All personnel must undergo environmental induction regarding fauna management and in particular awareness about not harming or collecting species such as snakes, tortoises and owls which are often persecuted out of superstition. Workers must be instructed to report any animals that may be trapped in the working area.
- No snares may be set, or nests raided for eggs or young.
- All vehicles must adhere to a low speed limit to avoid collisions with susceptible species such as snakes and tortoises.
- No litter, food or other foreign material may be thrown or left around the site. Such items must be kept in the site vehicles and daily removed to the site camp.

CULTURAL AND HERITAGE ENVIRONMENT

Archaeological, Heritage and Palaeontological Aspects:

- All mining must be confined to the development footprint area.
- If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.
- It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find and confirm the extent of the work stoppage in that area.

- The senior on-site Manager must inform the ECO of the chance find and its immediate impact on operations. The ECO must then contact a professional archaeologist for an assessment of the finds who must notify AMAFA.
- Work may only continue once the go-ahead was issued by AMAFA.
- The Chance Find Protocol that forms part of the desktop HIA (attached as Appendix G) must be implemented on site.

LAND USE

Loss of grazing for duration of mining:

- The Applicant will sign a memorandum of agreement with the landowner to compensate for the loss of grazing land for the duration of the mining period. If needed, mined out/rehabilitated areas could revert to grazing once the grass layer stabilised.

GENERAL

Waste Management:

- Regular vehicle maintenance, repairs and services may only take place at the workshop and service area. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a closed container/bin to be removed from the emergency service area (same day) to the workshop to ensure proper disposal. This waste must be treated as hazardous waste and must be disposed of at a registered hazardous waste handling facility, alternatively collected by a registered hazardous waste handling contractor. The safe disposal certificates must be filed for auditing purposes.
- If a diesel bowser is used on site, it must always be equipped with a drip tray. Drip trays must be used during each refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling.
- Mixing and/or decanting of all chemicals and hazardous substances must take place on an impermeable surface and must be protected from the ingress and egress of stormwater.
- Site management must ensure drip trays are cleaned after each use. No dirty drip trays may be used on site. The dirty rags used to clean the drip trays must be disposed as hazardous waste into a designated bin at the workshop, where it is incorporated into the hazardous waste removal system.
- Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate

disposal at a registered facility. Proof of safe disposal must be filed for auditing purposes.

- An oil spill kit must be obtained, and the employees must be trained in the emergency procedures to follow when a spill occurs as well as the application of the spill kit.
- Spills must be cleaned up immediately, within two hours of occurrence by removing the spillage together with the polluted soil and containing it in a designated hazardous waste bin until it is disposed of at a registered facility. Proof must be filed.
- Suitable covered receptacles must be always available and conveniently placed for the disposal of general waste.
- Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., must be stored in a container with a closable lid at a collecting point to be collected at least once a month and disposed of at a recognized landfill site. Specific precautions must be taken to prevent refuse from being dumped on or in the vicinity of the mine area. Proof of disposal must be available for auditing purposes.
- Biodegradable refuse must be handled as indicated above.
- Re-use or recycling of waste products must be encouraged on site.
- No waste may be buried or burned on the site.
- Ablution facilities must be provided in the form of a chemical toilet/s. The chemical toilet must be anchored (to prevent blowing/falling over) and shall be serviced at least once a week for the duration of the mining activities by a registered liquid waste handling contractor. The safe disposal certificates must be filed for auditing purposes.
- The use of any temporary, chemical toilet facilities must not cause any pollution to water sources or pose a health hazard. In addition, no form of secondary pollution should arise from the disposal of refuse or sewage from the temporary, chemical toilets. Any pollution problems arising from the above are to be addressed immediately by the permit holder.
- When small volumes of wastewater are generated during the life of the mine the following is applicable:
  - Water containing waste must not be discharged into the natural environment.
  - Measures to contain the wastewater and safely dispose thereof must be implemented.
- It is important that any significant spillage of chemicals, fuels etc. during the lifespan of the mining activities is reported to the Department of Water and Sanitation and other relevant authorities.
- Site management must implement the use of waste registers to keep record of the waste generated and removed from the mining area.

Management of health and safety risks

- Workers must have access to the correct personal protection equipment (PPE) as required by law.
- Sanitary facilities must be located within 100 m from any point of work.
- All operations must comply with the Mine Health and Safety Act, 1996 (Act No 29 of 1996).
- The type, duration and timing of the blasting procedures must be planned with due cognizance of other land users and structures in the vicinity.
- The surrounding landowners must be informed in writing ahead of each blasting event.
- The compliance of ground vibration and airblast levels must be monitored to USBM standards with each blasting event.
- A vibro recorder must be used to record all blasts.
- Audible warning of a pending blast must be given at least 3 minutes in advance of the blast.
- Measures to limit flyrock must be taken. All flyrock (of diameter 150 mm and larger) which falls beyond the working area, together with the rock spill must be collected and removed.

Management of safety and security risk posed by mining activities to surrounding residents

- Employees to be appointed must be vetted prior to inception of contract.
- No employees may be allowed to reside within the mining area.
- Mining employees must be educated to report suspicious looking person/s and/or matters to site management.
- Direct communication between the mining contractor and the landowner must be maintained for the duration of the site establishment-, operational, and decommissioning phases.
- The mining contractor may not enter negotiations with farm employees.
- Mining may only take place during normal business hours and unless otherwise authorised by the landowner.
- No alcohol of prohibited drugs may be allowed on site.
- Attendance registers must be maintained, and all mining vehicles/machinery must be pre-registered with the landowner/security.
- No firearms will be allowed on site.

ix) Motivation where no alternative sites were considered.

Not applicable.

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

(Provide a statement motivating the final site layout that is proposed)

Refer to Part A(1)(h) *Full description of the process followed to reach the proposed preferred site* above, and Part A(1)(l)(i) *Summary of the key findings of the environmental impact assessment*.

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)

During the impact assessment process the following potential impacts were identified of each main activity in each phase of the final project proposal (BP1) as the other four potential sites were all ruled unattainable by at least one of the specialist studies.

An initial significance rating (listed under *v) Impacts and Risks Identified*) was determined for each potential impact should the mitigation measures proposed in this document not be implemented on-site. The impact assessment process then continued in identifying mitigation measures to address the impact that the proposed mining activity may have on the surrounding environment.

The significance rating was again determined for each impact using the methodology as explained under *vi) Methodology Used in Determining and Ranking the Significance*. The impact ratings listed below was determined for each impact **after** bringing the proposed mitigation measures into consideration and therefore represents the final layout/activity proposal keeping in mind that the surrounding area is already approved for the development of the MNWP WEF projects.

SITE ESTABLISHMENT & INFRASTRUCTURE DEVELOPMENT

Loss of grazing for duration of mining

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**		**Degree of Mitigation: None**		
1	4	1	2	5	5	5	**10**

Visual intrusion because of site establishment

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**		**Degree of Mitigation: Partial**		
1	3	1	1.6	2	5	3.5	**5.6**

Impact on vegetation structure and plant species composition

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**		**Degree of Mitigation: Partial**		
2	4	1	2.3	4	2	3	**6.9**

Impact on protected plant species within mining footprint

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Full**		
2	1	4	2.3	2	1	1.5	**3.4**

Potential change of natural runoff and drainage patterns

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Full**		
2	1	1	1.3	2	2	2	**2.6**

Additional job opportunities because of the mining operation **(Positive Impact)**

			Consequence			Likelihood	**Significance (+)**
Severity (+)	Duration	Extent		Probability	Frequency		
Rating: High (+)			**Final Project Proposal**		**Degree of Mitigation: N/A**		
4	4	5	4.3	5	5	5	**21.5**

STRIPPING AND STOCKPILING OF TOPSOIL AND/OR OVERBURDEN:

Visual intrusion caused by mining activities

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**		**Degree of Mitigation: Partial**		
1	3	1	1.6	2	5	3.5	**5.6**

Loss of stockpiled topsoil during mining and stockpiling

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Full**		
1	2	1	1.3	2	1	1.5	**1.9**

Dust nuisance because of the disturbance of soil

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Full**		
2	1	2	1.6	2	2	2	**3.2**

Noise nuisance generated by earthmoving machinery

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Partial**		
1	1	2	1.3	2	5	3.5	**4.5**

Infestation of the topsoil heaps and mining area with weeds or invader plant species

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Full**		
2	2	1	1.6	2	2	2	**3.2**

Potential increase in runoff from bare areas and associated accelerated erosion

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Full**		
2	3	1	2	2	2	2	**4**

Potential contamination of footprint area and surface runoff because of hydrocarbon spillages/bad waste management practices.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Full**		
2	3	1	2	2	2	2	**4**

DRILLING AND BLASTING:

Health and safety risk posed by blasting activities

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Full**		
4	4	1	3	2	1	1.5	**4.5**

Dust nuisance caused by blasting activities

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**		**Degree of Mitigation: None**		
2	1	2	1.6	5	3	4	**6.4**

Noise nuisance because of blasting

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Partial**		
2	1	2	1.6	4	2	3	**4.8**

EXCAVATION, LOADING AND HAULING TO THE PROCESSING PLANT

Visual intrusion associated with the excavation activities

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**		**Degree of Mitigation: Partial**		
1	3	1	1.6	2	5	3.5	**5.6**

Dust nuisance due to excavation and from loading and vehicles transporting the material

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Full**		
2	3	1	2	2	2	2	**4**

Noise nuisance because of the mining activities

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Partial**		
1	3	2	2	2	1	1.5	**3**

Unsafe working environment for employees

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Full**		
2	1	1	1.3	2	1	1.5	**1.9**

Soil contamination from hydrocarbon spills and/or littering

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Full**		
2	1	1	1.3	2	2	2	**2.6**

Facilitation of erosion due to mining activities

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Full**		
2	4	1	2.3	2	2	2	**4.6**

CRUSHING, WASHING, STOCKPILING AND TRANSPORTING OF MATERIAL

Dust nuisance generated at the processing plant

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Full**		
2	1	1	1.3	3	3	3	**3.9**

Noise nuisance stemming from operation of the processing plant

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Partial**		
1	3	2	2	2	2	2	**4**

Potential contamination of environment due to improper waste management

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Full**		
2	1	1	1.3	2	2	2	**2.6**

Infestation of the area with invader plant species

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Full**		
2	2	2	2	2	2	2	**4**

Potential increase in runoff from bare areas and associated accelerated erosion

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Full**		
2	3	1	2	2	2	2	**4**

Loss of stockpiled material due to ineffective stormwater control

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Full**		
2	3	1	2	2	1	1.5	**3**

Increased fire risk due to mining activities

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Full**		
2	4	1	2.3	2	2	2	**4.6**

CUMULATIVE IMPACTS:

Direct physical loss or modification of the watercourses and/or wetland should the buffer zone not be maintained

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Full**		
4	1	4	3	2	1	1.5	**4.5**

Cumulative dust nuisance when quarry is operational and construction of the MNWP WEF commences

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
2	2	2	2	3	3	3	**6**

Cumulative noise nuisance when quarry and construction of the MNWP WEF occur simultaneously

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**		**Degree of Mitigation: Partial**		
2	4	2	2.6	3	4	3.5	**9.1**

Cumulative visual impact when quarry and MNWP WEF is developed

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**		**Degree of Mitigation: Partial**		
2	4	2	2.6	3	5	4	**10.4**

Cumulative impact on overall species and ecosystem diversity

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Full**		
2	4	1	2.3	2	1	1.5	**3.4**

Cumulative impact of invader plants in both the quarry and MNWP WEF footprints.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
2	3	5	3.3	2	2	2	**6.6**

Presence of mining contractor negatively affecting safety and security of the surrounding properties.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Full**		
1	4	2	2.3	2	2	2	**4.6**

Cumulative impact on job opportunities when quarry and MNWP WEF is in construction

			Consequence			Likelihood	**Significance (+)**
Severity (+)	Duration	Extent		Probability	Frequency		
Rating: High (+)			**Final Project Proposal**		**Degree of Mitigation: N/A**		
5	4	5	4.6	5	5	5	**23**

SLOPING AND LANDSCAPING DURING REHABILITATION:

Safety risk posed by un-sloped areas

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Full**		
2	4	1	2.3	2	1	1.5	**3.4**

Erosion of returned topsoil after rehabilitation

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Full**		
2	3	1	2	2	1	1.5	**3**

Infestation of the reinstated areas by weeds and invader plant species

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Full**		
2	3	1	2	2	1	1.5	**3**

Potential impact associated with litter/waste left at the mining area

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Full**		
2	3	1	2	2	1	1.5	**3**

Use of the excavation as spoil site for natural materials **(Positive Impact)**

			Consequence			Likelihood	**Significance (+)**
Severity (+)	Duration	Extent		Probability	Frequency		
Rating: Medium-High (+)			**Final Project Proposal**		**Degree of Mitigation: N/A**		
3	5	1	3	5	5	5	**15**

j) 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).

Table 29: Assessment of each identified potentially significant impact and risk

ACTIVITY Whether listed or not listed. (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc.)	**POTENTIAL IMPACT** (E.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, air pollution, etc…etc…etc.)	**ASPECTS AFFECTED**	**PHASE** In which impact is anticipated. (E.g. Construction, commissioning, operational Decommissioning closure, post closure.)	**SIGNIFICANCE** If not mitigated.	**MITIGATION TYPE** (modify, remedy, control, or stop) through (e.g. noise control measures, storm water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc etc) E.g. Modify through alternative method Control through noise control Control through management and monitoring through rehabilitation.	**SIGNIFICANCE** If not mitigated.
❖ Demarcation of site with visible beacons.	❖ No impact could be identified other than the beacons being outside the boundaries of the approved mining area.	N/A	Site Establishment phase	N/A	Control through management and monitoring.	N/A
❖ Site establishment and infrastructure development**.**	❖ Loss of grazing for duration of mining.	The impact may affect the agricultural value of	Site Establishment &	❖ Medium	Should the proposed project be approved, the operation will temporarily	❖ Medium

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
		the property. However, the farm is part of the proposed MNWP WEF development.	Operational Phase		interrupt the agricultural activities of the footprint area, only to be reversed upon the closure of the mine. The impact could be controlled through progressive rehabilitation.	
❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil and overburden. ❖ Excavation, loading and hauling to the processing plant. ❖ Cumulative impact	❖ Visual intrusion because of site establishment. ❖ Visual intrusion caused by mining activities. ❖ Visual intrustion assoiated with the excavation activities. ❖ Cumulative visual impact when quarry and MNWP WEF is developed.	The visual impact may affect the aesthetics of the landscape.	Site Establishment & Operational Phase	❖ Medium ❖ Low-Medium ❖ Low-Medium ❖ Medium	<u>Control:</u> Implementing proper housekeeping.	❖ Low-Medium ❖ Low-Medium ❖ Low-Medium ❖ Medium
❖ Site establishment and infrastructure development. ❖ Cumulative Impacts	❖ Impact on vegetation structure and plant species composition. ❖ Impact on protected plant species within mining footprint. ❖ Cumulative impact on overall species and ecosystem diversity.	This will impact on the biodiversity of the receiving environment.	Site Establishment & Operational Phase	❖ Medium ❖ High ❖ Low-Medium	<u>Control:</u> Implementing proper housekeeping and the mitigation measures proposed by the specialist.	❖ Low-Medium ❖ Low ❖ Low

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
❖ Site establishment and infrastructure development. ❖ Cumulative impact	❖ Additional job opportunities because of the mining operation (+) ❖ Cumulative impact on job opportunities when quarry and MNWP WEF is in construction (+).	Contribution to the socio-economic status of the area.	Site Establishment, & Operational Phase.	❖ High+ ❖ High+	N/A	❖ High+ ❖ High+
❖ Stripping and stockpiling of topsoil and overburden. ❖ Excavation, loading and hauling to the processing plant. ❖ Crushing, washing, stockpiling and transporting of material. ❖ Sloping and landscaping during rehabilitation.	❖ Loss of stockpiled topsoil during mining and stockpiling. ❖ Potential increase in runoff from bare areas and associated accelerated erosion. ❖ Facilitation of erosion due to mining activities. ❖ Potential increase in runoff from bare areas and associated accelerated erosion. ❖ Loss of stockpiled material due to ineffective stormwater control. ❖ Erosion of returned topsoil after rehabilitation.	The loss/contamination of topsoil and erosion of the footprint will affect the rehabilitation of the excavation upon closure of the site.	Site Establishment-, Operational and Decommissioning Phase	❖ Low-Medium ❖ Low-Medium ❖ Low-Medium ❖ Low-Medium ❖ Low-Medium ❖ Medium	<u>Control & Remedy:</u> Proper housekeeping and storm water management.	❖ Low ❖ Low ❖ Low ❖ Low ❖ Low ❖ Low
❖ Stripping and stockpiling of topsoil and/or overburden.	❖ Dust nuisance because of the disturbance of soil. ❖ Dust nuisance caused by blasting activities.	Increased dust generation will impact on the air quality of the	Site Establishment-, Operational-, and Decommissioning Phase	❖ Medium ❖ Low-Medium ❖ Medium ❖ Medium ❖ Medium-High	<u>Control:</u> Dust suppression methods and proper housekeeping.	❖ Low ❖ Low-Medium ❖ Low ❖ Low ❖ Low-Meduim

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
❖ Drilling and blasting. ❖ Excavation, loading and hauling to the processing plant. ❖ Crushing, washing, stockpiling and transporting of material. ❖ Cumulative impact	❖ Dust nuisance due to excavation and from loading and vehicles transporting the material. ❖ Dust nuisance generated at the processing plant. ❖ Cumulative dust nuisance when quarry is operational and construction of the MNWP WEF commences.	receiving environment.				
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Drilling and blasting. ❖ Excavation, loading and hauling to the processing plant. ❖ Crushing, washing, stockpiling and transporting of material. ❖ Cumulative impact	❖ Noise nuisance generated by earthmoving machinery. ❖ Noise nuisance because of blasting. ❖ Noise nuisance because of the mining activities. ❖ Noise nuisance stemming from operation of the processing plant. ❖ Cumulative noise nuisance when quarry and construction of the MNWP WEF occur simultaneously.	Should noise levels become excessive it may have an impact on the noise ambiance of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	❖ Low ❖ Medium ❖ Low-Medium ❖ Low-Medium ❖ Medium	<u>Control:</u> Noise suppression methods and proper housekeeping.	❖ Low ❖ Low-Medium ❖ Low ❖ Low ❖ Low-Medium
❖ Stripping and stockpiling of topsoil and/or overburden.	❖ Infestation of the topsoil heaps and mining area with weeds or invader plant species.	Infestation of the footprint by invader plant species may affect the biodiversity of the	Site Establishment-, Operational, and Decommissioning Phase	❖ Medium ❖ Medium-High ❖ High ❖ Medium-High	<u>Control & Remedy:</u> Implementation of an invasive plant species management plan.	❖ Low ❖ Low ❖ Low-Medium ❖ Low

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
❖ Crushing, washing, stockpiling and transporting of material. ❖ Cumulative impact ❖ Sloping and landscaping during rehabilitation phase.	❖ Infestation of the area with invader plant species. ❖ Cumulative impact of invader plants in both the quarry and MNWP WEF footprints. ❖ Infestation of the reinstated areas by weeds and invader plant species.	receiving environment.				
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Excavation, loading and hauling to the processing plant. ❖ Crushing, washing, stockpiling and transporting of material. ❖ Sloping and landscaping during rehabilitation phase.	❖ Potential contamination of footprint area and surface runoff because of hydrocarbon spillages/bad waste management practices. ❖ Soil contamination from hydrocarbon spills and/or littering. ❖ Potential contamination of environment due to improper waste management. ❖ Potential impact associated with litter/waste left at the mining area.	Contamination of the footprint area will negatively impact the soil, surface runoff and potentially the groundwater. It will also incur additional costs to the permit holder.	Site Establishment-, Operational-, and Decommissioning Phase	❖ Medium ❖ Medium ❖ Medium ❖ Medium	<u>Control & Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan.	❖ Low ❖ Low ❖ Low ❖ Low
❖ Site establishment & infrastructure development. ❖ Cumulative Impacts.	❖ Potential change of natural runoff and drainage patterns. ❖ Direct physical loss or modification of the watercourses and/or	This could impact the hydrology of the receiving environment.	Site Establishment, & Operational Phase.	❖ Medium ❖ Low-Medium	<u>Control:</u> Implementing the SWMP.	❖ Low ❖ Low

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
	wetland should the buffer zone not be maintained.					
❖ Drilling and blasting. ❖ Excavation, loading and hauling to the processing plant. ❖ Sloping and landscaping during rehabilitation phase.	❖ Health and safety risk posed by blasting activities. ❖ Unsafe working environment for employees. ❖ Safety risk posed by un-sloped areas.	An unsafe working environment affects the labour force, as well as pose a threat to animals and humans that may enter the mining footprint.	Operational-, and Decommissioning Phase	❖ Medium ❖ Medium ❖ Medium	Stop & Control: Adherance to the blasting rules and regulations, demarcation of the mining area and proper housekeeping.	❖ Low ❖ Low ❖ Low
❖ Crushing, washing, stockpiling and transporting of material.	❖ Increased fire due to mining activities.	Uncontrolled fire may affect the neighbouring farms, cause losses and result in financial costs to the mine.	Operational phase	❖ Low-Medium	Control & Stop: Control activities that may have a fire risk and snuff fires that may occur.	❖ Low
❖ Cumulative Impacts	❖ Presence of mining contractor negatively affecting safety and security of the property.	The impact may affect the security of the area.	Operational Phase	❖ Medium-High	Control, Stop & Remedy: Implementing proper human resources practices.	❖ Low
❖ Sloping and landscaping during rehabilitation	❖ Use of the exaction as spoil site for natural materials (+)	This will facilitate rehabilitation of the excavation.	Decommissioning Phase	❖ Medium-High+	N/A	❖ Medium-High+

The supporting impact assessment conducted by the EAP must be attached as an appendix, marked Appendix I.

k) 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):-

Table 30: Summary of specialist reports.

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
Agricultural Assessment November 2024 *(See Appendix E for a full copy of the report)*	**Compliance Statement Conclusion** ❖ It is the specialist's opinion that the development continues. ❖ The development will not have a significant impact on potential agricultural activities in the area and pose no threat to food security.	The recommendation of the specialist was incorporated into this report.	Part A(1)(h)(iv) The environmental attributes associated with the alternatives.
Desktop Heritage Impact Assessment October 2024 *(See Appendix G for a full copy of the report)*	**Conclusion** ❖ The desktop study compared the proposed borrow pits ion relation to recorded sites from the original survey. The survey covered all of the areas where the proposed borrow pits will be located. Only Borrow Pit 5 occurs near a heritage site with possible graves. Borrow Pit 5 is thus the least preferred option in terms of heritage. ❖ The type of material that will be mined will be dolerite. Dolerite is non fossiliferous material, and no PIA mitigation will be required. ❖ The chances of heritage sites occurring within the study areas are very low. No further mitigation is required. However, a Chance Find Protocol will be initiated and needs to form part of the EMPr.	The recommendations of the specialist were incorporated into this report.	Part A(1)(h)(iv) The environmental attributes associated with the alternatives. Part A(1)(h)(viii) The possible mitigation measures that could be applied and the level of risk. Part A(1)(k) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR.

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
			Part B(1)(g)-(k) Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon….
<u>Vegetation and Wetland Assessment</u> For borrow pit Site 1 for the Mulilo Newcastle Wind Energy Facility (WEF) situated near Newcastle in KwaZulu-Natal Province. January 2025 *(See Appendix F for a full copy of the report)*	**<u>Conclusions and Recommendations</u>** ❖ Where mining operations occur, it is important that comprehensive rehabilitation and monitoring of the rehabilitation take place. ❖ Correct topsoil and seedbank management will be paramount to rehabilitation. Where disturbance or excavation will occur, the upper 30 cm, or topsoil, should be removed, together with the vegetation, and stored on the site. The topsoil, together with the seedbank and any vegetation material, should then be placed on top of the rehabilitated soil surface. Subsoil should be used as backfilling and not as top dressing. Only removed topsoil should be utilised to rehabilitate the disturbed surface. The soil surface and geomorphology should also be re-instated to its natural condition and shape. ❖ The site and surroundings contain numerous protected species which have significant conservation value and will require mitigation:	All the recommendations proposed by the specialist were adapted in this FBAR.	Part A(1)(h)(iv) The environmental attributes associated with the alternatives. Part A(1)(h)(viii) The possible mitigation measures that could be applied and the level of risk. Part A(1)(k) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR. Part B(1)(d)(iv) Impacts to be mitigated in their respective phases.

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
	▪ Many of the affected protected species are cryptic and inconspicuous and have a winter dormancy, when they will be nearly impossible to identify. It is recommended that a walkthrough survey be conducted prior to the site being mined. This should include identification and marking of all protected plants on the site and should be performed by an ecologist or botanist. ▪ Species occurring on the site that may be affected by the development include *Gladiolus ecklonii, Raphionacme hirsuta*, *Dierama galpinii, Aloe maculata, Schizocarpus nervosus* and *Crinum macowanii*. Where development will affect these species, the necessary permits should be obtained and a significant proportion of these transplanted to adjacent areas where they will remain unaffected. These geophytic species are easily transplanted with a high success rate. ▪ The surrounding proposed Wind Energy Facility (WEF) has already initiated a protected species transplanting process and the mining permit application area can therefore also be incorporated into this process. ▪ Protected plants occurring on the site are listed as such under the KwaZulu-Natal Provincial Nature Conservation Ordinance Nr. 15 of 1974. ❖ Though the site itself does not currently contain any significant weed or invasive plant infestations, mining will increase disturbance in the area, and this will pose a risk of weeds and invasive species		Part B(1)(g)-(k) Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon….

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
	establishing and spreading into surrounding natural areas. This is particularly relevant to invasive *Acacia mearnsii* (Wattle), present in several clumps in the surroundings, which should be the main focus of eradication efforts. The proposed development will therefore have to implement a comprehensive monitoring and eradication programme to ensure that invasive plant species are removed from the area and prevented from re-establishing. ❖ Adequate monitoring of weed establishment and their continued eradication must be maintained. Where category 1 and 2 weeds occur, they require removal by the property owner according to the Conservation of Agricultural Resources Act, No. 43 of 1983 and National Environmental Management: Biodiversity Act, No. 10 of 2004. ❖ The seasonal stream and drainage line adjacent to Site 1 (Preferred Site) form part of the Northern Drakensberg Strategic Water Source Area (SWSA). Their continued preservation and conservation are therefore of utmost importance, and it is therefore recommended that they be excluded from mining operations: ▪ The seasonal stream and drainage line adjacent to Site 1, as identified within this assessment, should be treated as no-go areas and no mining activities, including construction or operational activities, vehicle movement, laydown areas, vegetation clearing or any other associated activities should occur in or near these watercourses. Given the nature of the mining operations and limited disturbance footprint (5 hectares), this should be easily attainable.		

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
	▪ In order to further prevent any impacts on the identified watercourses, a buffer of 47 metres should also be maintained from the edge of the riparian zone along these watercourses. This buffer area should also be treated as a no-go area. ▪ Where mining operations require crossing of the watercourses only existing roads and tracks should be utilised. The study area already contains a network of dirt tracks, which will also be upgraded and utilised for the broader Wind Energy Facility (WEF) and it should therefore be possible to avoid the construction of new access roads through watercourses. ❖ The following mitigation should be considered to prevent impacts on any of the surrounding watercourses: ▪ A natural vegetation layer should be re-instated where this was disturbed/removed. ▪ Adequate storm water management measures should be implemented and should include diverting storm- and floodwater around operational and excavation areas and preventing sediment and silt from entering any of the delineated watercourses. ❖ The necessary authorisations must be acquired from the Department of Water and Sanitation (DWS) for mining activities within 100 metres of any of the delineated watercourses around the site.		

I) Environmental impact statement

i) Summary of the key findings of the environmental impact assessment;

The key findings of the environmental impact assessment entail the following:

Project proposal:

- The project entails the mining of a 4.9 ha area (referred to as BP1 in this document) over the farm Byron No 9448, Amajuba District of KwaZulu-Natal.
- The material from the proposed area will be used in the development of the MNWP WEF projects.
- The quarry will be mined through opencast methods that will involve blasting, crushing, screening, washing and stockpiling of the material using temporary equipment.
- The excavation may, at the end of life of the mine, serve as a spoil site for inert materials from the MNWP WEF construction sites.

Topography:

- Mining the proposed quarry into the western face of the hill should create an excavation with more or less three faces that will be benched as the mining depth increases.
- The MNWP WEF contractors may use the excavation, at the end of the pits life, as a spoil site for inert rubble and soil, but this may not be enough to refill the quarry pit. The rehabilitation proposal is therefore (upon closure) to render the quarry safe and leave it as a minor landscape feature. If the proposed closure actions, as prescribed in the EMPR, are implemented the impact on the topography of the specific area is deemed of low significance.

Visual Characteristics:

- The viewshed analyses shows that the proposed visual impact will be of very low concern as the mining area will only be visible from the high laying areas north of the development.
- Should both the mining permit area and the MNWP WEF projects (separately authorised) be established on site, the cumulative visual impact that both projects may have on the receiving environment is deemed to be of medium significance.

Air and Noise Quality:

- The proposed activity does not require an air emissions licence.
- Should the Applicant implement the proposed mitigation measures the impact on the air quality of the surrounding environment is deemed to be of low significance.
- Should both the mining permit area and the construction of the MNWP WEF (separately authorised) take place simultaneously, the cumulative dust nuisance on the receiving environment (after mitigation) is deemed to be of low-medium significance.
- Although the proposed activity will have a cumulative impact on the ambient noise levels, the development will be temporary and take place in an area that was already approved for the construction of the MNWP WEF, and the impact is therefore deemed compatible with the future operations and of low-medium significance.

Hydrology:

- A stream is situated ±90 m to the north-west of the site, while a drainage line is situated ±40 m to the south-west. The stream and drainage line are highly sensitive, though are not situated on or near the site and therefore only relevant in terms of any indirect impacts the development may still have on them. The stream and drainage line should be treated as no-go areas and no mining activities should occur in or near these watercourses.
- BP1 is situated within the Northern Drakensberg Strategic SWSA as well as the NPAES: Moist Escarpment Grassland Focus Area. In both instances, the proposed quarry development is unlikely to have any significant impact, both in terms of the regional water source and any future expansion of protected areas, largely as a result of its small footprint and therefore limited impact.
- A buffer of 47 m should be maintained from the edge of the riparian zone along the watercourses. This buffer area should be treated as a no-go area.
- Where mining operations require crossing of the watercourses only existing roads and tracks should be utilised.
- Adequate storm water management measures should be implemented and should include diverting storm- and floodwater around operational and excavation areas and preventing sediment and silt from entering any of the delineated watercourses.
- The necessary authorisations must be acquired from the DWS for mining activities within 100 m of any of the delineated watercourses.

- Should the mitigation measures proposed in this document be implemented the proposed project is expected to have a Low impact on the hydrology of the receiving environment.

Terrestrial Biodiversity (including fauna and flora):

- BP1 consists of natural grassland which is in a fairly good condition. The species diversity is moderate although the area does contain a significant number of protected plant species which contribute towards its conservation value. Significant mitigation have to be implemented to ensure the impact on these elements of significant conservation value is decreased.
- BP1 is not listed as a CBA, ESA or important habitat for threatened species and is not considered essential for meeting conservation targets.
- It is recommended that a walkthrough survey be conducted prior to the site being mined. This should include identification and marking of all protected plants on the site and should be performed by an ecologist or botanist.
- The necessary plant removal permits must be obtained from Ezemvelo prior to commencement. The surrounding proposed MNWP WEF has already initiated a protected species transplanting process and the mining permit application area can be incorporated into this process.
- Though the site itself does not currently contain any significant weed or invasive plant infestations, mining will increase disturbance in the area, and this will pose a risk of weeds and invasive species establishing and spreading into surrounding natural areas. This risk must be managed throughout the life of the mine.
- Should the mitigation measures proposed in this document be implemented the ecologist supports the mining of the proposed BP1 footprint.

Archaeology, Cultural, Heritage and Palaeontology Environment:

- The survey results of the MNWP WEF projects (Anderson 2022) were compared to the location of the proposed borrow pits (BP1 – BP5), and only BP5 is located near heritage sites.
- Dr Smith (palaeontologist) noted that the dolerite to be mined is a non-fossiliferous and no PIA mitigation will be required.
- The specialist concluded that the chances of heritage sites occurring within the study area are very low and no further mitigation is required. A Chance Find Protocol must form part of the EMPr.

Existing Infrastructure:

- No infrastructure exists in the proposed 4.9 ha footprint of BP1, nor are there infrastructure in proximity to the proposed footprint apart from the boundary fence. Should the mitigation measures proposed in this document be implemented the existing infrastructure on the farm will be safeguarded against mining related impacts.

ii) Final Site Map

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

See the map indicating site activities attached as Appendix C.

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

POSITIVE IMPACTS ASSOCIATED WITH THE FINAL PROJECT PROPOSAL

- Mining the required fill material from an on-site quarry will reduce the need to transport raw materials along public roads, that will in turn reduce the probability of traffic incidents usually associated with delivery vehicles turning into/exiting construction sites.
- The use of materials from the immediate surroundings will reduce the need to import foreign materials to the construction sites. This is advantageous in that the distribution of plant species is controlled.
- Reduced transport costs will directly affect material costs and project feasibility.
- Reduced CO2 emissions as the material will be transported over shorter distances.
- Impacts such as dust generation, noise and produce spillage is contained to an already approved construction site controlled through an EMPR.
- Improved security of the mining equipment and reduction in unauthorized entry of the mining area as the quarry is encircled by the MNWP WEF projects.
- The potential impact that overloading may have on the public roads is eliminated.
- Containing mining related impacts associated with blasting, crushing, screening and the washing of materials within the perimeters of a larger operation

construction site lessens the potential of public complaints as the mining area will not occur near residences nor a pristine rural environment.

- The excavation can at the end of the life of mine be used as spoil site for all spoil rock, sand, and/or soil (from the MNWP WEF construction sites) and this will assist in the rehabilitation of the quarry pit and supply the WEF contractors with a responsible spoil site within proximity of the construction sites, without the need of spoiling material at registered landfill sites.

- The landowner of the farm Byron No 9448 will be compensated for the use of the material mined from the proposed quarry.

- At least fifteen new job opportunities will be created by the proposed activity.

POTENTIAL NEGATIVE IMPACTS ASSOCIATED WITH THE FINAL PROJECT PROPOSAL

The following table shows the potential negative impacts associated with the proposed activity that were deemed to have a Low-Medium or higher significance/risk:

Table 31: Potential negative impacts associated with the proposed activity with a Low-Medium or higher significance/risk.

ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION)	SIGNIFICANCE (AFTER MITIGATION)
❖ Site establishment and infrastructure development.	❖ Loss of grazing for duration of the project.	❖ Medium	❖ Medium
❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil and overburden. ❖ Excavation, loading and hauling to the processing plant.	❖ Visual intrusion because of site establishment. ❖ Visual intrusion caused by mining activities. ❖ Visual intrusion associated with the excavation activities. ❖ Cumulative visual impact when quarry and MNWP WEF is developed.	❖ Medium ❖ Low-Medium ❖ Low-Medium ❖ Medium	❖ Low-Medium ❖ Low-Medium ❖ Low-Medium ❖ Medium
❖ Site establishment and infrastructure development.	❖ Impact on vegetation structure and plant species composition.	❖ Medium	❖ Low-Medium
❖ Drilling and blasting.	❖ Dust nuisance caused by blasting activities.	❖ Low-Medium	❖ Low-Medium

ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION)	SIGNIFICANCE (AFTER MITIGATION)
❖ Cumulative Impacts.	❖ Cumulative dust nuisance when quarry is operational and construction of the MNWP WEF commences.	❖ Medium-High	❖ Low-Medium
❖ Drilling and blasting. ❖ Cumulative Impacts.	❖ Noise nuisance because of blasting. ❖ Cumulative noise nuisance when quarry and construction of the MNWP WEF occur simultanously.	❖ Medium ❖ Medium	❖ Low-Medium ❖ Low-Medium
❖ Cumulative impacts.	❖ Cumulative impact of invader plants in both the quarry and MNWP WEF footprints.	❖ High	❖ Low-Medium

m) 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 condition of authorisation.

Table 32: Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
TOPOGRAPHY Landscaping of Mining Area	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Use the excavated area for the final depositing of overburden. ❖ Dump rocks and coarse material removed from the excavation into the excavation. ❖ Remove coarse natural material used for the construction of ramps and dump it into the excavations. ❖ Remove stockpiles during the decommissioning phase, rip the area and return the topsoil to its original depth to provide a growth medium. ❖ Do not permit any waste to be deposited into the excavations. ❖ Return the previously stored topsoil to its original depth, once overburden, rocks and coarse natural materials have been added to the excavation and it was profiled with acceptable contours and erosion control measures. ❖ If necessary, fertilize the area to allow vegetation to establish rapidly. Seed the site with a local or adapted indigenous seed mix to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within six months from closure of the site. Only use topsoil removed during the site establishment phase to rehabilitate the disturbed surface. ❖ If required by the Regional Manager (DMRE) the soil must be analysed and any deleterious effects on the soil arising from the mining operation must be corrected and the area be seeded with a vegetation seed mix to his/her specification. ❖ On completion of operations, deal with all structures or objects in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002).	❖ Effectively rehabilitating the mined area to allow post-mining land use (MNWP WEF).

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		❖ On completion of mining operations, scarify the surface of all plant-, stockpiling-, and/or office areas, if compacted due to hauling and dumping operations, to a depth of at least 200mm and graded it to an even surface condition. Where applicable/possible return topsoil to its original depth over the area.	
VISUAL CHARACTERISTICS Visual mitigation	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Ensure that the site have a neat appearance and is always kept in good condition. ❖ Store mining equipment in a dedicated area when not in use. ❖ Limit vegetation removal, and only strip topsoil immediately prior to the mining/use of a specific area. ❖ Contain excavations to the approved footprint of the permitted area. ❖ Upon closure, rehabilitate the site to ensure that the visual impact on the aesthetic value of the area is reduced to the minimum.	❖ Minimise the impact of the mining operations on the visual characteristics of the receiving environment during the operational phase and minimise the residual impact after closure.
AIR AND NOISE QUALITY Dust Mitigation	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Control the liberation of dust into the surrounding environment using; inter alia, water spraying and/or other dust-allaying agents. ❖ Daily assess the efficiency of all dust suppression equipment. ❖ Limit speed on the haul roads to 20 km/h and 40 km/h on the access road to prevent the generation of excess dust. ❖ Minimise areas devoid of vegetation and only remove vegetation immediately prior to mining. ❖ Install water sprayers at the crusher plant to alleviate dust generation from the conveyor belts. ❖ Minimise fines, blowing from the drop end of the crusher plant by attaching strips of used conveyor belts to the conveyor's end. ❖ Weekly remove compacted dust from the crusher plant to eliminate the dust source. ❖ Consider weather conditions upon commencement of daily operations. Limit operations during very windy periods to reduce airborne dust and resulting impacts.	❖ Dust prevention measures are applied to minimise the impact.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		❖ Ensure dust generating activities comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM:AQA, 2004 and ASTM D1739 (SANS 1137:2012). ❖ Implement best practice measures during the stripping of topsoil, excavation, and transporting of material from site to minimize potential dust impacts.	
AIR AND NOISE QUALITY Noise Mitigation	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Ensure that employees and staff conduct themselves in an acceptable manner while on site. ❖ No loud music may be permitted at the mining area. ❖ Ensure that all project related vehicles are equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996. ❖ Plan the type, duration, and timing of the blasting procedures with due cognizance of other land users and structures in the vicinity. Notify the surrounding landowners in writing prior to each blasting occasion. ❖ Contract a qualified occupational hygienist to quarterly monitor and report on the personal noise exposure of the employees working at the mine. Monitoring must be in accordance with SANS 10083:2004 (Edition 5) sampling method as well as NEM:AQA 2004, SANS 10103:2008. ❖ Minimise the noise caused by generators. Maintain and equip all generators with sound mufflers, and if possible, point the generators away from the neighbouring land users. Place all generators on a level area/footing to minimise vibration noise. ❖ Implement best practice measures to minimise potential noise impacts. ❖ Restrict mining from 07:00 to 18:00 Monday to Fridays. Do not blast on weekends or afterhours.	❖ Prevent unnecessary noise to the environment by ensuring that noise from development activity is mitigated.
GEOLOGY AND SOIL Topsoil Handling	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.	❖ Strip and stockpile the upper 300 mm of the soil before mining. ❖ Carefully manage and conserve the topsoil throughout the stockpiling and rehabilitation process.	❖ Adequate fertile topsoil is available to rehabilitate the mined area.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
	Compliance to be monitored by the Environmental Control Officer.	❖ Ensure topsoil stripping, stockpiling, and re-spreading is done in a systematic way. Plan mining in such a way that topsoil is stockpiled for the minimum possible time. ❖ Place the topsoil on a levelled area, within the mining footprint. Do not stockpile topsoil in undisturbed areas. ❖ Protect topsoil stockpiles against losses by water- and wind erosion. Position stockpiles so it is not vulnerable to erosion by wind and water. The establishment of plants (grass) on the stockpiles will help to prevent erosion. ❖ Ensure that topsoil heaps do not exceed 1.5 m and not sloped more than 1:2 to avoid collapse. ❖ Keep temporary topsoil stockpiles free of invasive plant species. ❖ Vegetate the topsoil heaps to be stored longer than 3 months with an indigenous grass seed mix if vegetation does not naturally germinate within the first growth season. ❖ Divert storm- and runoff water around the on-site stockpile area to prevent erosion. ❖ Spread the topsoil evenly, to a depth of 300 mm, over the rehabilitated area upon closure of the site. ❖ Only use topsoil removed during the site establishment phase to rehabilitate the disturbed surface. ❖ Strive to re-instate topsoil at a time of the year when vegetation cover can be established as quickly as possible afterwards, to that erosion of returned topsoil is minimized. The best time of year is at the end of the rainy season. ❖ Plant an indigenous grass layer immediately after spreading topsoil to stabilise the soil and protect it from erosion. Fertilise the grass layer for optimum production. Rehabilitation extends until the first grass layer is well established. ❖ Control run-off water with temporary banks, where necessary, to prevent accumulation of run-off causing down-slope erosion.	

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		❖ Monitor the rehabilitated area for erosion, and appropriately stabilize if erosion do occur, for at least 12 months after reinstatement.	
HYDROLOGY Erosion Control and Storm Water Management	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Implement a storm water management plan for the duration of the mining activities. ❖ Limit clearing of vegetation to the proposed mining footprint and associated infrastructure. Ensure no clearing takes place outside the minimum required footprint. ❖ Place vegetation clearing on hold when heavy rains are expected. ❖ Divert stormwater around the topsoil heaps and mining areas to prevent erosion. ❖ Protect stockpiles from erosion and store it on flat areas surrounded by appropriate berms where possible. ❖ Ensure that adequate slope protection is provided when mining within steep slopes. ❖ Control the outflow of run-off water from the mining excavation to prevent down-slope erosion, by constructing temporary banks and ditches that will direct run-off water (if needed). These must be in place at any points where overflow out of the excavation might occur. ❖ Do not discharge dirty water emanating from the quarry into the natural environment or any watercourse. Channel all runoff into the stormwater system. ❖ Regularly monitor roads and other disturbed areas within the project for erosion and ensure problem areas receive follow-up monitoring to assess the success of the remediation. ❖ Rectify erosion problems within the mining area because of the mining activities immediately (within 48 hours) and monitored thereafter to ensure that it does not re-occur. ❖ Use silt/sediment traps/barriers where there is a danger of topsoil or material stockpiles eroding and entering downstream drainage lines	❖ Impact on the environment caused by stormwater discharge is avoided and erosion is managed.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		and other sensitive areas. Regularly maintain and clear the sediment/silt barriers to ensure effective drainage of the areas. ❖ Conduct activity in terms of the Best Practice Guidelines for small-scale mining as developed by DWS. ❖ Contain all fuels and chemicals stored or used on site in fit for purpose containers and store within designated storage areas. Ensure the designated storage areas are situated on an impermeable surface with a perimeter bund and a drainage sump. Size the volume of the bund and sump to contain at least 110% of the total volume of the fuel and chemicals being stored within the designated storage area. Ensure that the storage areas have a roof to prevent inflow of rainwater, which would require the sump to be emptied more frequently. ❖ Re-vegetate all exposed/bare surfaces and embankments once shaped. If revegetation of exposed surfaces cannot take place immediately, temporary erosion, and sediment control measures must be installed and maintained until such time that revegetation can commence. ❖ Monitor all erosion and sediment control measures weekly for the life of the operation and repaired immediately when damaged. Only remove the erosion and sediment control structures once vegetation cover has successfully recolonised the affected areas. ❖ After heavy rainfall events, check the site for erosion damage and rehabilitate this damage immediately. Fill in erosion rills and gullies with appropriate material and/or silt fences until vegetation has recolonised the rehabilitated area. ❖ Check the water sump of the washing plant every month to assess the amount of sediment collected. Remove sediment at a predetermined depth of sediment and stockpiled separately or deposit into the excavation.	

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
HYDROLOGY Mitigating the potential impact on the hydrology related features.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Acquire the necessary authorisations from the DWS for mining activities within 100 metres of any of the delineated watercourses around the site. ❖ Treat the seasonal stream and drainage line adjacent to BP1, as identified by the hydrologist, as no-go areas and do not allow any mining activities, including construction or operational activities, vehicle movement, laydown areas, vegetation clearing or any other associated activities in or near these watercourses. ❖ Maintain a buffer of 47 metres from the edge of the riparian zone along these watercourses and treat the buffer area as a no-go area. ❖ Only utilise existing roads and tracks where mining operations require crossing of the watercourses. ❖ Re-instate a natural vegetation layer where it was disturbed/removed. ❖ Implement adequate storm water management measures including diverting storm- and floodwater around operational and excavation areas and preventing sediment and silt from entering any of the delineated watercourses. ❖ To prevent an increase in surface water flow velocity: ▪ Ensure that an approved storm water plan is implemented; ▪ Moderate the flow of storm water onto the buffer and wetland features. ❖ To prevent the contamination of the nearby watercourses: ▪ Notify the CM and ECO immediately of any pollution incidents on site. ▪ Prevent discharge of any pollutants, such as cement, concrete, lime chemicals and fuels into any water source. ❖ Ensure that structures like berms are built to prevent soil from entering wetlands as this can result in sedimentation.	❖ The mining activities have no impact on the nearby watercourses.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
SITE SPECIFIC TERRESTRIAL BIODIVERSITY (INCLUDING FAUNA AND FLORA) Management of vegetation removal.	Permit holder to apply for a removal plant permit from Ezemvelo Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Clearly demarcate the mining boundaries and contain all operations to the approved mining area. Declare the area outside the mining boundaries a no-go area and educate all staff accordingly. ❖ Commit to a conservation approach and keep the actual footprint of disturbance to a minimum. ❖ Arrange a pre-commencement environmental induction for all staff on site to ensure that basic environmental principles are adhered to. This must include awareness of no littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, minimising wildlife interactions, remaining within demarcated construction areas, etc. ❖ Arrange a pre-commencement walkthrough by an ecologist to identify and demarcate important species to be relocated and sub habitats that may not be disturbed. ❖ Species occurring on the site that may be affected by the development include *Gladiolus ecklonii, Raphionacme hirsuta, Dierama galpinii, Aloe maculata, Schizocarpus nervosus* and *Crinum macowanii*. Where development will affect these species, obtain the necessary permits and transplant a significant proportion of these too adjacent areas where it will remain unaffected. ❖ Incorporate the mining permit area into the protected species transplanting process of the surrounding proposed Wind Energy Facility (WEF). ❖ Only commence with bush-clearance once the plant permits were received, and the important plants were relocated by a suitably qualified person. ❖ Do not allow grubbing as a method of clearing vegetation. Cut any trees that need to be cleared using chain saws and hauled it from the site using appropriate machinery where practically possible.	❖ Vegetation clearing is restricted to the authorised development footprint of the mine. ❖ No protected plants removed prior to receipt of the relevant permit.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		❖ Do not burn cleared vegetation to be retained at any time but rather mulch and stockpiled it. Ideally cover the heaps with stockpiled topsoil and retain the material for future site rehabilitation. ❖ Arrange that the ECO provide supervision and oversight of vegetation clearing activities and other activities which may cause damage to the environment, especially during the site establishment phase, when most of the vegetation clearing is taking place. ❖ Ensure all vehicles remain on demarcated roads and prevent unnecessary driving in the veld outside these areas. ❖ Do not translocated, uprooted, or disturbed plants for rehabilitation or other purposes without express permission from the ECO and without the relevant permits. ❖ Do not allow fires on-site. ❖ Provide spoil heaps and topsoil stockpiles with a vegetation cover of indigenous grasses. ❖ Generate a biodiversity protocol and rehabilitation plan that can be implemented upon closure.	
TERRESTRIAL BIODIVERSITY (INCLUDING FAUNA AND FLORA) Management of invasive plant species.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Implement an invasive plant species management plan to control all invasive plant species on site in terms of NEM:BA, 2004 and CARA, 1983. Do weed/alien ongoing clearing on throughout the life of the mining activities. ❖ Do not allow planting or importing of any alien species to the site for landscaping, rehabilitation, or any other purpose. ❖ Keep all stockpiles (topsoil & overburden) free of invasive plant species. ❖ Control declared invader or exotic species on the rehabilitated areas. Only use herbicides that are certified safe for use in aquatic environments by an independent testing authority.	❖ Mining area is kept free of invasive plant species.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
TERRESTRIAL BIODIVERSITY (INCLUDING FAUNA AND FLORA) Fire Management	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Do not permit open fires on site. ❖ Ensure fire prevention facilities are present at all hazardous storage facilities. ❖ Ensure adequate fire-fighting equipment is available and train workers on how to use it. ❖ Ensure that all workers on site know the proper procedure in case of a fire occurring on site. ❖ Do not permit smoking in areas considered to be a fire hazard.	❖ Mining is not cause uncontrolled fire outbreaks.
FAUNA Protection of fauna	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Ensure no fauna is caught, killed, harmed, sold, or played with. ❖ The ECO or other suitably qualified person must remove any fauna directly threatened by the operational activities to a safe location. ❖ Arrange a suitably trained individual to undertake the handling and relocation of any animal perceived to be dangerous/venomous/poisonous. ❖ Arrange that all personnel undergo environmental induction regarding fauna management and in particular awareness about not harming or collecting species such as snakes, tortoises and owls which are often persecuted out of superstition. Instruct workers to report any animals that may be trapped in the working area. ❖ Ensure no snares are set or nests raided for eggs or young. ❖ Ensure all vehicles adhere to a low speed limit to avoid collisions with susceptible species such as snakes and tortoises. ❖ Prevent litter, food or other foreign material thrown or left around the site. Keep such items in the site vehicles and daily removed it to the site camp.	❖ Disturbance to fauna is minimised.
CULTURAL AND HERITAGE ENVIRONMENT	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.	❖ Confine all mining to the development footprint area. ❖ Implement the following change find procedure when discoveries are made on site:	❖ Impact to cultural/heritage resources is avoided or at least minimised.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
Archaeological, heritage and palaeontological aspects.	Compliance to be monitored by the Environmental Control Officer.	▪ If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager. ▪ It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find and confirm the extent of the work stoppage in that area. ▪ The senior on-site Manager will inform the ECO of the chance find and its immediate impact on operations. The ECO will then contact a professional archaeologist for an assessment of the finds who will notify AMAFA. ▪ Work may only continue once the go-ahead was issued by AMAFA. ❖ Implement the Chance Find Protocol that forms part of the desktop HIA (attached as Appendix G).	
LAND USE Loss of agricultural land for duration of mining.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ If needed, sign mined/rehabilitated areas back to grazing once the grass layer stabilised.	❖ Mining has the least possible impact on the operation of the property.
GENERAL Waste management	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.	❖ Ensure regular vehicle maintenance, repairs and services only take place at the workshop and service area. Ensure drip trays are present if emergency repairs are needed on equipment not able to move to the workshop. Dispose all waste products in a closed container/bin to be removed from the emergency service area (same day) to the workshop to ensure proper disposal. Treat this as hazardous waste and dispose	❖ Wastes are appropriately handled and safely disposed of at registered waste facilities.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
	Compliance to be monitored by the Environmental Control Officer.	of it at a registered hazardous waste handling facility, alternatively arrange collection by a registered hazardous waste handling contractor. File safe disposal certificates for auditing purposes. ❖ If a diesel bowser is used on site, always equip it with a drip tray. Use drip trays during each refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling. ❖ Ensure mixing and/or decanting of all chemicals and hazardous substances take place on an impermeable surface that is protected from the ingress and egress of stormwater. ❖ Ensure drip trays are cleaned after each use. Do not allow dirty drip trays to be used on site. Dispose of dirty rags used to clean the drip trays as hazardous waste into a designated bin at the workshop, where it is incorporated into the hazardous waste removal system. ❖ Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and remove it from the site, either for resale or for appropriate disposal at a registered facility. File proof. ❖ Obtain an oil spill kit and train the employees in the emergency procedures to follow when a spill occurs as well as the application of the spill kit. ❖ Clean spills immediately, within two hours of occurrence by removing the spillage together with the polluted soil and containing it in a designated hazardous waste bin until it is disposed of at a registered facility. File proof. ❖ Ensure suitable covered receptacles are always available and conveniently placed for the disposal of general waste. ❖ Store non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., in a container with a closable lid at a collecting point to be collected at least once a month and disposed of at a recognized landfill site. Take specific precautions to prevent refuse from being dumped on or in the vicinity of the mine area. File proof of disposal. ❖ Handle biodegradable refuse as indicated above.	

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		❖ Encourage re-use or recycling of waste products. ❖ Do not bury or burn waste on the site. ❖ Provide ablution facilities in the form of a chemical toilet/s. Anchor the chemical toilet (to prevent blowing/falling over) and arrange that it is serviced at least once a week for the duration of the mining activities by a registered liquid waste handling contractor. File the safe disposal certificates. ❖ Ensure that the use of any temporary, chemical toilet facilities do not cause any pollution to water sources or pose a health hazard. In addition, ensure that no form of secondary pollution arise from the disposal of refuse or sewage from the temporary, chemical toilets. Address any pollution problems arising from the above immediately. ❖ Do not discharge water containing waste into the natural environment. ❖ Implement measures to contain the wastewater and safely dispose thereof. ❖ Report any significant spillage of chemicals, fuels etc. during the lifespan of the mining activities to the Department of Water and Sanitation and other relevant authorities. ❖ Implement the use of waste registers to keep record of the waste generated and removed from the mining area.	
GENERAL Management of health and safety risks	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Ensure that workers have access to the correct PPE as required by law. ❖ Locate sanitary facilities within 100 m from any point of work. ❖ Manage all operations in compliance with the Mine Health and Safety Act, 1996 (Act No 29 of 1996). ❖ Plan the type, duration and timing of blasting with due cognizance of other land users and structures in the vicinity. ❖ Inform the surrounding landowners and communities in writing ahead of any blasting event.	❖ Employees work in a healthy and safe environment.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		❖ Monitor the compliance of ground vibration and airblast levels to USBM standards with each blasting event. ❖ Record all blasts with a vibro recorder. ❖ Give audible warning of a pending blast at least 3 minutes in advance of the blast. ❖ Limit fly rock and collect and remove flyrock and rock spill that falls beyond the working area.	
GENERAL Management of Safety Risks to Landowners and Surrounding Community.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Screen employees to be appointed prior to inception of contract. ❖ Do not allow employees to reside within the mining area. ❖ Educate mining employees to report suspicious looking person/s and/or matters to site management. ❖ Maintain direct communication between the mining contractor and the landowner for the duration of the site establishment-, operational, and decommissioning phases. ❖ Do not enter negotiations with farm employees. ❖ Restrict mining to normal business hours unless otherwise authorised by the landowner. ❖ Ban alcohol and/or prohibited drugs from site. ❖ Maintain attendance registers, and pre-register all mining vehicles/machinery with the landowner/security. ❖ Do not allow firearms on site.	❖ The mining activities do not pose a safety risk to landowners/surrounding community.

n) Aspects for inclusion as conditions of Authorisation.

Any aspects which must be made conditions of the Environmental Authorisation

The management objectives listed in this report under *Part A(1)(m) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR* above should be considered for inclusion in the environmental authorisation.

o) Description of any assumptions, uncertainties and gaps in knowledge.

(Which relate to the assessment and mitigation measures proposed)

The assumptions made in this document which relate to the assessment and mitigation measures proposed, stem from site specific information gathered from site inspections, specialist and desktop studies, and background information that were gathered. No uncertainty regarding the proposed project or the receiving environment could be identified.

p) Reasoned opinion as to whether the proposed activity should or should not be authorised

i) Reasons why the activity should be authorised or not.

Should the mitigation measures and monitoring programmes proposed in this document be implemented on site, no fatal flaws could be identified that were deemed as severe as to prevent the activity continuing.

ii) Conditions that must be included in the authorisation

The management objectives listed in this report under *Part A(1)(m) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR* should be considered for inclusion in the environmental authorisation.

q) Period for which the Environmental Authorisation is required.

The Applicant requests the Environmental Authorisation to be valid for at least five-years to correspond with the validity of the mining permit.

r) Undertaking

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

The undertaking required to meet the requirements of this section is provided at the end of the EMPR and is applicable to both the Basic Assessment Report and the Environmental Management Programme report.

s) Financial Provision

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

i) Explain how the aforesaid amount was derived

The annual amount required to manage and rehabilitate the environment was estimated to be ±R 2 518 500.00. Please see the explanation as to how this amount was derived at attached as Appendix J – Financial and Technical Competence Report.

ii) Confirm that this amount can be provided 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).

Mulilo Newcastle Mining Rights (Pty) Ltd will be responsible for the financial and technical aspects of the proposed mining project. The operating expenditure is provided for as such in the Financial and Technical Competence Report attached as Appendix J to this report.

t) 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)

Refer to the following relevant sections of this report:

- Part A(1)(f) Need and desirability of the proposed activities;
- Part A(1)(h)(i) Details of the development footprint alternatives considered;
- Part A()(h)(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;
- Part A(1)(i) Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site through the life of the activity;
- Part A()(l)(i) Summary of the key findings of the environmental impact assessment.

(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 the 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).

No sites or artefacts classified as national estate as referred to in section 3(2) of the NHRA, 1999 were identified within the footprint of the proposed mining area (BP1).

u) Other matters required in terms of section 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 4)

The alternatives associated with the proposed activity, investigated during the impact assessment process, were done at the hand of information obtained during the site investigation, public participation process, specialist studies as well as desktop studies conducted of the study area. Refer to Part A(1)(h)(x) *Statement motivating the alternative development location within the overall site*.

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

1. DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME.

a) Details of the EAP,

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

The details and expertise of Ms Christine Fouché of Greenmined Environmental (Pty) Ltd that acts as EAP on this project has been included in *Part A(1)(a) Details of Greenmined Environmental (Pty) Ltd* as well as Appendix N as required.

b) Description of the Aspects of the Activity

(Confirm that the requirements 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 aspects of the activity that are covered by the environmental management programme has been described and included in *Part A(1)(h) 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.*

c) Composite Map

(Provide a map (Attached as an Appendix) 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 any areas that should be avoided, including buffers)

As mentioned under *Part A(1)(l)(ii) Final Site Map* this map has been compiled and is attached as Appendix C to this document.

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

- Remove all temporary infrastructure and waste from the mine as per the requirements of this EMPR and of the Provincial Department of Minerals and Resources and Energy.

- Shape and contour disturbed areas in compliance with the EMPR.
- Ensure that permanent changes in topography (due to mining) are sustainable and do not cause erosion or the uncontrolled damming of surface water.
- Make all excavations safe.
- Use the topsoil effectively to promote the re-establishment of vegetation.
- Ensure that all rehabilitated areas are stable and self-sustaining in terms of vegetation cover.
- Eradicate all weeds/invader plant species by intensive management of the mining area.

The site-specific closure objectives are discussed in the attached Closure Plan (Appendix K), however, a summary of the closure objectives for the proposed mine were included below.

The decommissioning phase will entail the reinstatement of the processing area by removing the stockpiled material, and site infrastructure/equipment and landscaping the disturbed footprints. Due to the impracticality of importing large volumes of fill to restore the excavation to its original topography, the rehabilitation option is to develop the quarry into a minor landscape feature. This will entail creating a series of irregular benches along the quarry faces, the top edges of each face being blasted away to form scree slopes on the benches below, thereby reducing the overall face angle. The benches will be top-dressed with topsoil and vegetated with an appropriate indigenous grass mix if vegetation does not naturally establish in the area within six months of the replacement of the topsoil.

The decommissioning activities will therefore consist of the following:

- Sloping and landscaping the quarry pit;
- Removing all stockpiled material;
- Removing all mining machinery and equipment from site;
- Landscaping all disturbed areas and replacing the topsoil;
- Vegetating the reinstated area; and
- Controlling/monitoring the invasive plant species.

The future land use of the proposed area will be a combination of agriculture (grazing) and energy generation as part of the MNWP WEF. Upon replacement of the topsoil, the area around the excavation will once again be available for grazing purposes, and the planting of the grass layer (to protect the topsoil) will tie in with the proposed land use.

The Applicant will comply with the minimum closure objectives as prescribed by the DMRE and detailed below:

- Rehabilitation of the excavated area:

  The excavated area must serve as a final depositing area for the placement of overburden. Rocks and coarse material removed from the excavation must be dumped into the excavation.

  No waste may be permitted to be deposited in the excavations.

  Once overburden, rocks and coarse natural materials has been added to the excavation and it was profiled with acceptable contours and erosion control measures, the topsoil previously stored must be returned to its original depth over the area.

  The area must be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within 6 months from closure of the site.

  If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.

- Rehabilitation of processing area:

  Coarse natural material used for the construction of ramps must be removed and dumped into the excavations.

  Stockpiles must be removed during the decommissioning phase, the area ripped, and the topsoil returned to its original depth to provide a growth medium.

  On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002):

  - Where sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.

- The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.

Photographs of the camp and office sites, before and during the mining operation and after rehabilitation, shall be taken at selected fixed points and kept on record for the information of the DMRE Regional Manager. _

On completion of mining operations, the surface of these areas, if compacted due to hauling and dumping operations, shall be scarified to a depth of at least 200mm and graded to an even surface condition. Where applicable/possible topsoil needs to be returned to its original depth over the area.

The area shall then be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local, adapted indigenous seed mix.

If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the DMRE Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a seed mix to his or her specification.

❖ <u>Final rehabilitation:</u>

Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation, seeding (if required) and maintenance, and invasive plant species clearing.

All mining equipment, and other items used during the mining period must be removed from the site (section 44 of the MPRDA).

Waste material of any description, including receptacles, scrap, rubble and tyres, must be removed entirely from the mining area and disposed of at a recognized landfill facility. It will not be permitted to be buried or burned on the site.

The management of invasive plant species must be done in a sporadic manner during the life of the mining activities. Species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto) will be eradicated from the site.

Final rehabilitation shall be completed within a period specified by the Regional Manager.

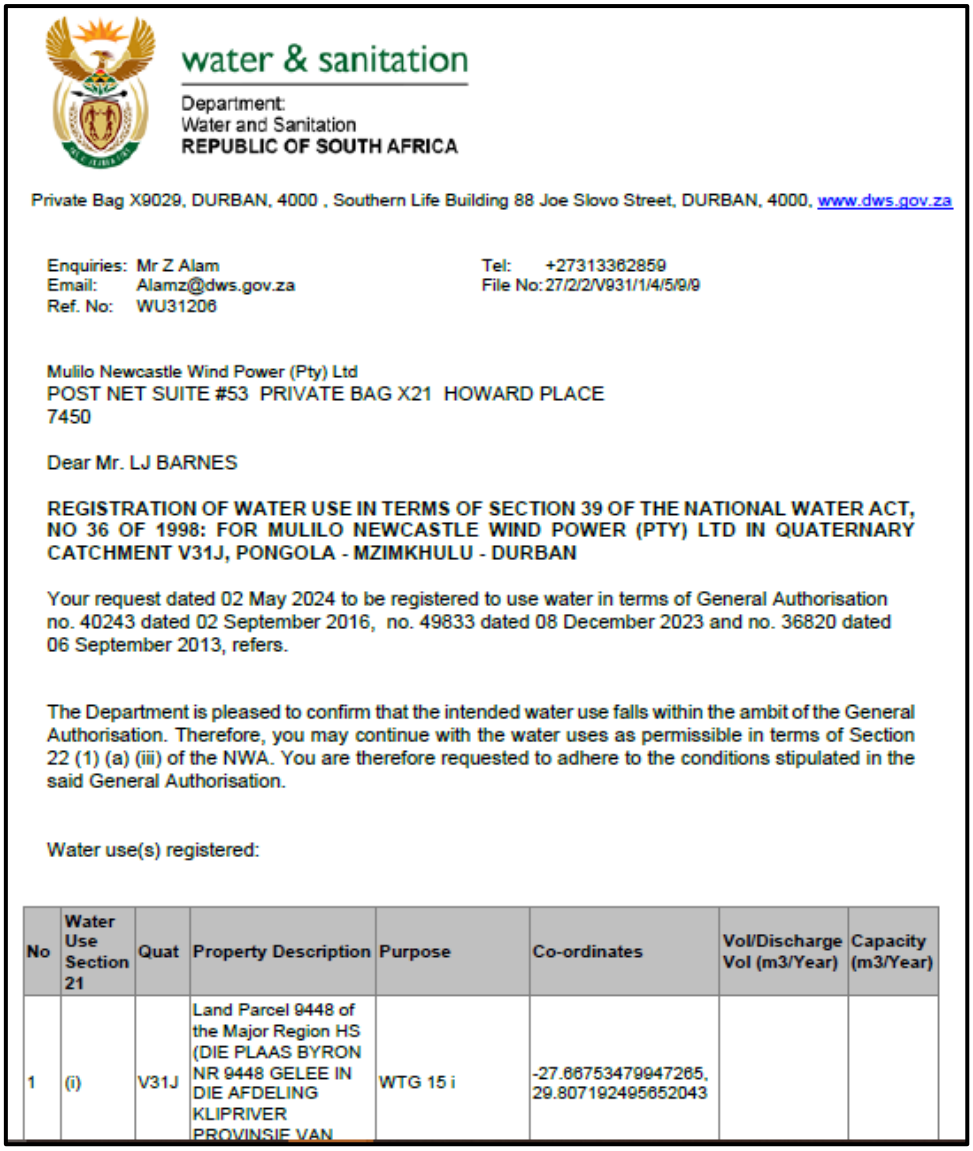
Once the mining area was rehabilitated the permit holder is required to submit a closure application to the Department of Mineral Resources and Energy in accordance with section 43(4) of the MPRDA, 2002 that states: *"An application for a closure certificate must be made to the Regional Manager in whose region the land in question is situated within 180 days of the occurrence of the lapsing, abandonment, cancellation, cessation, relinquishment or completion contemplated in subsection (3) and must be accompanied by the prescribed environmental risk report".* The Closure Application will be submitted in terms of Regulation 62 of the MPRDA, 2002, and Government Notice 940 of NEMA, 1998 (as amended).

ii) Volume and rate of water use required for the operation

Water will mainly be needed for dust suppression and the washing of the concrete aggregate. All water needed for the project will be sourced from nearby boreholes. Approximately 60 000 l water will be needed per day for the washing of concrete aggregate for a period of ±6 months. The total water requirement of the mining project will be ±90 000 l/day when the washing plant is operational, and ±30 000 l/day when the plant is down.

iii) Has a water use licence been applied for?

As shown in the following figure, the DWS confirmed that the water uses of the proposed MNWP WEF fall within the ambit of the General Authorisation of the NWA. The authorised abstraction of water from the boreholes will also accommodate the water needs of the quarry.



water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

Private Bag X9029, DURBAN, 4000 , Southern Life Building 88 Joe Slovo Street, DURBAN, 4000, www.dws.gov.za

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File No: 27/2/2/V931/1/4/5/9/9

Mulilo Newcastle Wind Power (Pty) Ltd
POST NET SUITE #53 PRIVATE BAG X21 HOWARD PLACE
7450

Dear Mr. LJ BARNES

REGISTRATION OF WATER USE IN TERMS OF SECTION 39 OF THE NATIONAL WATER ACT, NO 36 OF 1998: FOR MULILO NEWCASTLE WIND POWER (PTY) LTD IN QUATERNARY CATCHMENT V31J, PONGOLA - MZIMKHULU - DURBAN

Your request dated 02 May 2024 to be registered to use water in terms of General Authorisation no. 40243 dated 02 September 2016, no. 49833 dated 08 December 2023 and no. 36820 dated 06 September 2013, refers.

The Department is pleased to confirm that the intended water use falls within the ambit of the General Authorisation. Therefore, you may continue with the water uses as permissible in terms of Section 22 (1) (a) (iii) of the NWA. You are therefore requested to adhere to the conditions stipulated in the said General Authorisation.

Water use(s) registered:

No	Water Use Section 21	Quat	Property Description	Purpose	Co-ordinates	Vol/Discharge Vol (m3/Year)	Capacity (m3/Year)
1	(i)	V31J	Land Parcel 9448 of the Major Region HS (DIE PLAAS BYRON NR 9448 GELEE IN DIE AFDELING KLIPRIVER PROVINSIE VAN	WTG 15 i	-27.66753479947265, 29.807192495652043		

Figure 27: Proof of General Authorisation issued by the DWS for the development of the MNWP WEF.

iv) Impacts to be mitigated in their respective phases

Table 33: Impact to be mitigated in their respective phases.

ACTIVITIES (as listed in 2.11.1)	PHASE of operation in which activity will take place. State; Planning and design, Pre-Construction, Operational, Rehabilitation, Closure, Post closure	SIZE AND SCALE OF DISTURBANCE (volumes, tonnages and hectares or m^2)	MITIGATION MEASURES (describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDARDS (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	TIME PERIOD FOR IMPLEMENTATION Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either – Upon cessation of the individual activity or Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
❖ Demarcation of site with visible beacons.	Site Establishment phase	4.9 ha	Demarcation of the site will ensure that all employees are aware of the boundaries of the mining area, and that work stay within the approved area.	Mining is only allowed within the boundaries of the approved area. ❖ MPRDA, 2008 ❖ NEMA, 1998	Beacons need to be in place throughout the life of the activity.
❖ Site establishment and infrastructure development**.**	Site Establishment & Operational Phase	4.9 ha	**<u>Loss of grazing for duration of mining:</u>** ❖ The Applicant will sign a memorandum of agreement with the landowner to compensate for the loss of grazing land for the duration of the mining period. If needed, mined out/rehabilitated areas	Use of agricultural land must be managed in accordance with the: ❖ CARA, 1983 ❖ Closure Plan (Appendix K)	Throughout the site establishment-, and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			could revert to grazing once the grass layer stabilised		
❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Excavation, loading and hauling to the processing plant. ❖ Cumulative impact.	Site Establishment & Operational Phase	4.9 ha	**Visual Mitigation:** ❖ The site must have a neat appearance and always kept in good condition. ❖ Mining equipment must be stored neatly in dedicated areas when not in use. ❖ The permit holder must limit vegetation removal, and stripping of topsoil may only be done immediately prior to the mining/use of a specific area. ❖ The excavation must be contained within the approved footprint of the permitted area. ❖ Upon closure the site must be rehabilitated to ensure that the visual impact on the aesthetic value of the area is reduced to the minimum.	Management of the mining activities must be in accordance with the: ❖ MPRDA, 2008 ❖ NEMA, 1998	Throughout the site establishment- and operational phases.
❖ Site establishment and infrastructure development. ❖ Cumulative Impacts	Site Establishment phase	4.9 ha	**Management of vegetation removal:** ❖ The mining boundaries must be clearly demarcated, and all operations must be contained to the approved mining area. The area outside the mining boundaries must be declared a no-go area, and all staff must be educated accordingly. ❖ The Applicant must be committed to a conservation approach and the actual footprint of disturbance must be kept to a minimum.	Natural vegetated areas must be managed in accordance with the: ❖ NEM:BA, 2004	Throughout the site establishment- and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			❖ A pre-commencement environmental induction for all site staff must be provided to ensure that basic environmental principles are adhered to. This includes awareness of no littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, minimising wildlife interactions, remaining within demarcated construction areas, etc. ❖ A pre-commencement walkthrough must be done by an ecologist to identify and demarcate important species to be relocated and sub habitats not to be disturbed. ❖ Species occurring on the site that may be affected by the development include *Gladiolus ecklonii, Raphionacme hirsuta, Dierama galpinii, Aloe maculata, Schizocarpus nervosus* and *Crinum macowanii*. Where development will affect these species, the necessary permits must be obtained and a significant proportion of these transplanted to adjacent areas where it will remain unaffected. ❖ The surrounding proposed Wind Energy Facility (WEF) has already initiated a protected species transplanting process and the mining permit area must be incorporated into this process.		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			❖ Bush-clearance may only commence once the plant permits were received, and the important plants were relocated by a suitably qualified person. ❖ Grubbing is not permitted as a method of clearing vegetation. Any trees needing clearing must be cut down using chain saws and hauled from the site using appropriate machinery where practically possible. ❖ Cleared vegetation to be retained at any time may not be burned but can be mulched and stockpiled. Ideally the heaps can be covered with stockpiled topsoil and the material be retained for future site rehabilitation purposes. ❖ The ECO must provide supervision and oversight of vegetation clearing activities and other activities which may cause damage to the environment, especially during the site establishment phase, when most of the vegetation clearing takes place. ❖ All vehicles must remain on demarcated roads and no unnecessary driving in the veld outside these areas may be allowed. ❖ No plants may be translocated or otherwise uprooted or disturbed for rehabilitation or other purposes without express permission from the ECO and without the relevant permits.		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			❖ No fires must be allowed on-site. ❖ Spoil heaps and topsoil stockpiles must be provided with a vegetation cover of indigenous grasses. ❖ A biodiversity protocol and rehabilitation plan must be in place that can be implemented upon closure.		
❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil and overburden.	Site Establishment & Operational Phase	4.9 ha	**Protection of Fauna:** ❖ The site manager must ensure no fauna is caught, killed, harmed, sold, or played with. ❖ Any fauna directly threatened by the operational activities must be removed to a safe location by the ECO or other suitably qualified person. ❖ The handling and relocation of any animal perceived to be dangerous/venomous/poisonous must be undertaken by a suitably trained individual. ❖ All personnel must undergo environmental induction regarding fauna management and in particular awareness about not harming or collecting species such as snakes, tortoises and owls which are often persecuted out of superstition. Workers must be instructed to report any animals that may be trapped in the working area.	Site specific fauna must be managed in accordance with the: ❖ NEM:BA, 2004	Throughout the site establishment-, and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			❖ No snares may be set, or nests raided for eggs or young. ❖ All vehicles must adhere to a low speed limit to avoid collisions with susceptible species such as snakes and tortoises. ❖ No litter, food or other foreign material may be thrown or left around the site. Such items must be kept in the site vehicles and daily removed to the site camp.		
❖ Site establishment and infrastructure development. ❖ Excavation, loading and hauling to the processing plant.	Site Establishment, & Operational Phase.	4.9 ha	**Archaeological, Heritage and Palaeontological Aspects:** ❖ All mining must be confined to the development footprint area. ❖ If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager. ❖ It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find and confirm the extent of the work stoppage in that area.	Cultural/heritage aspects on site must be managed in accordance with the: ❖ NHRA, 1999	Throughout the site establishment-, and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			❖ The senior on-site Manager must inform the ECO of the chance find and its immediate impact on operations. The ECO must then contact a professional archaeologist for an assessment of the finds who must notify the SAHRA. ❖ Work may only continue once the go-ahead was issued by SAHRA. ❖ The Chance Find Protocol that forms part of the desktop HIA (attached as Appendix G) must be implemented on site.		
❖ Stripping and stockpiling of topsoil and overburden. ❖ Excavation, loading and hauling to the processing plant. ❖ Sloping and landscaping during rehabilitation.	Site Establishment-, Operational and Decommissioning Phase	4.9 ha	**<u>Topsoil Management</u>** ❖ The upper 300 mm of the soil must be stripped and stockpiled before mining. ❖ Topsoil is a valuable and essential resource for rehabilitation, and it must therefore be managed carefully to conserve and maintain it throughout the stockpiling and rehabilitation processes. ❖ Topsoil stripping, stockpiling, and re-spreading must be done in a systematic way. The mining plan must be such that topsoil is stockpiled for the minimum possible time. ❖ The topsoil must be placed on a levelled area, within the mining footprint. No topsoil may be stockpiled in undisturbed areas. ❖ Topsoil stockpiles must be protected against losses by water- and wind	Topsoil stripping must be managed in accordance with the: ❖ CARA, 1983 ❖ NEM:BA, 2004 ❖ MPRDA, 2002 ❖ Closure Plan (Appendix K)	Throughout the site establishment-, and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			erosion. Stockpiles must be positioned so as not to be vulnerable to erosion by wind and water. The establishment of plants (indigenous grass) on the stockpiles will help to prevent erosion. ❖ Topsoil heaps may not exceed 1.5 m in height and are not to be sloped more than 1:2 to avoid collapse. ❖ The temporary topsoil stockpiles must be kept free of invasive plant species. ❖ Topsoil heaps to be stored longer than a period of 3 months needs to be vegetated with an indigenous grass seed mix if vegetation does not naturally germinate within the first growth season. ❖ Storm- and runoff water must be diverted around the on-site stockpile area to prevent erosion. ❖ The stockpiled topsoil must be evenly spread, to a depth of 300 mm, over the rehabilitated area upon closure of the site. ❖ Only removed topsoil (during site establishment phase) may be utilised to rehabilitate the disturbed surface. ❖ The permit holder must strive to re-instate topsoil at a time of year when vegetation cover can be established as quickly as possible afterwards, so that erosion of returned topsoil by both rain and wind, before vegetation is established, is minimized. The best time		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			of year is at the end of the rainy season, when there is moisture in the soil for vegetation establishment and the risk of heavy rainfall events is minimal. ❖ An indigenous grass layer must be planted and established immediately after spreading of topsoil, to stabilize the soil and protect it from erosion. The grass layer must be fertilized for optimum biomass production. It is important that rehabilitation be taken up to the point of stabilization. Rehabilitation cannot be considered complete until the first grass layer is well established. ❖ Run-off water must be controlled via temporary berms, where necessary, on the slopes to ensure that accumulation of run-off does not cause down-slope erosion. ❖ The rehabilitated area must be monitored for erosion, and appropriately stabilized if any erosion occurs for at least 12 months after reinstatement.		
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Drilling and blasting. ❖ Excavation, loading and	Site Establishment-, Operational-, and Decommissioning Phase	4.9 ha	**<u>Fugitive Dust Emission Mitigation Measures:</u>** ❖ The liberation of dust into the surrounding environment must be effectively controlled using, inter alia, water spraying and/or environmentally friendly dust-allaying agents that contains no PCB's (e.g. DAS products).	Dust generation on site must be managed in accordance with the: ❖ NEM:AQA, 2004 Regulation 6(1) ❖ National Dust Control Regulations, GN No R827 ❖ ASTM D1739 (SANS 1137:2012)	Throughout the site establishment-, and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
hauling to the processing plant. ❖ Crushing, washing, stockpiling and transporting of material.			❖ The site manager must daily assess the efficiency of all dust suppression equipment. ❖ Speed on the haul roads must be limited to 20 km/h and 40 km/h on the access road to prevent the generation of excess dust. ❖ Areas devoid of vegetation, which could act as a dust source, must be minimized and vegetation removal may only be done immediately prior to mining. ❖ The crusher plant must have operational water sprayers to alleviate dust generation from the conveyor belts. ❖ Fines, blowing from the drop end of the crusher plant, can be minimized by attaching strips of used conveyor belts to the conveyor's end. ❖ Compacted dust must weekly be removed from the crusher plant to eliminate the dust source. ❖ Weather conditions must be taken into consideration upon commencement of daily operations. Limiting operations during very windy periods would reduce airborne dust and resulting impacts. ❖ All dust generating activities shall comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM:AQA (Act 39 of 2004) and ASTM D1739 (SANS 1137:2012).		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			❖ Best practice measures shall be implemented during the stripping of topsoil, excavation, and transporting of material from site to minimize potential dust impacts.		
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Drilling and blasting. ❖ Excavation, loading and hauling to the processing plant. ❖ Crushing, washing, stockpiling and transporting of material.	Site Establishment-, Operational-, and Decommissioning Phase	4.9 ha	**<u>Noise Handling:</u>** ❖ The permit holder must ensure that employees and staff conduct themselves in an acceptable manner while on site. ❖ No loud music may be permitted at the mining area. ❖ All mining vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996 (Act No 93 of 1996). ❖ The type, duration and timing of the blasting procedures must be planned with due cognizance of other land users and structures in the vicinity. Surrounding landowners must be notified in writing prior to each blasting occasion. ❖ A qualified occupational hygienist must be contracted to quarterly monitor and report on the personal noise exposure of the employees working at the mine. The monitoring must be done in accordance with the SANS 10083:2004 (Edition 5) sampling method as well as NEM:AQA, 2004, SANS 10103:2008.	Noise generation on site must be managed in accordance with the: ❖ NEM:AQA, 2004 Regulation 6(1) ❖ NRTA, 1996	Throughout the site establishment-, and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			❖ Site management must strive to minimise the noise caused by generators. All generators must be maintained and equipped with sound mufflers. If possible, the generators must be pointed away from the neighbouring land users. Further to this, all generators must be placed on a level area/footing to minimise vibration noise. ❖ Best practice measures shall be implemented to minimize potential noise impacts. ❖ Mining must be from 07:00 to 18:00 Monday to Friday. No blasting may be allowed after hours or on weekends.		
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Crushing, washing, stockpiling and transporting of material. ❖ Sloping and landscaping during rehabilitation phase.	Site Establishment-, Operational, and Decommissioning Phase	4.9 ha	**<u>Management of Invasive Plant Species:</u>** ❖ An invasive plant species management plan must be implemented at the site to ensure the management and control of all species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto). Weed/alien clearing must be done on an ongoing basis throughout the life of the mining activities. ❖ No planting or importing of any alien species to the site for landscaping, rehabilitation or any other purpose may be allowed.	Weeds and invader plants on site must be managed in accordance with the: ❖ CARA, 1983 ❖ NEM:BA, 2004 ❖ Invader Plants Species Management Plan (Appendix L)	Throughout the site establishment-, operational, and decommissioning phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			❖ All stockpiles (topsoil & overburden) must be kept free of invasive plant species. ❖ Management must take responsibility to control declared invader or exotic species on the rehabilitated areas. The following control methods can be used: ❖ Management must take responsibility to control declared invader or exotic species on the rehabilitated areas. The following control methods can be used: ▪ The plants can be uprooted, felled, or cut off and can be destroyed completely. ▪ The plants can be treated chemically by a registered pest control officer (PCO) using an herbicide recommended for use by the PCO in accordance with the directions for the use of such an herbicide. Only herbicides which have been certified safe for use in aquatic environments by independent testing authority are to be used.		
❖ Stripping and stockpiling of topsoil and overburden. ❖ Excavation, loading and hauling to the	Site Establishment-, Operational and Decommissioning Phase	4.9 ha	**<u>Erosion Control and Storm Water Management:</u>** ❖ A stormwater management plan must be implemented for the duration of the mining activities. ❖ Clearing of vegetation must be limited to the proposed mining footprint and	Erosion and storm water must be managed in accordance with the: ❖ CARA, 1983 ❖ NEMA, 1998 ❖ NWA, 1998	Throughout the site establishment-, and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
processing plant. ❖ Sloping and landscaping during rehabilitation.			associated infrastructure. No clearing outside of the minimum required footprint to take place. ❖ Vegetation clearing activities must be put on hold when heavy rains are expected. ❖ Stormwater must be diverted around the topsoil heaps and mining areas to prevent erosion. ❖ Stockpiles must be protected from erosion, stored on flat areas where possible, and be surrounded by appropriate berms. ❖ When mining within steep slopes, it must be ensured that adequate slope protection is provided. ❖ During mining, the outflow of run-off water from the mining excavation must be controlled to prevent down-slope erosion. This must be done by way of the construction of temporary banks and ditches that will direct run-off water (if needed). These must be in place at any points where overflow out of the excavation might occur. ❖ No dirty water emanating from the quarry shall be discharged into the natural environment or any watercourse. All runoff must be channelled into the stormwater system. ❖ Roads and other disturbed areas within the project area must be regularly monitored for erosion and problem areas		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			must receive follow-up monitoring to assess the success of the remediation. ❖ Any erosion problems within the mining area because of the mining activities observed must be rectified immediately (within 48 hours) and monitored thereafter to ensure that it does not re-occur. ❖ Silt/sediment traps/barriers must be used where there is a danger of topsoil or material stockpiles eroding and entering downstream drainage lines and other sensitive areas. These sediment/silt barriers must regularly be maintained and cleared to ensure effective drainage of the areas. ❖ Mining must be conducted only in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water and Sanitation (DWS), and any other conditions which that Department may impose: ▪ Clean water (e.g. rainwater) must be kept clean and be routed to a natural watercourse by a system separate from the dirty water system. You must prevent clean water from running or spilling into dirty water systems.		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			▪ Dirty water must be collected and contained in a system separate from the clean water system. ▪ Dirty water must be prevented from spilling or seeping into clean water systems. ▪ A storm water management plan must apply for the entire life cycle of the mining activity and over different hydrological cycles (rainfall patterns). ▪ The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into a storm water management plan. ❖ All fuels and chemicals stored or used on site must be contained within fit for purpose containers and stored within designated storage areas. To prevent pollution of the surrounding environment during an accidental spillage, the designated storage areas must be situated on an impermeable surface and must feature a perimeter bund and a drainage sump. The volume of the bund and sump must be sized to contain at least 110% of the total volume of the fuel and chemicals being stored within the designated storage area. The storage areas must feature a roof to prevent		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			inflow of rainwater, which would require the sump to be emptied more frequently. ❖ Once shaped, all exposed/bare surfaces and embankments must be re-vegetated immediately. If revegetation of exposed surfaces cannot take place immediately, temporary erosion, and sediment control measures must be installed and maintained until such time that revegetation can commence.. ❖ All erosion and sediment control measures must be monitored (weekly) for the life of the operation and repaired immediately when damaged. The erosion and sediment control structures may only be removed once vegetation cover has successfully recolonised the affected areas. ❖ After heavy rainfall events, the contractor must check the site for erosion damage and rehabilitate this damage immediately. Erosion rills and gullies must be filled-in with appropriate material and/or silt fences until vegetation has recolonised the rehabilitated area. ❖ Check the water sump of the washing plant every month to assess the amount of sediment collected. Remove sediment at a predetermined depth of sediment and stockpiled separately or deposit into the excavation.		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Excavation, loading and hauling to the processing plant. ❖ Crushing, washing, stockpiling and transporting of material. ❖ Sloping and landscaping during rehabilitation phase.	Site Establishment-, Operational-, and Decommissioning Phase	4.9 ha	**Waste Management:** ❖ Regular vehicle maintenance, repairs and services may only take place at the workshop and service area. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a closed container/bin to be removed from the emergency service area (same day) to the workshop in order to ensure proper disposal. This waste must be treated as hazardous waste and must be disposed of at a registered hazardous waste handling facility, alternatively collected by a registered hazardous waste handling contractor. The safe disposal certificates must be filed for auditing purposes. ❖ If a diesel bowser is used on site, it must always be equipped with a drip tray. Drip trays must be used during each refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling. ❖ Mixing and/or decanting of all chemicals and hazardous substances must take place on an impermeable surface and must be protected from the ingress and egress of stormwater.	Mining related waste must be managed in accordance with the: ❖ NWA, 1998 ❖ NEM:WA, 2008	Throughout the site establishment-, operational and decommissioning phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			❖ Site management must ensure drip trays are cleaned after each use. No dirty drip trays may be used on site. The dirty rags used to clean the drip trays must be disposed as hazardous waste into a designated bin at the workshop, where it is incorporated into the hazardous waste removal system. ❖ Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a registered facility. Proof of safe disposal must be filed for auditing purposes. ❖ An oil spill kit must be obtained, and the employees must be trained in the emergency procedures to follow when a spill occurs as well as the application of the spill kit. ❖ Spills must be cleaned up immediately, within two hours of occurrence by removing the spillage together with the polluted soil and containing it in a designated hazardous waste bin until it is disposed of at a registered facility. Proof must be filed. ❖ Suitable covered receptacles must always be available and conveniently placed for the disposal of general waste. ❖ Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc.,		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			must be stored in a container with a closable lid at a collecting point to be collected at least once a month and disposed of at a recognized landfill site. Specific precautions must be taken to prevent refuse from being dumped on or in the vicinity of the mine area. Proof of disposal must be available for auditing purposes. ❖ Biodegradable refuse must be handled as indicated above. ❖ Re-use or recycling of waste products must be encouraged on site. ❖ No waste may be buried or burned on the site. ❖ Ablution facilities must be provided in the form of a chemical toilet/s. The chemical toilet must be anchored (to prevent blowing/falling over) and shall be serviced at least once a week for the duration of the mining activities by a registered liquid waste handling contractor. The safe disposal certificates must be filed for auditing purposes. ❖ The use of any temporary, chemical toilet facilities must not cause any pollution to water sources or pose a health hazard. In addition, no form of secondary pollution should arise from the disposal of refuse or sewage from the temporary, chemical toilets. Any pollution problems arising from the above are to be		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			addressed immediately by the permit holder. ❖ When small volumes of wastewater are generated during the life of the mine the following is applicable: ▪ Water containing waste must not be discharged into the natural environment. ▪ Measures to contain the wastewater and safely dispose thereof must be implemented. ❖ It is important that any significant spillage of chemicals, fuels etc. during the lifespan of the mining activities is reported to the Department of Water and Sanitation and other relevant authorities. ❖ Site management must implement the use of waste registers to keep record of the waste generated and removed from the mining area.		
❖ Stripping and stockpiling of topsoil and/or overburden.	Site Establishment, & Operational Phase.	N/A	**Mitigating the potential impact on the hydrology related features:** ❖ The necessary authorisations must be acquired from the DWS for mining activities within 100 metres of any of the delineated watercourses around the site. ❖ The seasonal stream and drainage line adjacent to BP1, as identified by the hydrologist, must be treated as no-go areas and no mining activities, including	All water related matters must be managed in terms of the: ❖ NWA, 1998	Throughout the site establishment-, and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			construction or operational activities, vehicle movement, laydown areas, vegetation clearing or any other associated activities may occur in or near these watercourses. ❖ To prevent any further impacts on the identified watercourses, a buffer of 47 metres must be maintained from the edge of the riparian zone along these watercourses. This buffer area must also be treated as a no-go area. ❖ Where mining operations require crossing of the watercourses only existing roads and tracks may be utilised. ❖ A natural vegetation layer must be re-instated where it was disturbed/removed. ❖ Adequate storm water management measures must be implemented and must include diverting storm- and floodwater around operational and excavation areas and preventing sediment and silt from entering any of the delineated watercourses. ❖ To prevent an increase in surface water flow velocity: ▪ Ensure that an approved storm water plan is compiled and implemented; ▪ The flow of storm water onto the buffer and wetland features must be moderated.		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			❖ To prevent the contamination of the nearby watercourses: ▪ The contractor must notify the CM and ECO immediately of any pollution incidents on site. ▪ The contractor must prevent discharge of any pollutants, such as cement, concrete, lime chemicals and fuels into any water source. ❖ Ensure that structures like berms are built to prevent soil from entering wetlands as this can result in sedimentation.		
❖ Drilling and blasting. ❖ Excavation, loading and hauling to the processing plant. ❖ Sloping and landscaping during rehabilitation phase.	Operational-, and Decommissioning Phase	4.9 ha	**<u>Management of health and safety risks:</u>** ❖ Workers must have access to the correct personal protection equipment (PPE) as required by law. ❖ Sanitary facilities must be located within 100 m from any point of work. ❖ All operations must comply with the Mine Health and Safety Act, 1996 (Act No 29 of 1996). ❖ The type, duration and timing of the blasting procedures must be planned with due cognizance of other land users and structures in the vicinity. ❖ The surrounding landowners must be informed in writing ahead of each blasting event. ❖ The compliance of ground vibration and airblast levels must be monitored to	Health and safety aspects on site must be managed in accordance with the: ❖ MHSA, 1996 ❖ OHSA, 1993 ❖ OHSAS 18001 ❖ USBM standards	Throughout the site establishment-,operational and decommissioning phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			USBM standards with each blasting event. ❖ A vibro recorder must be used to record all blasts. ❖ Audible warning of a pending blast must be given at least 3 minutes in advance of the blast. ❖ Measures to limit flyrock must be taken. All flyrock (of diameter 150 mm and larger) which falls beyond the working area, together with the rock spill must be collected and removed.		
❖ Cumulative Impacts	Site establishment-, and operational phase	4.9 ha	**Management of safety and security risk posed by mining activities to residents:** ❖ Employees to be appointed must be vetted prior to inception of contract. ❖ No employees may be allowed to reside within the mining area. ❖ Mining employees must be educated to report suspicious looking person/s and/or matters to site management. ❖ Direct communication between the mining contractor and the landowner must be maintained for the duration of the site establishment-, operational, and decommissioning phases. ❖ The mining contractor may not enter negotiations with farm employees.	All mining activities must be in accordance with the: ❖ MPRDA, 2002; ❖ NEMA, 1998	Throughout the operational phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			❖ Mining may only take place during normal business hours and unless otherwise authorised by the landowner. ❖ No alcohol of prohibited drugs may be allowed on site. ❖ Attendance registers must be maintained, and all mining vehicles/machinery must be pre-registered with the landowner/security. ❖ No firearms will be allowed on site.		
❖ Site establishment & infrastructure development. ❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Drilling and blasting. ❖ Excavation, loading and hauling to the processing plant. ❖ Crushing, washing, stockpiling and transporting of material.	Site establishment-, and operational phase	4.9 ha	**Fire Management:** ❖ No open fires to be permitted on site. ❖ Fire prevention facilities must be present at all hazardous storage facilities. ❖ Ensure adequate fire-fighting equipment is available and train workers on how to use it. ❖ Ensure that all workers on site know the proper procedure in case of a fire occurring on site. ❖ Smoking must not be permitted in areas considered to be a fire hazard.	Management of the mining activities must be in accordance with the: ❖ MPRDA, 2008 ❖ NEMA, 1998	Throughout the site establishment-, and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
❖ Sloping and landscaping during rehabilitation phase.					
❖ Sloping and landscaping during rehabilitation phase.	Decommissioning Phase	4.9 ha	**Rehabilitation/landscaping of mining area:** ❖ The excavated area must serve as a final depositing area for the placement of overburden. ❖ Rocks and coarse material removed from the excavation must be dumped into the excavation. ❖ Coarse natural material used for the construction of ramps must be removed and dumped into the excavations. ❖ Stockpiles must be removed during the decommissioning phase, the area ripped, and the topsoil returned to its original depth to provide a growth medium. ❖ No waste may be permitted to be deposited in the excavations. ❖ Once overburden, rocks and coarse natural materials have been added to the excavation and it was profiled with acceptable contours and erosion control measures, the topsoil previously stored must be returned to its original depth over the area.	Rehabilitation of the mining area must be in accordance with the: ❖ CARA, 1983 ❖ NEM:BA, 2004 ❖ MPRDA, 2002 ❖ Closure Plan (Appendix K)	Throughout the decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			❖ The area must be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within six months from closure of the site. Only removed topsoil (during site establishment phase) may be utilised to rehabilitate the disturbed surface. ❖ If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification. ❖ On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002). ❖ On completion of mining operations, the surface of all plant-, stockpiling-, and/or office areas, if compacted due to hauling and dumping operations, shall be scarified to a depth of at least 200mm and graded to an even surface condition. Where applicable/possible topsoil needs		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			to be returned to its original depth over the area.		

e) Impact Management Outcomes

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

Table 34: Impact Management Outcomes.

ACTIVITY whether listed or not listed (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc..etc.)	POTENTIAL IMPACT (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)	ASPECTS AFFECTED	PHASE In which impact is anticipated (e.g. Construction, commissioning, operational Decommissioning, closure, post-closure))	MITIGATION TYPE (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc...etc..) E.g. • Modify through alternative method. • Control through noise control • Control through management and monitoring • Remedy through rehabilitation.	STANDARD TO BE ACHIEVED (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
❖ Demarcation of site with visible beacons.	❖ No impact could be identified other than the beacons being outside the boundaries of the approved mining area.	N/A	Site Establishment phase	Control through management and monitoring.	Mining is only allowed within the boundaries of the approved area. ❖ MPRDA, 2008

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
					❖ NEMA, 1998
❖ Site establishment and infrastructure development**.**	❖ Loss of grazing for duration of mining.	The impact may affect the agricultural opportunities of the property.	Site Establishment & Operational Phase	Should the proposed project be approved, the operation will temporarily interrupt the agricultural activities of the footprint area, only to be reversed upon the closure of the mine. The impact could be controlled through progressive rehabilitation.	Use of agricultural land must be managed in accordance with the: ❖ CARA, 1983 ❖ Closure Plan (Appendix K)
❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil and overburden. ❖ Excavation, loading and hauling to the processing plant. ❖ Cumulative impact.	❖ Visual intrusion because of site establishment. ❖ Visual intrusion caused by mining activities. ❖ Visual intrustion assoiated with the excavation activities. ❖ Cumulative visual impact when quarry and MNWP WEF is developed.	The visual impact may affect the aesthetics of the landscape.	Site Establishment & Operational Phase	Control: Implementing proper housekeeping.	Management of the mining activities must be in accordance with the: ❖ MPRDA, 2008 ❖ NEMA, 1998
❖ Site establishment and infrastructure development. ❖ Cumulative Impacts	❖ Impact on vegetation structure and plant species composition. ❖ Impact on protected plant species within mining footprint. ❖ Cumulative impact on overall species and ecosystem diversity.	This will impact on the biodiversity of the receiving environment.	Site Establishment & Operational Phase	Control: Implementing proper housekeeping.	Areas of conservation importance must be managed in accordance with the: ❖ NEM:BA, 2004

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
❖ Stripping and stockpiling of topsoil and overburden. ❖ Excavation, loading and hauling to the processing plant. ❖ Crushing, washing, stockpiling and transporting of material. ❖ Sloping and landscaping during rehabilitation.	❖ Loss of stockpiled topsoil during mining and stockpiling. ❖ Potential increase in runoff from bare areas and associated accelerated erosion. ❖ Facilitation of erosion due to mining activities. ❖ Potential increase in runoff from bare areas and associated accelerated erosion. ❖ Loss of stockpiled material due to ineffective stormwater control. ❖ Erosion of returned topsoil after rehabilitation.	The loss/contamination of topsoil and erosion of the footprint will affect the rehabilitation of the excavation upon closure of the site.	Site Establishment-, Operational and Decommissioning Phase	Control & Remedy: Proper housekeeping and storm water management.	Topsoil stripping must be managed in accordance with the: ❖ CARA, 1983 ❖ NEM:BA, 2004 ❖ MPRDA, 2002 ❖ Closure Plan (Appendix K)
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Drilling and blasting. ❖ Excavation, loading and hauling to the processing plant. ❖ Crushing, washing, stockpiling and transporting of material. ❖ Cumulative impact	❖ Dust nuisance because of the disturbance of soil. ❖ Dust nuisance caused by blasting activities. ❖ Dust nuisance due to excavation and from loading and vehicles transporting the material. ❖ Dust nuisance generated at the processing plant. ❖ Cumulative dust nuisance when quarry is operational	Increased dust generation will impact on the air quality of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	Control: Dust suppression methods and proper housekeeping.	Dust generation on site must be managed in accordance with the: ❖ NEM:AQA, 2004 Regulation 6(1) ❖ National Dust Control Regulations, GN No R827 ❖ ASTM D1739 (SANS 1137:2012)

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
	and construction of the MNWP WEF commences.				
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Drilling and blasting. ❖ Excavation, loading and hauling to the processing plant. ❖ Crushing, washing, stockpiling and transporting of material. ❖ Cumulative impact	❖ Noise nuisance generated by earthmoving machinery. ❖ Noise nuisance because of blasting. ❖ Noise nuisance because of the mining activities. ❖ Noise nuisance stemming from operation of the processing plant. ❖ Cumulative noise nuisance when quarry and construction of the MNWP WEF occur simultaneously.	Should noise levels become excessive it may have an impact on the noise ambiance of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	Control: Noise suppression methods and proper housekeeping.	Noise generation on site must be managed in accordance with the: ❖ NEM:AQA, 2004 Regulation 6(1) ❖ NRTA, 1996
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Crushing, washing, stockpiling and transporting of material. ❖ Cumulative impact ❖ Sloping and landscaping during rehabilitation phase.	❖ Infestation of the topsoil heaps and mining area with weeds or invader plant species. ❖ Infestation of the area with invader plant species. ❖ Cumulative impact of invader plants in both the quarry and MNWP WEF footprints. ❖ Infestation of the reinstated areas by weeds and invader plant species.	Infestation of the footprint by invader plant species may affect the biodiversity of the receiving environment.	Site Establishment-, Operational, and Decommissioning Phase	Control & Remedy: Implementation of an invasive plant species management plan.	Weeds and invader plants on site must be managed in accordance with the: ❖ CARA, 1983 ❖ NEM:BA, 2004
❖ Stripping and stockpiling of topsoil and/or overburden.	❖ Potential contamination of footprint area and surface runoff because of	Contamination of the footprint area will negatively impact the	Site Establishment-, Operational-, and	Control & Remedy: Proper housekeeping and implementation of an	Mining related waste must be managed in accordance with the: ❖ NWA, 1998

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
❖ Excavation, loading and hauling to the processing plant. ❖ Crushing, washing, stockpiling and transporting of material. ❖ Sloping and landscaping during rehabilitation phase.	hydrocarbon spillages/bad waste management practices. ❖ Soil contamination from hydrocarbon spills and/or littering. ❖ Potential contamination of environment due to improper waste management. ❖ Potential impact associated with litter/waste left at the mining area.	soil, surface runoff and potentially the groundwater. It will also incur additional costs to the permit holder.	Decommissioning Phase	emergency response plan and waste management plan.	❖ NEM:WA, 2008
❖ Site establishment & infrastructure development. ❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Processing, stockpiling and transporting of material.	❖ Potential change of natural runoff and drainage patterns. ❖ Direct physical loss or modification of the watercourses and/or wetland should the buffer zone not be maintained.	This could impact the hydrology of the receiving environment.	Site Establishment, & Operational Phase.	<u>Control:</u> Implementing the SWMP.	Any water related matters must be managed in accordance with the: ❖ NWA, 1998 ❖ GA conditions
❖ Drilling and blasting. ❖ Excavation, loading and hauling to the processing plant. ❖ Sloping and landscaping during rehabilitation phase.	❖ Health and safety risk posed by blasting activities. ❖ Unsafe working environment for employees. ❖ Safety risk posed by un-sloped areas.	An unsafe working environment affects the labour force, as well as pose a threat to animals and humans that may enter the mining footprint.	Operational-, and Decommissioning Phase	<u>Stop & Control:</u> Adherance to the blasting rules and regulations, demarcation of the mining area and proper housekeeping.	Health and safety aspects on site must be managed in accordance with the: ❖ MHSA, 1996 ❖ OHSA, 1993 ❖ OHSAS 18001 ❖ USBM standards

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
❖ Cumulative Impacts	❖ Presence of mining contractor negatively affecting safety and security of the surrounding properties.	The impact may affect the security of the area.	Site establishment-, and Operational Phase.	Control, Stop & Remedy: Implementing proper human resources practices.	All mining activities must be in accordance with the: ❖ MPRDA, 2002; ❖ NEMA, 1998
❖ Crushing, washing, stockpiling and transporting of material.	❖ Increased fire due to mining activities.	Uncontrolled fire may affect the neighbouring farms, cause losses and result in financial costs to the mine.	Operational phase	Control & Stop: Control activities that may have a fire risk and snuff fires that may occur.	Management of the mining activities must be in accordance with the: ❖ MPRDA, 2008 ❖ NEMA, 1998

f) Impact Management Actions

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

Table 35: Impact Management Actions.

ACTIVITY whether listed or not listed (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc..etc.)	**POTENTIAL IMPACT** (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)	**MITIGATION TYPE** (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc... etc.) E.g. • Modify through alternative method. • Control through noise control • Control through management and monitoring • Remedy through rehabilitation.	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either: Upon cessation of the individual activity Or. Upon the cessation of mining bulk sampling or alluvial diamond prospecting as the case may be.	**COMPLIANCE WITH STANDARDS** (A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)
❖ Demarcation of site with visible beacons.	❖ No impact could be identified other than the beacons being outside the boundaries of the approved mining area.	Control through management and monitoring.	Beacons need to be in place throughout the life of the mine.	Mining is only allowed within the boundaries of the approved area. ❖ MPRDA, 2008 ❖ NEMA, 1998
❖ Site establishment and infrastructure development**.**	❖ Loss of grazing for duration of mining.	Should the proposed project be approved, the operation will temporarily interrupt the agricultural activities of the footprint area, only to be reversed upon the closure of the mine. The impact could be	Throughout site establishment- and operational phases.	Use of agricultural land must be managed in accordance with the: ❖ CARA, 1983 ❖ Closure Plan (Appendix K)

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
		controlled through progressive rehabilitation.		
❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil and overburden. ❖ Excavation, loading and hauling to the processing plant. ❖ Cumulative impact.	❖ Visual intrusion because of site establishment. ❖ Visual intrusion caused by mining activities. ❖ Visual intrustion assoiated with the excavation activities. ❖ Cumulative visual impact when quarry and MNWP WEF is developed.	Control: Implementing proper housekeeping.	Throughout site establishment- and operational phases.	Management of the mining activities must be in accordance with the: ❖ MPRDA, 2008 ❖ NEMA, 1998
❖ Site establishment and infrastructure development. ❖ Cumulative Impacts	❖ Impact on vegetation structure and plant species composition. ❖ Impact on protected plant species within mining footprint. ❖ Cumulative impact on overall species and ecosystem diversity.	Control: Implementing proper housekeeping.	Applicable during the site establishment phase, and to be managed throughout the operational and decommissioning phases.	Areas of conservation importance must be managed in accordance with the: ❖ NEM:BA, 2004
❖ Stripping and stockpiling of topsoil and overburden. ❖ Excavation, loading and hauling to the processing plant. ❖ Crushing, washing, stockpiling and transporting of material.	❖ Loss of stockpiled topsoil during mining and stockpiling. ❖ Potential increase in runoff from bare areas and associated accelerated erosion. ❖ Facilitation of erosion due to mining activities.	Control & Remedy: Proper housekeeping and storm water management.	Throughout operational- and decommissioning phases.	Topsoil stripping must be managed in accordance with the: ❖ CARA, 1983 ❖ NEM:BA, 2004 ❖ MPRDA, 2002 ❖ Closure Plan (Appendix K)

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
❖ Sloping and landscaping during rehabilitation.	❖ Potential increase in runoff from bare areas and associated accelerated erosion. ❖ Loss of stockpiled material due to ineffective stormwater control. ❖ Erosion of returned topsoil after rehabilitation.			
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Drilling and blasting. ❖ Excavation, loading and hauling to the processing plant. ❖ Crushing, washing, stockpiling and transporting of material. ❖ Cumulative impact	❖ Dust nuisance because of the disturbance of soil. ❖ Dust nuisance caused by blasting activities. ❖ Dust nuisance due to excavation and from loading and vehicles transporting the material. ❖ Dust nuisance generated at the processing plant. ❖ Cumulative dust nuisance when quarry is operational and construction of the MNWP WEF commences.	Control: Dust suppression methods and proper housekeeping.	Throughout site establishment-, and operational phase.	Dust generation on site must be managed in accordance with the: ❖ NEM:AQA, 2004 Regulation 6(1) ❖ National Dust Control Regulations, GN No R827 ❖ ASTM D1739 (SANS 1137:2012)
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Drilling and blasting. ❖ Excavation, loading and hauling to the processing plant.	❖ Noise nuisance generated by earthmoving machinery. ❖ Noise nuisance because of blasting. ❖ Noise nuisance because of the mining activities.	Control: Noise suppression methods and proper housekeeping.	Throughout site establishment-, and operational phase.	Noise generation on site must be managed in accordance with the: ❖ NEM:AQA, 2004 Regulation 6(1) ❖ NRTA, 1996

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
❖ Crushing, washing, stockpiling and transporting of material. ❖ Cumulative impact	❖ Noise nuisance stemming from operation of the processing plant. ❖ Cumulative noise nuisance when quarry and construction of the MNWP WEF occur simultaneously.			
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Crushing, washing, stockpiling and transporting of material. ❖ Cumulative impact ❖ Sloping and landscaping during rehabilitation phase.	❖ Infestation of the topsoil heaps and mining area with weeds or invader plant species. ❖ Infestation of the area with invader plant species. ❖ Cumulative impact of invader plants in both the quarry and MNWP WEF footprints. ❖ Infestation of the reinstated areas by weeds and invader plant species.	Control & Remedy: Implementation of an invasive plant species management plan.	Throughout operational- and decommissioning phases.	Weeds and invader plants on site must be managed in accordance with the: ❖ CARA, 1983 ❖ NEM:BA, 2004
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Excavation, loading and hauling to the processing plant. ❖ Crushing, washing, stockpiling and transporting of material. ❖ Sloping and landscaping during rehabilitation phase.	❖ Potential contamination of footprint area and surface runoff because of hydrocarbon spillages/bad waste management practices. ❖ Soil contamination from hydrocarbon spills and/or littering. ❖ Potential contamination of environment due to improper waste management.	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan.	Throughout operational- and decommissioning phases.	Mining related waste must be managed in accordance with the: ❖ NWA, 1998 ❖ NEM:WA, 2008

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
	❖ Potential impact associated with litter/waste left at the mining area.			
❖ Site establishment & infrastructure development. ❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Processing, stockpiling and transporting of material.	❖ Potential change of natural runoff and drainage patterns. ❖ Direct physical loss or modification of the watercourses and/or wetland should the buffer zone not be maintained.	Control: Implementing the SWMP.	Throughout site establishment-, and operational phase.	Any water related matters must be managed in accordance with the: ❖ NWA, 1998 ❖ GA conditions
❖ Drilling and blasting. ❖ Excavation, loading and hauling to the processing plant. ❖ Sloping and landscaping during rehabilitation phase.	❖ Health and safety risk posed by blasting activities. ❖ Unsafe working environment for employees. ❖ Safety risk posed by un-sloped areas.	Stop & Control: Adherance to the blasting rules and regulations, demarcation of the mining area and proper housekeeping.	Throughout operational- and decommissioning phases.	Health and safety aspects on site must be managed in accordance with the: ❖ MHSA, 1996 ❖ OHSA, 1993 ❖ OHSAS 18001 ❖ USBM standards
❖ Cumulative Impacts	❖ Presence of mining contractor negatively affecting safety and security of the surrounding properties.	Control, Stop & Remedy: Implementing proper human resources practices.	Throughout site establishment-, and operational phases.	All mining activities must be in accordance with the: ❖ MPRDA, 2002; ❖ NEMA, 1998
❖ Crushing, washing, stockpiling and transporting of material.	❖ Increased fire due to mining activities.	Control & Stop: Control activities that may have a fire risk and snuff fires that may occur.	Throughout operational phase.	Management of the mining activities must be in accordance with the: ❖ MPRDA, 2008 NEMA, 1998

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.

The decommissioning phase will entail the reinstatement of the processing area by removing the stockpiled material, and site infrastructure/equipment and landscaping the disturbed footprints. Due to the impracticality of importing large volumes of fill to restore the excavation to its original topography, the rehabilitation option is to develop the quarry into a minor landscape feature. This will entail creating a series of irregular benches along the quarry faces, the top edges of each face being blasted away to form scree slopes on the benches below, thereby reducing the overall face angle. The benches will be top-dressed with topsoil and vegetated with an appropriate indigenous grass mix if vegetation does not naturally establish in the area within six months of the replacement of the topsoil. The applicant will comply with the minimum closure objectives as prescribed by DMRE.

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

The Draft Basic Assessment Report including all the environmental objectives in relation to closure was available for perusal by the landowner, I&AP's and stakeholders over a 30-days commenting period. Subsequently, the comments received on the DBAR were incorporated into this report, the FBAR, to be submitted to the DMRE for decision making.

(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 requested rehabilitation plan is attached as Appendix D.

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

The decommissioning phase will entail the final rehabilitation of the mining site. Final landscaping, levelling and top dressing will be done on all areas to be rehabilitated. The rehabilitation of the mining area as indicated by the rehabilitation plan attached as Appendix D will comply with the minimum closure objectives as prescribed by DMRE and detailed below, and therefore is deemed to be compatible:

Rehabilitation of the excavated area:

- The excavated area must serve as a final depositing area for the placement of overburden.
- Rocks and coarse material removed from the excavation must be dumped into the excavation.
- No waste may be permitted to be deposited in the excavations.
- Once overburden, rocks and coarse natural materials has been added to the excavation and it was profiled with acceptable contours and erosion control measures, the topsoil previously stored must be returned to its original depth over the area.
- The area must be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within 6 months from closure of the site.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager (DMRE) may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification

Rehabilitation of the Processing Area:

- Coarse natural material used for the construction of ramps must be removed and dumped into the excavations.
- Stockpiles must be removed during the decommissioning phase, the area ripped, and the topsoil returned to its original depth to provide a growth medium.
- On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002):
  - Where sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.
  - The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.
- Photographs of the camp and office sites, before and during the mining operation and after rehabilitation, shall be taken at selected fixed points and kept on record for the information of the DMRE Regional Manager. _
- On completion of mining operations, the surface of these areas, if compacted due to hauling and dumping operations, shall be scarified to a depth of at least 200mm

and graded to an even surface condition. Where applicable/possible topsoil needs to be returned to its original depth over the area.

- The area shall then be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local, adapted indigenous seed mix.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the DMRE Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a seed mix to his or her specification.

Final rehabilitation:

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

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

The calculation of the quantum for financial provision was according to Section B of the working manual.

Mine type and saleable mineral by-product

According to Tables B.12, B.13 and B.14

Mine type	Aggregate, gravel and stone
Saleable mineral by-product	None

Risk ranking

According to Tables B.12, B.13 and B.14

Primary risk ranking (either Table B.12 or B.13)	C (Low risk).
Revised risk ranking (B.14)	N/A

Environmental sensitivity of the mine area

According to Table B.4

Environmental sensitivity of the mine area	Low

Level of information

According to Step 4.2:

Level of information available	Extensive

Identify closure components

According to Table B.5 and site-specific conditions

Component No.	Main description	Applicability of closure components (Circle Yes or No)	
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)	-	**NO**
2(A)	Demolition of steel buildings and structures	-	**NO**
2(B)	Demolition of reinforced concrete buildings and structures	-	**NO**
3	Rehabilitation of access roads	-	**NO**
4(A)	Demolition and rehabilitation of electrified railway lines	-	**NO**
4(B)	Demolition and rehabilitation of non-electrified railway lines	-	**NO**
5	Demolition of housing and facilities	-	**NO**
6	Opencast rehabilitation including final voids and ramps	**YES**	-
7	Sealing of shafts, adits and inclines	-	**NO**
8(A)	Rehabilitation of overburden and spoils	-	**NO**
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing)	-	**NO**
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich)	-	**NO**
9	Rehabilitation of subsided areas	-	**NO**
10	General surface rehabilitation, including grassing of all denuded areas	**YES**	-
11	River diversions	-	**NO**
12	Fencing	-	**NO**
13	Water management (Separating clean and dirty water, managing polluted water and managing the impact on groundwater)	-	**NO**
14	2 to 3 years of maintenance and aftercare	**YES**	-

Unit rates for closure components

According to Table B.6 master rates and multiplication factors for applicable closure components. The master rate from the DMRE Master Rates Table for Financial Provision of 2025 was used.

Component No.	Main description	Master rate	Multiplication factor
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)	-	-
2(A)	Demolition of steel buildings and structures	-	-
2(B)	Demolition of reinforced concrete buildings and structures	-	-
3	Rehabilitation of access roads	-	-
4(A)	Demolition and rehabilitation of electrified railway lines	-	-
4(B)	Demolition and rehabilitation of non-electrified railway lines	-	-
5	Demolition of housing and facilities	-	-
6	Opencast rehabilitation including final voids and ramps	338 597	0.04
7	Sealing of shafts, adits and inclines	-	-
8(A)	Rehabilitation of overburden and spoils	-	-
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing)	-	-
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich)	-	-
9	Rehabilitation of subsided areas	-	-
10	General surface rehabilitation, including grassing of all denuded areas	178 817	1.00
11	River diversions	-	-
12	Fencing	-	-
13	Water management (Separating clean and dirty water, managing polluted water and managing the impact on groundwater)	-	-
14	2 to 3 years of maintenance and aftercare	23 797	1.00

Determine weighting factors

According to Tables B.7 and B.8

Weighting factor 1: Nature of terrain/accessibility	1.10
Weighting factor 2: Proximity to urban area where goods and services are to be supplied	1.05

Calculation of closure costs

Table B.10 Template for Level 2: "Rules-based" assessment of the quantum for financial provision

Table 36: Calculation of closure cost

CALCULATION OF THE QUANTUM							
Mine:	Mulilo Newcastle Mining Rights Quarry			**Location:**	Newcastle		
Evaluators:	C Fouché			**Date:**	23 January 2025		
No	**Description**	**Unit**	**A Quantity**	**B Master rate**	**C Multiplication factor**	**D Weighting factor 1**	**E=A *B*C*D Amount (Rand)**
			Step 4.5	**Step 4.3**	**Step 4.3**	**Step 4.4**	
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)	m^2	0	23	1.00	1.10	R 0.00
2(A)	Demolition of steel buildings and structures	m^2	0	323	1.00	1.10	R 0.00
2(B)	Demolition of reinforced concrete buildings and structures	m^2	0	476	1.00	1.10	R 0.00
3	Rehabilitation of access roads	m^2	0	58	1.00	1.10	R 0.00
4(A)	Demolition and rehabilitation of electrified railway lines	m	0	561	1.00	1.10	R 0.00
4(B)	Demolition and rehabilitations of non-electrified railway lines	m	0	306	1.00	1.10	R 0.00
5	Demolition of housing and/or administration facilities	m^2	0	646	1.00	1.10	R 0.00
6	Opencast rehabilitation including final voids and ramps	ha	4	338 597	0.04	1.10	R 59 593.05
7	Sealing of shaft, audits and inclines	m^3	0	174	1.00	1.10	R 0.00
8(A)	Rehabilitation of overburden and spoils	ha	0	225 731	1.00	1.10	R 0.00
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing waste)	ha	0	281 144	1.00	1.10	R 0.00
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste)	ha	0	816 575	0.51	1.10	R 0.00

9	Rehabilitation of subsided areas	ha	0	189 016	1.00	1.10	R 0.00
10	General surface rehabilitation	ha	0.9	178 817	1.00	1.10	R 177 028.53
11	River diversions	ha	0	178 817	1.00	1.10	R 0.00
12	Fencing	m	0	204	1.00	1.10	R 0.00
13	Water Management	ha	0	67 992	0.17	1.10	R 0.00
14	2 to 3 years of maintenance and aftercare	ha	4.9	23 797	1.00	1.10	R 128 265.83
15(A)	Specialists study	Sum	0				R 0.00
15(B)	Specialists study	Sum	0				R 0.00
Sum of items 1 to 15 above							R 364 887.41
Multiply Sum of 1-15 by Weighting factor 2 (Step 4.4)		1.05		R 364 887.41		**Sub Total 1**	R 383 131.78

1	Preliminary and General	6% of Subtotal 1 if Subtotal 1 <R100 000 000.00	R 22 987.91
		12% of Subtotal 1 if Subtotal 1 >R100 000 000.00	-
2	Contingency	10.0% of Subtotal 1	R 38 313.18
		Sub Total 2 (Subtotal 1 plus management and contingency)	R 444 432.87
		Vat (15%)	R66 664.93
		GRAND TOTAL (Subtotal 3 plus VAT)	**R 511 097.80**

The amount that will be necessary for the rehabilitation of damages caused by the operation, both sudden closures during the normal operation of the project and at final, planned closure gives a sum of **R 511 097.80.**

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

Herewith I, the person, whose name is stated below confirm that I am the person authorised to act as representative of the Applicant in terms of the resolution submitted with the application. I herewith confirm that the company will provide the amount that will be determined by the Regional Manager in accordance with the prescribed guidelines.

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

g) Monitoring of Impact Management Actions
h) Monitoring and reporting frequency
i) Responsible persons
j) Time period for implementing impact management actions
k) Mechanisms for monitoring compliance

Table 37: Mechanisms for monitoring compliance with and performance assessment against the EMPR and reporting thereon.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
Demarcation of site with visible beacons	Maintenance of beacons	❖ Beacons to place at the corners of the mining area.	Responsibility: ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Role: ❖ Ensure beacons are in place throughout the life of the mine.	Applicable throughout site establishment-, operational-, and decommissioning phases. ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.
❖ Site establishment and infrastructure development**.**	**Land Use:**	❖ Mining schedule.	Responsibility: ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.	Applicable throughout site establishment-, operational-, and decommissioning phases.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
	❖ Loss of agricultural land for duration of mining.		❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Role: ❖ If needed, sign mined/rehabilitated areas back to grazing once the grass layer stabilised.	❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.
❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil and overburden. ❖ Excavation, loading and hauling to the processing plant. ❖ Cumulative impact.	**Visual Characteristics** ❖ Visual intrusion because of site establishment. ❖ Visual intrusion caused by mining activities. ❖ Visual intrustion assoiated with the excavation activities. ❖ Cumulative visual impact when quarry and MNWP WEF is developed.	❖ Parking areas for equipment. ❖ Good housekeeping practices.	Responsibility: ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Role: ❖ Ensure that the site have a neat appearance and is always kept in good condition. ❖ Store mining equipment in a dedicated area when not in use. ❖ Limit vegetation removal, and only strip topsoil immediately prior to the mining/use of a specific area. ❖ Contain excavations to the approved footprint of the permitted area. ❖ Upon closure, rehabilitate the site to ensure that the visual impact on the aesthetic value of the area is reduced to the minimum.	Applicable throughout site establishment-, operational-, and decommissioning phases. ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Cumulative impacts.	❖ Impact on vegetation structure and plant species composition. ❖ Impact on protected plant species within mining footprint. ❖ Cumulative impact on overall species and ecosystem diversity.	❖ Visible beacons indicating the boundary of the mineable area. ❖ Removal permit to relocate protected species. ❖ Indigenous grass mix to seed reinstated areas upon closure.	<u>Responsibility:</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Botanist to identify plants of importance. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Role:</u> ❖ Clearly demarcate the mining boundaries and contain all operations to the approved mining area. Declare the area outside the mining boundaries a no-go area and educate all staff accordingly. ❖ Commit to a conservation approach and keep the actual footprint of disturbance to a minimum. ❖ Arrange a pre-commencement environmental induction for all staff on site to ensure that basic environmental principles are adhered to. This must include awareness of no littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, minimising wildlife interactions, remaining within demarcated construction areas, etc. ❖ Arrange a pre-commencement walkthrough by an ecologist to identify and demarcate important species to be relocated and sub habitats that may not be disturbed. ❖ Species occurring on the site that may be affected by the development include *Gladiolus ecklonii, Raphionacme hirsuta, Dierama galpinii, Aloe maculata, Schizocarpus nervosus* and *Crinum macowanii*. Where	Applicable throughout site establishment-, operational-, and decommissioning phases. ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			development will affect these species, obtain the necessary permits and transplant a significant proportion of these too adjacent areas where it will remain unaffected. ❖ Incorporate the mining permit area into the protected species transplanting process of the surrounding proposed Wind Energy Facility (WEF). ❖ Only commence with bush-clearance once the plant permits were received, and the important plants were relocated by a suitably qualified person. ❖ Do not allow grubbing as a method of clearing vegetation. Cut any trees that need to be cleared using chain saws and hauled it from the site using appropriate machinery where practically possible. ❖ Only commence with bush-clearance once the plant permits were received, and the important plants were relocated by a suitably qualified person. ❖ Do not burn cleared vegetation to be retained at any time but rather mulch and stockpiled it. Ideally cover the heaps with stockpiled topsoil and retain the material for future site rehabilitation. ❖ Arrange that the ECO provide supervision and oversight of vegetation clearing activities and other activities which may cause damage to the environment, especially during the site establishment phase, when most of the vegetation clearing takes place. ❖ Ensure all vehicles remain on demarcated roads and prevent unnecessary driving in the veld outside these areas.	

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			❖ Do not translocated, uprooted, or disturbed plants for rehabilitation or other purposes without express permission from the ECO and without the relevant permits. ❖ Do not allow fires on-site. ❖ Provide spoil heaps and topsoil stockpiles with a vegetation cover of indigenous grasses. ❖ Generate a biodiversity protocol and rehabilitation plan that can be implemented upon closure.	
❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil and/or oberburden. ❖ Cumulative impacts.	**Fauna Management**	❖ Toolbox talks to educate employees how to handle fauna that enter the work areas.	Responsibility: ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Role: ❖ Ensure no fauna is caught, killed, harmed, sold, or played with. ❖ The ECO or other suitably qualified person must remove any fauna directly threatened by the operational activities to a safe location. ❖ Arrange a suitably trained individual to undertake the handling and relocation of any animal perceived to be dangerous/venomous/poisonous. ❖ Arrange that all personnel undergo environmental induction regarding fauna management and in particular awareness about not harming or collecting species such as snakes, tortoises and owls which are	Applicable throughout site establishment-, and operational phases. ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			often persecuted out of superstition. Instruct workers to report any animals that may be trapped in the working area. ❖ Ensure no snares are set or nests raided for eggs or young. ❖ Ensure all vehicles adhere to a low speed limit to avoid collisions with susceptible species such as snakes and tortoises. ❖ Prevent litter, food or other foreign material thrown or left around the site. Keep such items in the site vehicles and daily removed it to the site camp.	
❖ Site establishment and infrastructure development. ❖ Excavation, loading and hauling to the processing plant.	**Cultural and Heritage Environment.**	❖ Contact number of an archaeologist & palaeontologist that can be contacted when a discovery is made on site.	Responsibility: ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Role: ❖ Confine all mining to the development footprint area. ❖ Implement the following change find procedure when discoveries are made on site: ▪ If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find	Applicable throughout site establishment-, and operational phases. ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			to their immediate supervisor, and through their supervisor to the senior on-site manager. ▪ It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find and confirm the extent of the work stoppage in that area. ▪ The senior on-site Manager will inform the ECO of the chance find and its immediate impact on operations. The ECO will then contact a professional archaeologist for an assessment of the finds who will notify the AMAFA. ▪ Work may only continue once the go-ahead was issued by AMAFA. ❖ Implement the Chance Find Protocol that forms part of the desktop HIA (attached as Appendix G).	
❖ Stripping and stockpiling of topsoil and/or vegetation.	**<u>Geology and Soil:</u>** ❖ Loss of stockpiled topsoil during mining and stockpiling.	❖ Earthmoving equipment to strip, stockpile and spread the topsoil. ❖ Stormwater control infrastructure. ❖ Designated team to control weeds/invader plant species that may germinate on the topsoil heaps. ❖ Cover crop to vegetate topsoil heaps (when	<u>Responsibility:</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Role:</u> ❖ Strip and stockpile the upper 300 mm of the soil before mining. ❖ Carefully manage and conserve the topsoil throughout the stockpiling and rehabilitation process.	Applicable throughout site establishment-, operational-, and decommissioning phases. ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
		needed) and reinstated soil.	❖ Ensure topsoil stripping, stockpiling, and re-spreading is done in a systematic way. Plan mining in such a way that topsoil is stockpiled for the minimum possible time. ❖ Place the topsoil on a levelled area, within the mining footprint. Do not stockpile topsoil in undisturbed areas. ❖ Protect topsoil stockpiles against losses by water- and wind erosion. Position stockpiles so it is not vulnerable to erosion by wind and water. The establishment of plants (indigenous grass) on the stockpiles will help to prevent erosion. ❖ Ensure that topsoil heaps do not exceed 1.5 m and not sloped more than 1:2 to avoid collapse. ❖ Keep temporary topsoil stockpiles free of invasive plant species. ❖ Vegetate the topsoil heaps to be stored longer than 3 months with an indigenous grass seed mix if vegetation does not naturally germinate within the first growth season. ❖ Divert storm- and runoff water around the on-site stockpile area to prevent erosion. ❖ Spread the topsoil evenly, to a depth of 300 mm, over the rehabilitated area upon closure of the site. ❖ Only use topsoil removed during the site establishment phase to rehabilitate the disturbed surface. ❖ Strive to re-instate topsoil at a time of the year when vegetation cover can be established as quickly as possible afterwards, to that erosion of returned topsoil is minimized. The best time of year is at the end of the rainy season.	

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			❖ Plant a grass layer (indigenous) immediately after spreading topsoil to stabilise the soil and protect it from erosion. Fertilise the grass layer for optimum production. Rehabilitation extends until the first grass layer is well established. ❖ Control run-off water with temporary banks, where necessary, to prevent accumulation of run-off causing down-slope erosion. ❖ Monitor the rehabilitated area for erosion, and appropriately stabilize if erosion do occur, for at least 12 months after reinstatement.	
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Drilling and blasting. ❖ Excavation, loading and hauling to the processing plant. ❖ Crushing, washing, stockpiling and transporting of material. ❖ Cumulative impact	**Air and Noise Quality** ❖ Dust nuisance because of the disturbance of soil. ❖ Dust nuisance caused by blasting activities. ❖ Dust nuisance due to excavation and from loading and vehicles transporting the material. ❖ Dust nuisance generated at the processing plant. ❖ Cumulative dust nuisance when quarry is operational and	❖ Dust suppression equipment such as a water car, water dispenser and sprayers on the crusher plant. ❖ Signage that clearly reduce the speed on the access roads.	Responsibility: ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Role: ❖ Control the liberation of dust into the surrounding environment using; inter alia, water spraying and/or other dust-allaying agents. ❖ Daily assess the efficiency of all dust suppression equipment. ❖ Limit speed on the haul roads to 20 km/h and 40 km/h on the access road to prevent the generation of excess dust. ❖ Minimise areas devoid of vegetation and only remove vegetation immediately prior to mining.	Applicable throughout site establishment-, and operational phases. ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
	construction of the MNWP WEF commences.		❖ Install water sprayers at the crusher plant to alleviate dust generation from the conveyor belts. ❖ Minimise fines, blowing from the drop end of the crusher plant by attaching strips of used conveyor belts to the conveyor's end. ❖ Weekly remove compacted dust from the crusher plant to eliminate the dust source. ❖ Consider weather conditions upon commencement of daily operations. Limit operations during very windy periods to reduce airborne dust and resulting impacts. ❖ Ensure dust generating activities comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM:AQA, 2004 and ASTM D1739 (SANS 1137:2012). ❖ Implement best practice measures during the stripping of topsoil, excavation, and transporting of material from site to minimize potential dust impacts.	
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Drilling and blasting. ❖ Excavation, loading and hauling to the processing plant. ❖ Crushing, washing,	<u>Air and Noise Quality</u> ❖ Noise nuisance generated by earthmoving machinery. ❖ Noise nuisance because of blasting. ❖ Noise nuisance because of the mining activities.	❖ Signage indicating noise zones. ❖ Silencers fitted to all project related vehicles, and the use of vehicles that are in road worthy condition in terms of the National Road Traffic Act, 1996.	<u>Responsibility:</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Role:</u> ❖ Ensure that employees and staff conduct themselves in an acceptable manner while on site. ❖ No loud music may be permitted at the mining area.	Applicable throughout site establishment-, and operational phases. ❖ Daily compliance monitoring by site management. Annual compliance monitoring of site by an Environmental Control Officer.

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stockpiling and transporting of material. ❖ Cumulative impact	❖ Noise nuisance stemming from operation of the processing plant. ❖ Cumulative noise nuisance when quarry and construction of the MNWP WEF occur simultaneously.	❖ Noise mufflers fitted to generators.	❖ Ensure that all project related vehicles are equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996. ❖ Plan the type, duration, and timing of the blasting procedures with due cognizance of other land users and structures in the vicinity. Notify the surrounding landowners in writing prior to each blasting occasion. ❖ Contract a qualified occupational hygienist to quarterly monitor and report on the personal noise exposure of the employees working at the mine. Monitoring must be in accordance with SANS 10083:2004 (Edition 5) sampling method as well as NEM:AQA 2004, SANS 10103:2008. ❖ Minimise the noise caused by generators. Maintain and equip all generators with sound mufflers, and if possible, point the generators away from the neighbouring land users. Place all generators on a level area/footing to minimise vibration noise. ❖ Implement best practice measures to minimise potential noise impacts. ❖ Restrict work hours from 07:00 to 18:00 Monday to Friday. Do not blast work on weekends or afterhours.	
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Crushing, washing, stockpiling and	<u>Terrestrial biodiversity (including fauna and flora)</u> ❖ Infestation of the topsoil heaps and mining area with	❖ Designated team to cut or pull out invasive plant species that germinated on site. ❖ Herbicide application equipment.	<u>Responsibility:</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.	Applicable throughout site establishment-, operational-, and decommissioning phases.

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transporting of material. ❖ Cumulative impact ❖ Sloping and landscaping during rehabilitation phase.	weeds or invader plant species. ❖ Infestation of the area with invader plant species. ❖ Cumulative impact of invader plants in both the quarry and MNWP WEF footprints. ❖ Infestation of the reinstated areas by weeds and invader plant species.		<u>Role:</u> ❖ Implement an invasive plant species management plan to control all invasive plant species on site in terms of NEM:BA, 2004 and CARA, 1983. Do weed/alien ongoing clearing on throughout the life of the mining activities. ❖ Do not allow planting or importing of any alien species to the site for landscaping, rehabilitation, or any other purpose. ❖ Keep all stockpiles (topsoil & overburden) free of invasive plant species. ❖ Control declared invader or exotic species on the rehabilitated areas. ❖ Only use herbicides that are certified safe for use in aquatic environments by an independent testing authority.	❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.
❖ Stripping and stockpiling of topsoil and overburden. ❖ Excavation, loading and hauling to the processing plant. ❖ Crushing, washing, stockpiling and transporting of material.	<u>Hydrology</u> ❖ Potential increase in runoff from bare areas and associated accelerated erosion. ❖ Facilitation of erosion due to mining activities. ❖ Potential increase in runoff from bare areas and associated accelerated erosion.	❖ Storm water management structures such as berms to direct storm- and runoff water around work areas.	<u>Responsibility:</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Role:</u> ❖ Implement a stormwater management plan for the duration of the mining activities. ❖ Limit clearing of vegetation to the proposed mining footprint and associated infrastructure. Ensure no	Applicable throughout site establishment-, operational-, and decommissioning phases. ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.

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❖ Sloping and landscaping during rehabilitation.	❖ Loss of stockpiled material due to ineffective stormwater control. ❖ Erosion of returned topsoil after rehabilitation.		clearing takes place outside the minimum required footprint. ❖ Place vegetation clearing on hold when heavy rains are expected. ❖ Divert stormwater around the topsoil heaps and mining areas to prevent erosion. ❖ Protect stockpiles from erosion and store it on flat areas surrounded by appropriate berms where possible. ❖ Ensure that adequate slope protection is provided when mining within steep slopes. ❖ Control the outflow of run-off water from the mining excavation to prevent down-slope erosion, by constructing temporary banks and ditches that will direct run-off water (if needed). These must be in place at any points where overflow out of the excavation might occur. ❖ Do not discharge dirty water emanating from the quarry into the natural environment or any watercourse. Channel all runoff into the stormwater system. ❖ Regularly monitor roads and other disturbed areas within the project for erosion and ensure problem areas receive follow-up monitoring to assess the success of the remediation. ❖ Rectify erosion problems within the mining area because of the mining activities immediately (within 48 hours) and monitored thereafter to ensure that it does not re-occur. ❖ Use silt/sediment traps/barriers where there is a danger of topsoil or material stockpiles eroding and entering downstream drainage lines and other sensitive areas.	

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			Regularly maintain and clear the sediment/silt barriers to ensure effective drainage of the areas. ❖ Conduct activity in terms of the Best Practice Guidelines for small-scale mining as developed by DWS. ❖ Contain all fuels and chemicals stored or used on site in fit for purpose containers and store within designated storage areas. Ensure the designated storage areas are situated on an impermeable surface with a perimeter bund and a drainage sump. Size the volume of the bund and sump to contain at least 110% of the total volume of the fuel and chemicals being stored within the designated storage area. Ensure that the storage areas have a roof to prevent inflow of rainwater, which would require the sump to be emptied more frequently. ❖ Re-vegetate all exposed/bare surfaces and embankments once shaped. If revegetation of exposed surfaces cannot take place immediately, temporary erosion, and sediment control measures must be installed and maintained until such time that revegetation can commence. ❖ Monitor all erosion and sediment control measures weekly for the life of the operation and repaired immediately when damaged. Only remove the erosion and sediment control structures once vegetation cover has successfully recolonised the affected areas. ❖ After heavy rainfall events, check the site for erosion damage and rehabilitate this damage immediately. Fill in erosion rills and gullies with appropriate material and/or silt fences until vegetation has recolonised the rehabilitated area.	

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			❖ Check the water sump of the washing plant every month to assess the amount of sediment collected. Remove sediment at a predetermined depth of sediment and stockpiled separately or deposit into the excavation.	
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Excavation, loading and hauling to the processing plant. ❖ Crushing, washing, stockpiling and transporting of material. ❖ Sloping and landscaping during rehabilitation phase.	<u>Waste Management</u> ❖ Potential contamination of footprint area and surface runoff because of hydrocarbon spillages/bad waste management practices. ❖ Soil contamination from hydrocarbon spills and/or littering. ❖ Potential contamination of environment due to improper waste management. ❖ Potential impact associated with litter/waste left at the mining area.	❖ Oil spill kit. ❖ Drip trays. ❖ Formal waste disposal system with waste registers.	<u>Responsibility:</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Role:</u> ❖ Ensure regular vehicle maintenance, repairs and services only take place at the workshop and service area. Ensure drip trays are present if emergency repairs are needed on equipment not able to move to the workshop. Dispose all waste products in a closed container/bin to be removed from the emergency service area (same day) to the workshop in order to ensure proper disposal. Treat this as hazardous waste and dispose of it at a registered hazardous waste handling facility, alternatively arrange collection by a registered hazardous waste handling contractor. File safe disposal certificates for auditing purposes. ❖ If a diesel bowser is used on site, equip it with a drip tray at all times. Use drip trays during each and every refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling.	Applicable throughout site establishment-, operational-, and decommissioning phases. ❖ Daily compliance monitoring by site management. Annual compliance monitoring of site by an Environmental Control Officer.

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			❖ Ensure mixing and/or decanting of all chemicals and hazardous substances take place on an impermeable surface that is protected from the ingress and egress of stormwater. ❖ Ensure drip trays are cleaned after each use. Do not allow dirty drip trays to be used on site. Dispose of dirty rags used to clean the drip trays as hazardous waste into a designated bin at the workshop, where it is incorporated into the hazardous waste removal system. ❖ Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and remove it from the site, either for resale or for appropriate disposal at a registered facility. File proof. ❖ Obtain an oil spill kit and train the employees in the emergency procedures to follow when a spill occurs as well as the application of the spill kit. ❖ Clean spills immediately, within two hours of occurrence by removing the spillage together with the polluted soil and containing it in a designated hazardous waste bin until it is disposed of at a registered facility. File proof. ❖ Ensure suitable covered receptacles are available at all times and conveniently placed for the disposal of general waste. ❖ Store non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., in a container with a closable lid at a collecting point to be collected at least once a month and disposed of at a recognized landfill site. Take specific precautions to prevent refuse from being dumped on or in the vicinity of the mine area. File proof of disposal.	

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			❖ Handle biodegradable refuse as indicated above. ❖ Encourage re-use or recycling of waste products. ❖ Do not bury or burn waste on the site. ❖ Provide ablution facilities in the form of a chemical toilet/s. Anchor the chemical toilet (to prevent blowing/falling over) and arrange that it is serviced at least once a week for the duration of the mining activities by a registered liquid waste handling contractor. File the safe disposal certificates. ❖ Ensure that the use of any temporary, chemical toilet facilities do not cause any pollution to water sources or pose a health hazard. In addition, ensure that no form of secondary pollution arise from the disposal of refuse or sewage from the temporary, chemical toilets. Address any pollution problems arising from the above immediately. ❖ Do not discharge water containing waste into the natural environment. ❖ Implement measures to contain the waste water and safely dispose thereof. ❖ Report any significant spillage of chemicals, fuels etc. during the lifespan of the mining activities to the Department of Water and Sanitation and other relevant authorities. ❖ Implement the use of waste registers to keep record of the waste generated and removed from the mining area.	
❖ Site establishment and	<u>Hydrology:</u>	❖ General Authorisation approved by the DWS.	<u>Responsibility:</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.	Applicable throughout site establishment-, and operational phases.

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infrastructure development. ❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Cumulative impacts.	❖ Potential change of natural runoff and drainage patterns. ❖ Direct physical loss or modification of the watercourses and/or wetland should the buffer zone not be maintained.	❖ Stormwater Management Plan.	❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Role:</u> ❖ Acquire the necessary authorisations from the DWS for mining activities within 100 metres of any of the delineated watercourses around the site. ❖ Treat the seasonal stream and drainage line adjacent to BP1, as identified by the hydrologist, as no-go areas and do not allow any mining activities, including construction or operational activities, vehicle movement, laydown areas, vegetation clearing or any other associated activities in or near these watercourses. ❖ Maintain a buffer of 47 metres from the edge of the riparian zone along these watercourses and treat the buffer area as a no-go area. ❖ Only utilise existing roads and tracks where mining operations require crossing of the watercourses. ❖ Re-instate a natural vegetation layer where it was disturbed/removed. ❖ Implement adequate storm water management measures including diverting storm- and floodwater around operational and excavation areas and preventing sediment and silt from entering any of the delineated watercourses. ❖ To prevent an increase in surface water flow velocity: ▪ Ensure that an approved storm water plan is implemented;	❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.

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			▪ Moderate the flow of storm water onto the buffer and wetland features. ❖ To prevent the contamination of the nearby watercourses: ▪ Notify the CM and ECO immediately of any pollution incidents on site. ▪ Prevent discharge of any pollutants, such as cement, concrete, lime chemicals and fuels into any water source. ❖ Ensure that structures like berms are built to prevent soil from entering wetlands as this can result in sedimentation.	
❖ Drilling and blasting; ❖ Excavation, loading and hauling to the processing plant; ❖ Sloping and landscaping during rehabilitation.	<u>Health and Safety:</u> ❖ Health and safety risk posed by blasting activities. ❖ Unsafe working environment for employees. ❖ Safety risk posed by un-sloped areas.	❖ Stocked first aid box. ❖ Level 1 certified first aider. ❖ All appointments in terms of the Mine Health and Safety Act, 1996. ❖ Vibro recorder.	<u>Responsibility:</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Role:</u> ❖ Ensure that workers have access to the correct PPE as required by law. ❖ Locate sanitary facilities within 100 m from any point of work. ❖ Manage all operations in compliance with the Mine Health and Safety Act, 1996 (Act No 29 of 1996). ❖ Plan the type, duration, and timing of blasting with due cognizance of other land users and structures in the vicinity.	Applicable throughout operational-, and decommissioning phases. ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.

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			❖ Inform the surrounding landowners and communities in writing ahead of any blasting event. ❖ Monitor the compliance of ground vibration and airblast levels to USBM standards with each blasting event. ❖ Record all blasts with a vibro recorder. ❖ Give audible warning of a pending blast at least 3 minutes in advance of the blast. ❖ Limit fly rock and collect and remove flyrock and rock spill that falls beyond the working area.	
❖ Cumulative Impacts	**General:** Presence of mining contractor negatively affecting safety and security of the surrounding properties.	❖ Signage restricting entry to the mining area. ❖ Toolbox talks regarding safety and security. ❖ Community based discussion forums such as Whatsapp groups.	Role: ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Responsibility: ❖ Screen employees to be appointed prior to inception of contract. ❖ Do not allow employees to reside within the mining area. ❖ Educate mining employees to report suspicious looking person/s and/or matters to site management. ❖ Maintain direct communication between the mining contractor and the landowner for the duration of the site establishment-, operational, and decommissioning phases. ❖ Do not enter negotiations with farm employees.	Applicable throughout operational-, and decommissioning phases. ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.

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			❖ Restrict mining to normal business hours unless otherwise authorised by the landowner. ❖ Ban alcohol and/or prohibited drugs from site. ❖ Maintain attendance registers, and pre-register all mining vehicles/machinery with the landowner/security. ❖ Do not allow firearms on site.	
❖ Crushing, washing, stockpiling and transporting of material.	<u>Fire Management</u> ❖ Increased fire due to mining activities.	❖ Fire fighting equipment. ❖ Fire fighting training for employees.	<u>Responsibility:</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Role:</u> ❖ Do not permit open fires on site. ❖ Ensure fire prevention facilities are present at all hazardous storage facilities. ❖ Ensure adequate fire-fighting equipment is available and train workers on how to use it. ❖ Ensure that all workers on site know the proper procedure in case of a fire occurring on site. ❖ Do not permit smoking in areas considered to be a fire hazard. ❖	Applicable throughout site establishment, and operational phase. ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.
❖ Sloping and landscaping during rehabilitation.	<u>Topography:</u> ❖ Landscaping of mining area.	❖ Earthmoving equipment to reinstate mined areas.	<u>Responsibility:</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.	Applicable throughout decommissioning phase.

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		❖ Indigenous grass mix to be established on reinstated area. ❖ Erosion control infrastructure (when needed).	❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Role:</u> ❖ Use the excavated area for the final depositing of overburden. ❖ Dump rocks and coarse material removed from the excavation into the excavation. ❖ Remove coarse natural material used for the construction of ramps and dump it into the excavations. ❖ Remove stockpiles during the decommissioning phase, rip the area and return the topsoil to its original depth to provide a growth medium. ❖ Do not permit any waste to be deposited into the excavations. ❖ Return the previously stored topsoil to its original depth, once overburden, rocks and coarse natural materials have been added to the excavation and it was profiled with acceptable contours and erosion control measures. Only use topsoil removed during the site establishment phase to rehabilitate the disturbed surface. ❖ If necessary, fertilize the area to allow vegetation to establish rapidly. Seed the site with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within six months from closure of the site. ❖ If required by the Regional Manager (DMRE) the soil must be analysed and any deleterious effects on the soil arising from the mining operation must be corrected and	❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.

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			the area be seeded with a vegetation seed mix to his/her specification. ❖ On completion of operations, deal with all structures or objects in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002). ❖ On completion of mining operations, scarify the surface of all plant-, stockpiling-, and/or office areas, if compacted due to hauling and dumping operations, to a depth of at least 200mm and graded it to an even surface condition. Where applicable/possible return topsoil to its original depth over the area.	

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

The Environmental Audit Report in accordance with Appendix 7 as prescribed in Regulation 34 of the EIA Regulations, 2014 (as amended) will annually be submitted to DMRE for compliance monitoring purposes or in accordance with the period stipulated by the Environmental Authorisation.

m) Environmental Awareness Plan

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

Once the Applicant received the mining permit and may commence with the proposed activity, a copy of the Environmental Management Programme will be handed to the site manager for his perusal. Issues such as the mining boundaries, fire principals and hazardous waste handling will be discussed.

An induction meeting will be held with all the site workers to inform them of the Basic Rules of Conduct regarding the environment.

ii) Manner in which risk will be dealt with in order to avoid pollution or the degradation of the environment.

The operations manager must ensure that he/she understands the EMPR document and its requirement and commitments before any mining takes place. An Environmental Control Officer needs to check compliance of the mining activity to the management programmes described in the EMPR.

The following list represents the basic steps towards environmental awareness, which all participants in this project must consider whilst carrying out their tasks.

- **Site Management:**
  - Stay within boundaries of site – do not enter adjacent properties.
  - Keep tools and material properly stored.
  - Smoke only in designated areas.
  - Use toilets provided – report full or leaking toilets.

- **Water Management and Erosion:**
  - Check that rainwater flows around work areas and are not contaminated.
  - Report any erosion.

- Check that dirty water is kept from clean water.
- Do not swim in or drink from quarry pits.

❖ **Waste Management:**

- Take care of your own waste
- Keep waste separate into labelled containers – report full bins.
- Place waste in containers and always close lid.
- Don't burn waste.
- Pick-up any litter laying around.

❖ **Hazardous Waste Management (Petrol, Oil, Diesel, Grease)**

- Never mix general waste with hazardous waste.
- Use only sealed, non-leaking containers.
- Keep all containers closed and store only in approved areas.
- Always put drip trays under vehicles and machinery.
- Empty drip trays after rain.
- Stop leaks and spills, if safe:
  - ✓ Keep spilled liquids moving away.
  - ✓ Immediately report the spill to the site manager/supervision.
  - ✓ Locate spill kit/supplies and use to clean-up, if safe.
  - ✓ Place spill clean-up wastes in proper containers.
  - ✓ Label containers and move to approved storage area.

❖ **Discoveries:**

- Stop work immediately.
- Notify site manager/supervisor.
- Includes – archaeological finds, cultural artefacts, contaminated water, pipes, containers, tanks and drums, any buried structures.

❖ **Air Quality:**

- Wear protection when working in very dusty areas.
- Implement dust control measures:
  - ✓ Water all roads and work areas.
  - ✓ Minimize handling of material.
  - ✓ Obey speed limit and cover trucks.

❖ **Driving and Noise:**

- Use only approved access roads.
- Respect speed limits.
- Only use turn-around areas – no crisscrossing through undisturbed areas.
- Avoid unnecessary loud noises.
- Report or repair noisy vehicles.

❖ **Vegetation and Animal life:**

- Do not remove any plants or trees without approval of the site manager.
- Do not collect firewood.
- Do not catch, kill, harm, sell or play with any animal, reptile, bird or amphibian on site.
- Report any animal trapped in the work area.
- Do not set snares or raid nests for eggs or young.

❖ **Fire Management:**

- Do not light any fires on site, unless contained in a drum at demarcated area.
- Put cigarette butts in a rubbish bin.
- Do not smoke near gas, paints or petrol.
- Know the position of firefighting equipment.
- Report all fires.
- Don't burn waste or vegetation.

n) Specific information required by the Competent Authority

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

The Applicant undertakes to annually review and update the financial provision calculation, upon which it will be submitted to DMRE for review and approved as being sufficient to cover the environmental liability at the time and for closure of the mine at that time.

2. UNDERTAKING

The EAP herewith confirms

a) the correctness of the information provided in the reports [X]
b) the inclusion of comments and inputs from stakeholders and I&AP's [X]
c) the inclusion of inputs and recommendations from the specialist reports where relevant, a [X]
d) that the information provided by the EAP to interested and affected parties and any response by the EAP to comments or inputs made by interested and affected parties are correctly reflected herein [X]

Christine Fouché

Signature of the environmental assessment practitioner:

Greenmined Environmental (Pty) Ltd

Name of Company:

14 April 2025

Date:

Docusign Envelope ID: 47C69589-0501-48FA-BFE7-F80308DA55AF

UNDERTAKING

I, Russell Bedford ..... the undersigned and duly authorised thereto by..... *Mulilo Newcastle Mining Rights (Pty) Ltd* .....

Company / ~~Closed Corporation / Municipality or Council~~
(Delete whichever is not applicable)

hereby undertake to implement all the aspects contained in the BAR and EMPR / ~~EIA and EMPR~~ and accept full responsibility therefore.
(Delete whichever is not applicable)

SIGNED at CAPE TOWN ..... on this ..... 14th ..... day ..... of April..... 2025

Signed by:
[redacted]

SIGNATURE

WITNESSES:

1.....

2.....

Official use

APPROVAL

Approved in terms of the National Environmental Management Act (NEMA), 1998 (Act 107 of 1998), as amended.

SIGNED at ..... this ..... day ..... 2025.....

REGIONAL MANAGER

KWAZULU-NATAL

Undertaking/eg

-END-

APPENDIX A

REGULATION 2(2) MINE MAP

APPENDIX B
LOCALITY AND LAND USE MAP

APPENDIX C
SITE ACTIVITIES PLAN

APPENDIX D

REHABILITATION PLAN

APPENDIX E

AGRICULTURAL ASSESSMENT

APPENDIX F

VEGETATION AND WETLAND ASSESSMENT

APPENDIX G

DESKTOP HERITAGE IMPACT ASSESSMENT (INCLUDING PALAEONTOLOGY)

APPENDIX H1

COMMENTS AND RESPONSE REPORT

APPENDIX H2

PROOF OF PUBLIC PARTICIPATION

APPENDIX I

SUPPORTING IMPACT ASSESSMENT

APPENDIX J

FINANCIAL AND TECHNICAL COMPETENCE

APPENDIX K

CLOSURE PLAN

APPENDIX L

INVASIVE PLANT SPECIES MANAGEMENT PLAN

APPENDIX M

PHOTOGRAPHS OF THE PROPOSED SITE

APPENDIX N

CV AND EXPERIENCE RECORD OF EAP