WANSLEY SIYAKHULA (PTY) LTD

PORTION 1 OF FARM NO 652

EAST LONDON MUNICIPAL DISTRICT

EASTERN CAPE PROVINCE

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT & ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

DEPARTMENTAL REFERENCE NUMBER:

EC 30/5/1/2/2/228 MR

JULY 2021

PREPARED FOR:

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EXECUTIVE SUMMARY

Wansley Siyakhula (Pty) Ltd has been a trusted suppliers of weathered dolerite in the greater East London area for the past 20 years. A mining licence was issued to David Peter Coetzer (trading as Wansley Quarries) on 23 March 2000 that was converted to a new order mining right in 2016. In 2020, the mining right was ceded, in terms of Section 11 of the MPRDA, 2002, to Wansley Siyakhula (Pty) Ltd that is the current mining right holder. The mining right is valid until 16 June 2026, with an approved footprint of 5.2149 ha over an area of Portion 1 of Farm No 652, in the East London magisterial district of the Eastern Cape Province.

Wansley Siyakhula (Pty) Ltd submitted a Section 102 ("S102") amendment application in terms of the MPRDA, 2002 to:

- align the mining documentation with the Section 11 approval,
- comply with the latest departmental and legislative requirements,
- add blasting and processing of material to the EMPR,
- add dolerite as a commodity to the mining right, and
- expand the mining footprint to 37.8575 ha.

The S102 application necessitates an application for a Part 2 amendment of the mine's EMPR in terms of GNR 326 Section 31 (NEMA). The S102 application further constitute listed/specified activities in terms of the NEMA: EIA Regulations, 2014 (as amended) and therefore requires an environmental impact assessment (EIA) that informs the competent authority (Department of Mineral Resources and Energy) when considering the environmental authorisation.

The proposed extension area will be developed over a portion of the property that was historically used for pineapple cultivation extending towards the north-west of the current mining area. Presently, it is proposed that should the S102 application be approved, mining will gradually advance into the extension area as the current mining footprint (±5.2 ha) is mined-out. The mining method will make use of blasting in order to loosen the hard rock, the material will then be loaded and hauled out of the excavation to the crushing and screening plant. The dolerite/gravel will be screened to various sized stockpiles from where it will be transported to clients with trucks and trailers. The MR Holder will continue to use the offices, workshops, and store rooms of the farm yard, as well as the processing plant in the mining area. The project proposal is discussed in detail under Part A(1)(d)(ii) *Description of the activities to be undertaken – 2. S102 Application*.

Alternatives:

Project/site alternatives does not apply to the current Wansley operation, as the mine has been in operation since 2000.

For the Section 102 amendment application, the no-go alternative, one site alternative (S1), two project alternatives (P1 & P2) and two technology alternatives (T1 & T2) were considered upon review of the site specific information, comments received from the public, and the results of the specialist studies.

Subsequently, the following preferred alternatives were identified for this project:

- S1 – extension of the current mining footprint with ±32.6 ha over Portion 1 of Farm No 652;
- P1 – use of only the W-road by mining related vehicles to and from the quarry;
- T1 – mining of the proposed dolerite resource by means of blasting.

Public Participation Process:

During the initial public participation process, of this S102 application, the stakeholders and I&AP's were informed of the project by means of background information documents that were sent directly to the contact persons. An advertisement was placed in Go & Express and on-site notices were placed at the turn-off from the N6 onto W-Road, the R102 and B-Road intersection, and the W-Road and B-Road T-junction. A 30 days commenting period was allowed that expired 13 October 2020.

In accordance with the timeframes stipulated in the EIA Regulations, 2014 (as amended) the Draft Scoping Report (DSR) was compiled to allow perusal of the report by the I&AP's and stakeholders. A 30-day commenting period, ending 08 January 2021 (extended to 15 January 2021), was allowed for perusal of the documentation and submission of comments. The comments and responses received on the DSR were incorporated into the Final Scoping Report that was submitted to DMRE for decision making.

Upon approval of the Final Scoping Report (31 May 2021) this report the Draft Environmental Impact Assessment Report was compiled that will be circulated for public comments over a 30-day period that extends until 24 August 2021. The comments received on the draft EIA & EMPR will be incorporated into the final EIA & EMPR to be submitted to the DMRE for decision making.

Environmental Impact Assessment Report:

The environmental impact 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 regarding the proposed project entail the following:

Topography:

- The proposed activity will impact the topography of the earmarked footprint in that the quarry pit will create a crater like features with benched side walls in accordance with the proposed mine plan.

Visual Characteristics:

- The proposed mining extension will be screened from the western and southern neighbours. No permanent residences, within <1 km, were identified on the northern and/or eastern neighbouring properties that could be negatively affected by the potential visual impact associated with the proposed activity and therefore the potential visual impact is deemed to be of medium significance.

Air Quality:

- Blasting: Dust could hinder the occupants of properties number 5 and 6 (Figure 33) between December – February, where after the seasonal change in wind direction will most likely move any dust (due to blasting) away from the neighbouring properties. Monthly fallout dust monitoring will report on the direction and level of dust generated as a direct result of the mining activities, and based on these results the blasting plan could be adjusted should the dust levels exceed the allowable standard.

- Processing Plant: The potential dust impact to be created as a direct result of the crushing and screening of the dolerite can be reduced through the implementation of the mitigation measures proposed in this document. As with the dust generated during a blast, it is proposed that the actual dust levels be monitored through the implementation of a monthly fallout dust monitoring programme that will identify problem areas in need of additional mitigation.

- Stockpile areas, handling and transport of material: Minimising the amount of material stockpiled at the site, moistening denuded areas and gravel roads within the mining footprint, as well as the W-Road for as long as it remains unsurfaced will contribute to mitigating the potential increase in dust levels as a result of the mining activity.

Noise Ambiance:

- Blasting: The modelling results (provisional) show that the predicted disturbance levels are within acceptable limits at 500 meters from the quarry workings, and as the distance increases the disturbance levels decrease.

Geology:

- The site (S1) is underlain predominantly by an elongated north-south trending, near vertical dolerite dyke. Presently, it is believed that the proposed extension area may have an inferred reserve of >25 000 000 m^3 dolerite with a potential life of mine of ±60 years.

Hydrology and Geohydrology:

- The EFRSA states that the loss of the two drainage lines (within the mining footprint) is acceptable as these drainage lines are already in severe degraded and transformed state with very limited functionality maintained. Activities and impacts are regarded as acceptable from an ecological perspective and will not cause detrimental impacts to the ecological features located within the affected area and surrounding properties.

- The SWMP requires the potential development of two SWD's. For the northern dam, a total storage capacity of 2 680 m^3 was recommended, and for the southern dam a total SWD storage capacity of 5 685 m^3. In addition to the SWDs, stormwater containment systems will be implemented to contain dirty water generated on the site. Water from the SWDs will be used for dust suppression purposes.

Mining Biodiversity Conservation Areas:

- Ground truthing confirmed that a large portion of the Wansley property as well as some of the surrounding landscape do not meet the criteria that justify the area as a CBA2. These areas should rather be regarded as Other Natural Areas. S1 is outside of the High Sensitive (No-Go) areas and will not contribute to a further reduction in landscape connectivity.

Vegetation:

- The EFRSA concludes that the vegetation within the study site resembles a severely modified and transformed form of Albany Coastal Thicket, and as such, the current layout is regarded as acceptable from an ecological point.

Fauna:

- No resident faunal species of conservation concern were identified within the approved mining area or proposed extension footprint.

- Blasting impact on caged birds: The projected features suggest that there is a real potential for a negative impact on the caged birds. However, the nature of this impact is unclear. It is proposed that baseline vibration- and noise monitoring be done at the bird enclosures prior to the first blast, and thereafter with each blast to determine the exact ground vibration and noise levels experienced during a blast at the bird enclosures. Following the first readings (after the first blast) guidance could be obtained from an ornithologist regarding the best way forward to minimise the potential impact of blasting on the caged birds in question.

Cultural and Heritage Environment:

- HIA: Due to the lack of significant heritage resources in the study area the impact of the proposed project on heritage resources is considered low and impacts can be mitigated to an acceptable level.

- PIA: Based on the site visit and the lack of any previously recorded fossils from the area, it is extremely unlikely that any fossils would be preserved in the shales around the quarry site, and certainly not in the dolerites. Although no fossils were seen during the site visit, there is a very small chance that fossils may occur in the unexposed shales of the Adelaide Subgroup.

Socio-economic Environment:

- The MR Holder intends to spend at least R 636 418.70 on Human Resource Development, and R 177 325.20 on LED over a 5-year period. The LED project consists of assistance to Guardians of Hope that is a non-profit organisation that takes care of abandoned and destitute babies. In addition to the LED project, Wansley Quarry will afford two employees with an opportunity to become functionally literate.

- Character of Surrounding Area: It is the opinion of DBP Consulting that the impacts of the proposed project on the existing character of the area will be minimal. The increase in the size of this quarry will only add to an existing feature and will not disrupt the *status quo*. From a Town Planning perspective, the location and proposed size of Wansley Quarry is in line with similar precedents that have been set. DBP Consulting concluded that the proposed project has no associated risk to the community from a land use or spatial planning point of view.

Existing Infrastructure:

- Power Line: Eskom will be approached regarding the deviation of the power line that will be within the mining footprint. Until such time as the deviation is finalised a buffer no-go area of 10 m will be maintained around the power line.

- Access Roads: The quarry currently gains access to the greater road network via the W-Road, linking to the National Route 6 to the west of the site and the B-Road, linking to the municipal Class 3 Municipal Main Road, R102, to the south of the site. The W-Road is classified as a Provincial Minor Road and the B-Road is classified as a Municipal Road. Both roads are unsurfaced. Existing traffic to and from the quarry is estimated to be approximately 100 loads per day, according to the operations manager and in line with the traffic survey. Future traffic generated from the site expansion is estimated to be 200 loads per day.

- Initial investigations into the impact of the heavy goods transport reveal that this proposed development would require a surfaced access route (W-Road). The expanded mining footprint crosses a portion of the

provincial minor road (W-Road) that falls on the property. This will require realignment of a portion of the road and the provincial roads department should be informed of such action.

- Should the S102 application be successful, Wansley Quarry will cease to use the B-Road for the hauling of mined material with heavy vehicles. Even though Wansley Quarry is committed to upgrade the W-Road from a gravel to a surfaced road, the proposed upgrade is not financially viable at the onset of the expansion of the quarry. The quarry therefore commits, in the interim, to maintain the gravel pavement structure of the W-Road by means of regular re-gravelling, vegetation clearance and side drainage clearance until the upgrading of the road to a paved surface is achievable (within 3 years from approval of the S102).

During the environmental impact assessment process the feasibility of the proposed site 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.

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 the mining area, both at sudden closure during the normal operation of the project, and at final, planned closure is a sum total of R 844 320.39.

LIST OF ACRONYMS

A2	Drainage Line A2
A3	Watercourse A3 with Riparian Vegetation
ABET	Adult Based Education and Training
AIA	Archaeological Impact Assessment
ASTM	American Society for Testing and Materials
BCMM	Buffalo City Metropolitan Municipality
BID	Background Information Document
BLMC	Biodiversity Land Management Classes
CARA	Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)
CBA	Critical Biodiversity Areas
CLAA	Criminal Law Amendment Act, 2013 (Act No. 37 of 2013)
CRR	Comments and Response Report
DEDEAT-EC	Department of Economic Development, Environmental Affairs and Tourism – Eastern Cape Province
DEIAR	Draft Environmental Impact Assessment Report
DMRE	Department of Mineral Resources and Energy
DoT	Department of Transport
DPW	Department of Public Works
DRDAR	Department of Rural Development and Agrarian Reform
DRDLR	Department of Rural Development and Land Reform
DSR	Draft Scoping Report
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EAR	Environmental Audit Report
EC	Eastern Cape
ECBCP	Eastern Cape Biodiversity Conservation Plan
ECO	Environmental Control Officer
ECNEO	Eastern Cape Nature and Environmental Ordinance, 1974 (No 19 of 1974)
EFRSA	Ecological and Freshwater Resource Study and Assessment
EIA	Environmental Impact Assessment
EIS	Ecological Importance and Sensitivity
EMP	Environmental Management Plan
EMPR	Environmental Management Programme
ESA	Earlier Stone Age
ESA	Ecological Support Area

FEIAR	Final Environmental Impact Assessment Report
FEPA	Freshwater Ecosystem Priority Area
FSR	Final Scoping Report
GNR	Government Notice Number
GVA	Gross Value Added
HBPAA	Harmful Business Practices Amendment Act, 1999 (Act No 23 of 1999)
HCAC	Heritage Contracts and Archaeological Consulting
HIA	Heritage Impact Assessment
I&AP	Interested and Affected Party
IAP	Invasive Alien Plant
IDP	Integrated Development Plan
IHI	Index of Habitat Integrity
J1	Joint 1
J2	Joint 2
LED	Local Economic Development
LoM	Life of Mine
LN	Listing Notice
LSA	Later Stone Age
MAR	Mean Annual Runoff
MHSA	Mine Health and Safety Act, 1996 (Act No 29 of 1996)
MPA	Marine Protected Area
MPRDA	Minerals and Petroleum Resources Development Act, 2002 (Act No 28 of 2002)
MR	Mining Right
MR Holder	Wansley Siyakhula (Pty) Ltd
MRMR	Mining Rock Mass Rating
MSA	Middle Stone Age
MWP	Mine Works Programme
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)
NEMA	National Environmental Management Act, 1998 (Act No 107 of 1998)
NHRA	National Heritage Resources Act, 1999 (Act No 25 of 1999)
NPAES	National Protected Areas Expansion Strategy
NRTA	National Road Traffic Act, 1996 (Act No 25 of 1999)
NWA	National Water Act, 1998 (Act No 36 of 1998)
OHSA	Occupational Health and Safety Act, 1993 (Act No 85 of 1993)
P1	Project Alternative 1
P2	Project Alternative 2

PCB's	Polychlorinated Biphenyls
PCO	Pest Control Officer
PES	Present Ecological Sensitivity
PHA	Protection from Harassment Act, 2011 (Act No 17 of 2011)
PIA	Palaeontological Impact Assessment
PPE	Personal Protection Equipment
PPV	Peak Particle Velocity
PSM	Palaeontological Sensitivity Map
S1	Site Alternative 1
S102	Section 102 Amendment Application in terms of the MPRDA, 2002
SAHRA	South African Heritage Resources Agency
SAMBF	South African Mining and Biodiversity Forum
SAMRAD	South African Mining Mineral Resources Administration System
SANBI	South African National Biodiversity Institute
SANRAL	South African National Roads Agency SOC Ltd
SANS	South African National Standards
SLP	Social and Labour Plan
SPL	Sound Pressure Level
SPLUMA	Spatial Planning and Land Use Management Act, 2013 (Act No 16 of 2013)
STEP	Subtropical Thicket Ecosystem Planning
SWD	Stormwater Dam
SWMP	Stormwater Management Plan
T1	Technology Alternative 1
T2	Technology Alternative 2
TIA	Traffic Impact Assessment
USBM	United States Bureau of Mine
WMA	Water Management Area
WULA	Water Use Licence Application

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mineral resources
Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

ENVIRONMENTAL IMPACT ASSESSMENT REPORT

And

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

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

NAME OF APPLICANT:	Wansley Siyakhula (Pty) Ltd
TEL NO:	043 730 7162
FAX NO:	043 730 7162
POSTAL ADDRESS:	P.O. Box 769, Gonubie, 5256
PHYSICAL ADDRESS:	Wansley Farm, Old Gonubie Road, East London
FILE REFERENCE NUMBER SAMRAD:	EC 30/5/1/2/2/228 MR

IMPORTANT NOTICE

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

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

In terms of section 16(3)(b) of the EIA Regulation, 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 authorization 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 failure to meet the requirements of the Regulation and will lead to the Environmental Authorization 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 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 ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

The objective of the environmental impact assessment process is to, through a consultative process-

(a) determine the policy and legislative context within the activity is located and document how the proposed activity complies with and responds to the policy and legislative context,

(b) describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location,

(c) identify the location of the development footprint within the preferred site based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment,

(d) determine the –

(i) nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives, and

(ii) degree to which these impacts-

(aa) can be reversed;

(bb) may cause irreplaceable loss of resources, and

(cc) can be avoided, managed or mitigated;

(e) identify the most ideal location for the activity within the preferred site based on the lowest level of environmental sensitivity identified during the assessment;

(f) identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity;

(g) identify suitable measures to manage, avoid or mitigate identified impacts, and

(h) identify residual risks that need to be managed and monitored.

PART A

SCOPE OF ASSESSMENT AND ENVIRONMENTAL IMPACT ASSESSMENT REPORT

1. CONTACT PERSON AND CORRESPONDENCE ADDRESS

a) Details of Greenmined Environmental

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 aforementioned Act. Wansley Siyakhula (Pty) Ltd (hereafter referred to as the "MR Holder") appointed Greenmined Environmental (Pty) Ltd (hereafter referred to as "Greenmined") to undertake the study needed. Greenmined has no vested interest in Wansley Siyakhula (Pty) Ltd or the proposed project and declares its independence as required by the EIA Regulations, 2014 (as amended 2017).

i) Details of the EAP

Name of the Practitioner:	Ms Christine Fouché
Tel No:	021 850 8875 / 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 S.

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

Ms Fouché has sixteen years' experience in doing Environmental Impact Assessments and Mining Applications in South Africa. See a list of past project attached as Appendix S.

b) Description of the property

Table 1: Description of the property.

Farm Name:	Portion 1 of Farm No 652
Application area (Ha)	♦ Approved MR area: 5.2149 ha ♦ Section 102 Application Area: 32.6426 ha ♦ Total MR area: 37.8575 ha
Magisterial district:	East London
Distance and direction from nearest town	Wansley Quarry is approximately 30 km north-east of East London city centre and ±65 km south-east of King William's Town.
21 digit Surveyor General Code for each farm portion	C02300000000652000001

c) Locality map

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

The requested map is attached as Appendix B.

d) Description of the scope of the proposed overall activity

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

Wansley Siyakhula (Pty) Ltd submitted a Section 102 ("S102") amendment application to:

- align the mining documentation with the Section 11 approval,
- comply with the latest departmental and legislative requirements,
- add blasting and processing of material to the EMPR,
- add dolerite as a commodity to the mining right, and
- expand the mining footprint to 37.8575 ha.

The S102 application necessitates an application for a Part 2 amendment of the mine's EMPR in terms of GNR 326 Section 31 (NEMA). The S102 application further constitute listed/specified activities in terms of the NEMA: EIA Regulations, 2014 (as amended) and therefore requires an environmental impact assessment (EIA) 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.

See attached as Appendix C a copy of the site layout plan of the proposed extension area.

i) Listed and specified activities

Table 2: Listed and specified activities triggered by the proposed S102 amendment application.

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)
Application for a Section 102 MPRDA, 2002 amendment of the mining right.	37.8575 ha	X	GNR 324 LN 3 Activity 4, 12, 14 GNR 325 LN 2 Activity 15, 17 GNR 327 LN 1 Activity 12, 19, 22, 24, 28

GNR 324 Listing Notice 3 of 2017 Activity 4:

The development of a road wider than 4 meters with a reserve less than 13.5 meters.

a) Eastern Cape

i) Outside urban area:

(ee) critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.

GNR 324 Listing Notice 3 of 2017 Activity 12:

The clearance of an area of 300 square meters or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.

a) Eastern Cape

ii) Within critical biodiversity areas identified in bioregional plans.

GNR 324 Listing Notice 3 of 2017 Activity 14:

The development of-

(i) dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square meters; or

(ii) infrastructure or structures with a physical footprint of 10 square metres or more;

where such development occurs-

(a) within a watercourse;

(b) in front of a development setback; or

(c) if no development setback exists, within 32 meters of a watercourse, measured from the edge of a watercourse.

excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.

a) Eastern Cape

i) Outside urban areas:

(ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.

GNR 325 Listing Notice 2 of 2017 Activity 15:

The clearance of an area of 20 hectare or more of indigenous vegetation, excluding where such clearances of indigenous vegetation is required for –

NAME OF ACTIVITY	AERIAL EXTENT OF THE ACTIVITY	LISTED ACTIVITY	APPLICABLE LISTING NOTICE
(i) the undertaking of a linear activity; or *(ii) maintenance purposes undertaken in accordance with a maintenance management plan.*			
GNR 325 Listing Notice 2 of 2017 Activity 17: *Any activity including the operation of that activity which requires a mining right as contemplated in section 22 of the mineral and Petroleum Resources Development Act, 2002 (Act No 28 of 2002), including-* *(a) associated infrastructure, structures and earthworks, directly related to the extraction of a mineral resources; or* *(b) the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing.* *but excluding the secondary processing of a mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource in which case activity 6 in this Notice applies.*			
GNR 327 Listing Notice 1 of 2017 Activity 12: *The development of-* *(i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square meters; or* *(ii) infrastructure or structures with a physical footprint of 100 square metres or more;* *where such development occurs-* *(a) within a watercourse;* *(b) in front of a development setback; or* *(c) if no development setback exists, within 32 meters of a watercourse, measured from the edge of a watercourse.* *excluding –* *(aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour;* *(bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies;* *(cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies;* *(dd) where such development occurs within an urban area;* *(ee) where such development occurs within existing roads, road reserves or railway line reserves; or* *(ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared.*			
GNR 327 Listing Notice 1 of 2017 Activity 19: *The infilling or depositing of any material of more than 10 cubic meters into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic meters from a watercourse;* *but excluding where such infilling, depositing, dredging, excavation, removal or moving—* *(a) will occur behind a development setback;* *(b) is for maintenance purposes undertaken in accordance with a maintenance management plan;* *(c) falls within the ambit of activity 21 in this Notice, in which case that activity applies;* *(d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or* *(e) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.*			
GNR 327 Listing Notice 1 of 2017 Activity 22: *The decommissioning of any activity requiring –* *(i) a closure certificate in terms of section 43 of the Mineral and Petroleum Resources Development Act, 2002 (Act No 28 of 2002); or* *(ii) a prospecting right, mining right, mining permit, production right or exploration right, where the throughput of the activity has reduced by 90% or more over a period of 5 years excluding where the competent authority has in writing agreed that such reduction in throughput does not constitute closure.* *but excluding the decommissioning of an activity relating to the secondary processing of a –* *(a) mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource; or* *(b) petroleum resource, including the refining of gas, beneficiation, oil or petroleum products; –*			

NAME OF ACTIVITY	AERIAL EXTENT OF THE ACTIVITY	LISTED ACTIVITY	APPLICABLE LISTING NOTICE
in which case activity 31 in this Notice applies.			
GNR 327 Listing Notice 1 of 2017 Activity 24: *The development of a road –* *(ii) with a reserve wider than 13.5 meters, or where no reserve exists where the road is wider than 8 meters;* *but excluding a road –* *(a) which is identified and included in activity 27 in Listing Notice 2 of 2014;* *(b) where the entire road falls within an urban area; or* *(c) which is 1 kilometre or shorter.*			
GNR 327 Listing Notice 1 of 2017 Activity 28: *Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development:* *(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;* *excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.*			
Demarcation of the extension area with visible beacons.	37.8575 ha	N/A	Not listed
Site establishment and infrastructure development.	±1 ha	X	GNR 324 LN 3 Activity 4, 12, 14; GNR 325 LN 2 Activity 15, 17; GNR 327 LN 1 Activity 12, 24, 28.
Stripping and stockpiling of topsoil and/or overburden.	±32 ha	X	GNR 324 LN 3 Activity 12 GNR 325 LN 2 Activity 15 GNR 327 LN 1 Activity 19, 28
Drilling and blasting of hard rock	±32 ha	X	GNR 325 LN 2 Activity 17 GNR 327 LN 1 Activity 28
Excavation, loading and hauling to processing area.	±32 ha	X	GNR 325 LN 2 Activity 17 GNR 327 LN 1 Activity 19, 28
Processing, stockpiling and transporting of material.	±2 ha (within disturbed mining footprint – no additional disturbance)	X	GNR 325 LN 2 Activity 17 GNR 327 LN 1 Activity 28
Sloping and landscaping upon closure of the site.	37.8575 ha	X	GNR 327 LN 1 Activity 22
Replacing the topsoil and vegetating the disturbed area.	±32 ha	X	GNR 327 LN 1 Activity 22

ii) Description of the activities to be undertaken

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

(Information obtained from the Environmental Management Programme Report of Wansley Quarry, March 2008)

1. BACKGROUND INFORMATION (WANSLEY QUARRY)

(Refer to Appendix F1: Mining Authorisation)

Wansley Quarry has been a trusted supplier of weathered dolerite in the greater East London area for the past 20 years. A mining licence was issued to David Peter Coetzer (trading as Wansley Quarries) on 23 March 2000 that was converted to a new order mining right in 2016. In 2020, the mining right was ceded, in terms of Section 11 of the MPRDA, 2002, to Wansley Siyakhula (Pty) Ltd that is the current mining right holder. The mining right is valid until 16 June 2026, with an approved footprint of 5.2149 ha over an area of Portion 1 of Farm No 652, in the East London magisterial district of the Eastern Cape Province.

The table below lists the GPS coordinates of the approved mining footprint (5.2149 ha).

Table 3: GPS coordinates of the approved mining right area.

NUMBER	DEGREES, MINUTES, SECONDS		DECIMAL DEGREES	
	LAT (S)	LONG (E)	LAT (S)	LONG (E)
A	32º54’47.47”	27º55’39.56”	-32.913186º	27.927656º
B	32º54’53.10”	27º55’42.96”	-32.914751º	27.928600º
C	32º54’58.79”	27º55’43.14”	-32.916331º	27.928651º
D	32º54’59.32”	27º55’36.75”	-32.916477º	27.926876º
E	32º54’57.54”	27º55’36.60”	-32.915982º	27.926833º
F	32º54’55.07”	27º55’34.26”	-32.915298º	27.926182º

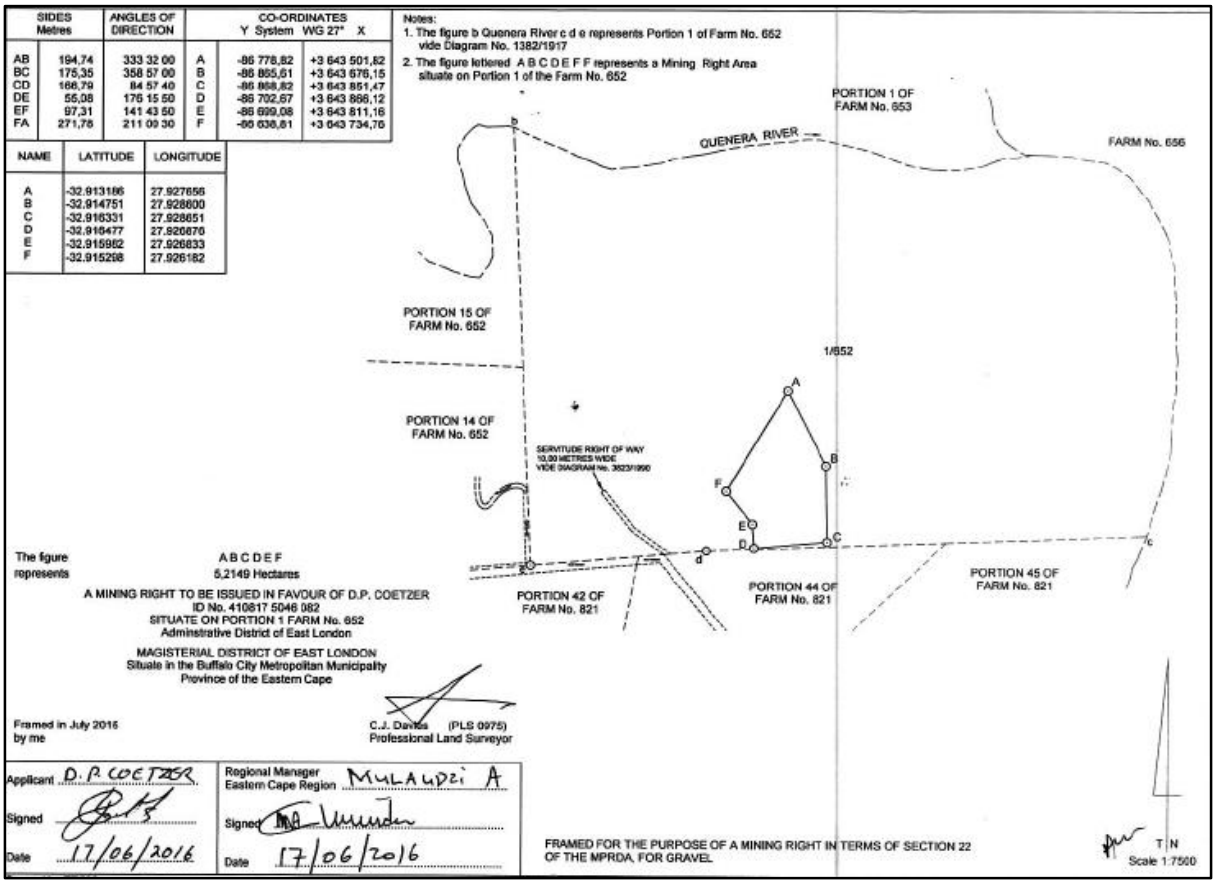


Figure 1: Cadastral map showing the approved mining footprint of Wansley Quarry (Pty) Ltd.

Figure 2: Satellite view showing the location of the MR area (red polygon) in relation to the surrounding landscape. (Image obtained from Google Earth).

1.1 CONSTRUCTION PHASE

Wansley Quarry has been in full production for at least 20 years, with the site establishment phase already completed in 2000. In light of this, no construction/development phase applies to the current operations.

1.2 PRESENT MINING OPERATIONS / OPERATIONAL PHASE

The operational phase of the mine entails the removal of the weathered dolerite through direct extraction with an excavator. Mining was focused on the soft material as blasting was not approved with the initial mining right approval. Upon excavation of the gravel, a limited stockpile is established as most material is directly loaded onto haul trucks that transported it to the clients.

1.2.1 Existing Infrastructure

No permanent infrastructure, other than the processing plant, has been established within the mining area, as the MR Holder makes use of the existing workshops, storerooms and ablution facilites at the farm yard (outside the mining footprint).

The mining related machinery are removed to the off-site workshop on the farm or the town of East London when maintenance and/or servicing is needed. Likewise, the mining site does not require the storage of diesel, and fueling of the equipment is done at the farm yard (off-site).

The MR Holder makes use of existing gravel roads (Mn10118 St also know as W-Road and the B-Road) that leads up to the mining area (see figure below). To the west the gravel road (Mn10118 St / W-Road) joins up with the N6 national road. The gravel road south of the mine (B-Road) joins up with the R102 provincial road.

Presently, the processing plant is powered by a generator until a connection to the Eskom grid can be secured. A low voltage power line, supplying electricity to the Wansley farm house, traverses the property in a north-eastern direction (presently outside the mining footprint).

Figure 3: Satellite view showing the location of the MR area (red polygon) in relation to the access roads where the brown line indicates the Mn10118 St / W-Road (connecting to the N6) and the green line shows the B-Road running in a southern direction towards the R102. The blue line shows the position of the power line traversing the property. (Image obtained from Google Earth).

1.2.2 Mine Plan

Mining commenced along the eastern boundary of the mining footprint gradually progressing in a southern and western direction where soft wheathered dolorite was available. The EMPR of the MR Holder mentions that decomposed dolerite rock will be excavated from the quarry faces in such a way that benches are developed. Those benches will be 4-5 m high by 5 m wide. The angle of slope of the faces will be ±1:1. The mine benches are to be developed (according to the current EMPR) in such a way that a final profile of 18º will be achievable during the rehabilitatin phase.

Presently, most of the soft material that can be mechanically removed has been mined and therefore the MR Holder identified the need to add blasting to the mining method that will allow access to the underlying solid dolerite.

The material mined from the footprint is sold locally (in an around the East Cape Province) to the building-, construction-, and road maintenance sectors.

1.2.3 Waste Management Programme

Due to the nature of the project, and the fact that the workshop and storerooms are located off-site, very little general waste is generated as a direct result of the mining activities. Currently, the general waste of the site is kept inside the mining vehicles until it is removed from the site at the end of the day where it is incorporated into the existing waste disposal system of the farm, from where it is removed to the Berlin landfill site.

Likewise, very little generation of hazardous waste is applicable to this activity. Hazardous waste is mainly the result of accidental spillages or breakdowns. Such contaminated areas are immediately (within first hour of the occurrence) cleaned and the contaminated soil is contained in a designated hazardous waste container that is daily (when applicable) removed to the MR Holder's workshop on the farm, from where it is disposed of as part of the hazardous waste disposal system of the farm to East London Bricks in Gonubie.

Site employees make use of the formal ablution facilities on the farm. No chemical toilets have been placed in the mining area.

1.2.4 Water Management

The water used at Wansley Quarry is extracted from a borehole on the farm; the MR Holder is in the process of registering the water uses with the Department of Water and Sanitation (DWS). The mining related water requirements mainly consist of water needed for dust suppression on the haul roads and the processing plant.

(Also refer to Part A(1)(g)(iv)(1)(c) *Descripton of specific environemntal features and infrastructure on the site – Site Specific Hydrology and Geohydrology;* 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*)

2. S102 APPLICATION

2.1 PROJECT PROPOSAL

As mentioned earlier, the MR Holder submitted an application for consent of the minister to:

- align the mining documentation with the Section 11 approval,
- comply with the latest departmental and legislative requirements,
- add blasting and processing of material to the EMPR,

- add dolerite as a commodity to the mining right, and
- expand the mining footprint to 37.8575 ha.

, in terms of Section 102 of the MPRDA, 2002. The table below lists the GPS coordinates of the proposed extension area as shown on the Regulation 2(2) and Regulation 42 Mine Plans attached as Appendix A1 and A2 respectively.

Table 4: GPS coordinates of the proposed S102 extension area.

NUMBER	DEGREES, MINUTES, SECONDS		DECIMAL DEGREES	
	LAT (S)	LONG (E)	LAT (S)	LONG (E)
A	32º54'43.53"	27º55'18.20"	-32.912092º	27.921722º
B	32º54'40.46"	27º55'20.88"	-32.911240º	27.922466º
C	32º54'38.70"	27º55'23.42"	-32.910751º	27.923173º
D	32º54'37.25"	27º55'28.39"	-32.910348º	27.924552º
E	32º54'36.18"	27º55'34.28"	-32.910052º	27.926190º
F	32º54'54.49"	27º55'55.51"	-32.915137º	27.932086º
G	32º54'59.18"	27º55'42.07"	-32.916439º	27.928354º
H	32º54'59.14"	27º55'33.87"	-32.916428º	27.926074º

Figure 4: Satellite view showing the location of the proposed S102 extension area (yellow polygon) in relation to the approved MR area (red polygon), and the surrounding landscape. (Image obtained from Google Earth).

The proposed extension area will be developed over a portion of the property that was historically used for pineapple cultivation extending towards the north-west of the current mining area. Presently it is proposed that should the S102 application be approved, mining

will gradually advance into the extension area as the current mining footprint (±5.2 ha) is mined-out. The mining method will make use of blasting by means of explosives in order to loosen the hard rock, the material will then be loaded and hauled out of the excavation to the crushing and screening plant. The dolerite/gravel will be screened to various sized stockpiles from where it will be transported to clients with trucks and trailers.

The MR Holder will continue to use the offices, workshops, and store rooms of the farm yard, as well as the processing plant in the mining area.

In light of this, the Applicant intents to:

- strip and stockpile the topsoil and/or overburden from the mining footprint;
- blast and excavate the mining area;
- crush and screen the loosened material at the processing plant;
- stockpile the product until sold and transported from site;
- slope and landscape the affected areas upon closure; and
- replace the topsoil and vegetate the disturbed area.

Should the S102 amendment application be issued and the mining of dolerite/gravel from the extension area 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 phase,* which will involve the demarcation of the extension area and the buffer no-go area around the power line (until the line is diverted). Site establishment will also necessitate the clearing of vegetation, the stripping and stockpiling of topsoil, the development of stormwater dams (SWD) and -control measures, and possible road infrastructure that may be required.

(2) Operational phase that is presently expected to entail the mining of dolerite/gravel from the approved footprint area through conventional open cast mining methods. The mining method will make use of blasting in order 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, before it is sold and transported from site to clients.

(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 MR Holder will further be responsible for the seeding of all rehabilitated areas. Once the full mining area is rehabilitated, the MR 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).

2.2 SITE ESTABLISHMENT PHASE

Site establishment entails the demarcation of the extension area boundaries and the power line servitude, clearance of vegetation, stripping and stockpiling of topsoil (to establish mining related infrastructure) from the stockpile areas and the excavation zone as detailed below::

2.2.1 Zoning

Presently, Portion 1 Farm No 652 is zoned in terms of the Buffalo City Zoning Scheme for Agricultural Zone purposes. A property zoned for agricultural use has the following permitted primary uses: intensive agronomy, stud farming, dwelling-house, second dwelling, feed pen farming, agriculture, aquaculture. Associated consent uses include farm stall, agricultural industry, abattoir, riding school, boarding kennels, nursery, tourist facilities, day care centre, renewable energy structure, further additional dwellings.

In light thereof, the MR Holder appointed DBP Consulting who is responsible for the Land Use Application for the Departure to Permit Mining Rights on Portion 1 of Farm No 652 in terms of the SPLUMA legislation. The said application was submitted to the Buffalo City Metropolitan Municipality – Planning Division on 26 March 2021.

(Also refer to Part A(1)(f) *Need and desirability of the proposed activities,* as well as the Town Planning Motivation attached as Appendix F2)

2.2.2 Demarcation of Mining Boundaries

Pursuant to receipt of an Environmental Authorisation (EA) and the Section 102 Mining Right (MR) amendment, and prior to mining, the boundary of the amended mining footprint has to be demarcated.

A 10 m no-go buffer area will be demarcated around the power line to protect it against mining related damages until the line could be deviated.

2.2.3 Clearing of Vegetation

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

The proposed extension footprint falls within a vegetation type known as the Albany Coastal Belt (AT9). It also extends into the Eastern Cape Biodiversity Conservation Plan (ECBCP) – Terrestrial Critical Biodiversity Area (CBA).

As the extension of the mining area will necessitate the removal of indigenous vegetation to allow access to the mineral (dolerite/gravel), Nkurenkuru Ecology & Biodiversity was appointed to conduct an ecological and freshwater resource study and assessment (EFRSA) of the earmarked extension area. The EFRSA is attached as Appendix H2 to this report, and the findings and recommendations of the specialist were incorporated into this DEIAR.

As discussed in Part A(1)(g)(iv)(1)(c) *Description of specific environmental features and infrastructure on the site – Site Specific Vegetation,* the EFRSA concludes that the vegetation within the study site resembles a severely modified and transformed form of Albany Coastal Thicket, and as such, the current layout is regarded as acceptable from an ecological point.

2.2.4 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 within the mining boundary 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 2 m in height to prevent compaction and preserve micro-organisms within the topsoil.

2.2.5 Access Roads

(Also refer to Part A(1)(g)(i) Details of the development footprint alternatives considered and Appendix I for a copy of the Traffic Impact Assessment)

As mentioned earlier, the MR Holder presently makes use of existing gravel roads, Mn10118 St / W-Road and the B-Road, to gain access to the quarry as presented in the following figure.

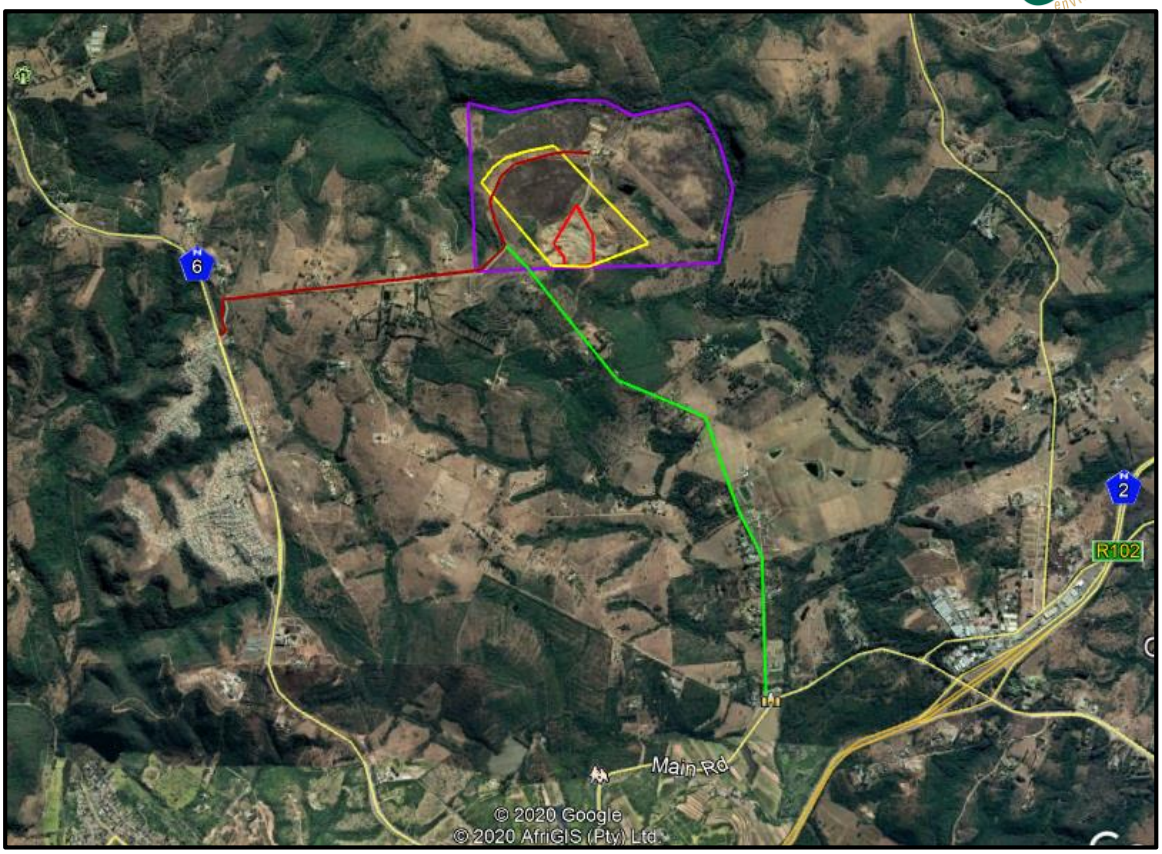


Figure 5: Satellite view showing the access road Mn10118 St / W-Road (brown line) to Wansley Quarry (purple polygon) in relation to the N6 national road, as well as the B-Road (green line) in relation to R102 provincial road (image obtained from Google Earth).

In order to identify the potential impact that the proposed extension of the mining operations will have on the surrounding road infrastructure, BVI Consulting Engineers were contracted to undertake a Traffic Impact Assessment (TIA) (see Appendix I for a full copy of the study).

The objectives of the TIA were to determine the following:

- The local impact of the proposed development on the road and transportation system surrounding the development, with a particular focus on heavy goods transport;
- Whether it is possible to accommodate the proposed development, with or without the implementation of mitigation measures;
- The mitigation measures and improvements that may be required to accommodate the proposed development in order to address the comments received through the Background Information Document; and
- Propose a route that should be used by the development traffic to minimise impact.

The TIA included an assessment of the following road infrastructure:

- W-Road, from the intersection with National Route 6 (N6), up to the quarry access; and
- B-Road, from the intersection with municipal main road R102, up to the intersection with Road W.

The road classification (presented in the following table) noted in the TIA was made according to the *Municipal and Provincial Road Classifications* (RISFSA), as received from the provincial authorities. The TIA notes that:

- the W-Road is classified a Provincial Minor Road up to the access to the site, beyond the intersection with Road B.
- while the B-Road is indicated as a private road on the network information diagram, the municipal authorities have indicated that it is deemed a municipal road and is subject to the requirements of the local roads authority.

Table 5: Existing roadways affected (table obtained from the TIA).

ROAD NAME	ROAD CLASS	DESCRIPTION
Road W – MN10118	Class 5 Provincial Minor Road	This road is an unpaved provincial road with one lane per direction
Road B	Municipal Road	This road is an unpaved road and is a municipal road
National Route 6	Class 1 National Road	In the vicinity of the study area, this road is a single carriageway with one lane in each direction and paved shoulders
R102 – MR686	Class 3 Main Road	In the vicinity of the study area, this road is a single carriageway with one lane in each direction and unpaved shoulders.

2.2.5.1 Traffic Assessment

The TIA determined the existing traffic demand at the intersection of the B-Road and the W-Road by means of a manual 12-hour intersection count on 07 October 2020. The hourly volumes indicated slight peaks in the morning between 09:15 and 10:15 and in the afternoon between 14:45 and 15:45. The following figure presents the total volumes counted over the 12-hour period.

APPROACH -MOVEMENT	VEHICLE TYPE		
	LIGHT	HEAVY	TOTAL
Road W (from N6) - RT	38	0	38
Road W (from N6) - LT	18	72	90
Road W / Quarry Rd (from quarry) – RT	16	66	82
Road W / Quarry Rd (from quarry) – TH	22	19	41
Road B (from R102) – TH	20	13	33
Road B (from R102) – LT	37	0	37

Figure 6: 12-Hour traffic volumes at study intersection (image obtained from the TIA)

The counts indicated a total of 246 trips in and out of the quarry, consisting of 170 heavy vehicles (85 in: 85 out) and 76 light vehicles (38 in: 38 out) over the 12-hour period. The survey did not indicate excessive peak volumes, meaning that the impact of the operations of the quarry is spread throughout the day, rather than during peak times. It also indicated the high proportion of heavy vehicles that the quarry receives, and therefore the direct impact on the gravel road. The future trips due to the proposed expansion have been estimated as 200 total daily loads.

2.2.5.2 Traffic Impact on Transport Route

The TIA notes that the use of both the B- and W-roads by heavy vehicles is undesirable as both routes are unpaved and the use of both routes may lead to a requirement of increased maintenance of two routes. The TIA therefore proposed that only the W-Road be used by the quarry as access route to the greater road network (N6).

2.2.5.3 Traffic Impact on Pavement Structure

The TIA notes that the existing heavy vehicle traffic indicate that a surfaced pavement structure be implemented, and therefore proposes that the W-Road is surfaced to minimum cross-sectional and pavement structure standards as required by the provincial authority, to be designed in line with the expected traffic along the road. This will ensure that the impact due to heavy goods transport is mitigated along the W-Road by means of a surfaced road.

It is envisaged that the ultimate typical cross-section for the W-Road will be considered a low-volume sealed road as presented in the following image. Further to this, the improvement at the intersection of the W-Road and the N6 will require engagement with the national roads authority, SANRAL, to ensure that the

geometric standards of the intersection are considered and acceptable to the relevant geometric design standards.

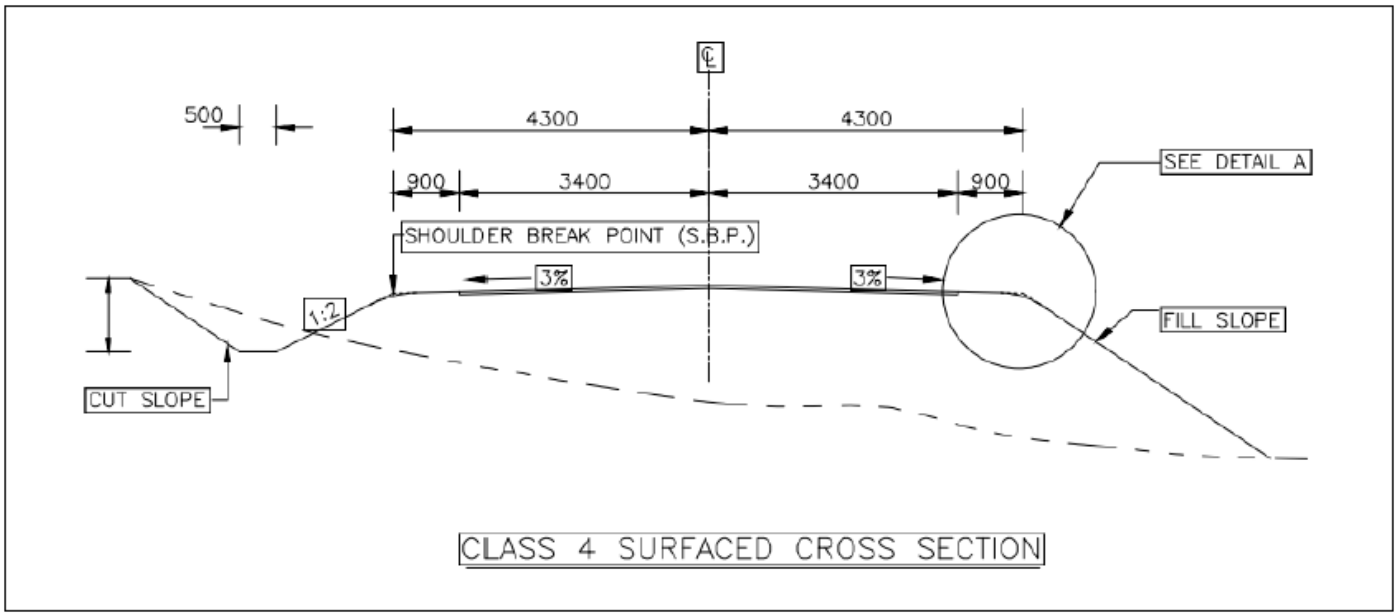


Figure 7: Typical cross-section for Class 4 low-volume sealed road (image obtained from the TIA)

The following figure shows a typical pavement design for the expected traffic loading associated with this project. The TIA however notes that this is an initial assessment of the type of pavement structure to be expected due to the development traffic. This design will need to be confirmed by further investigations prior to implementation.

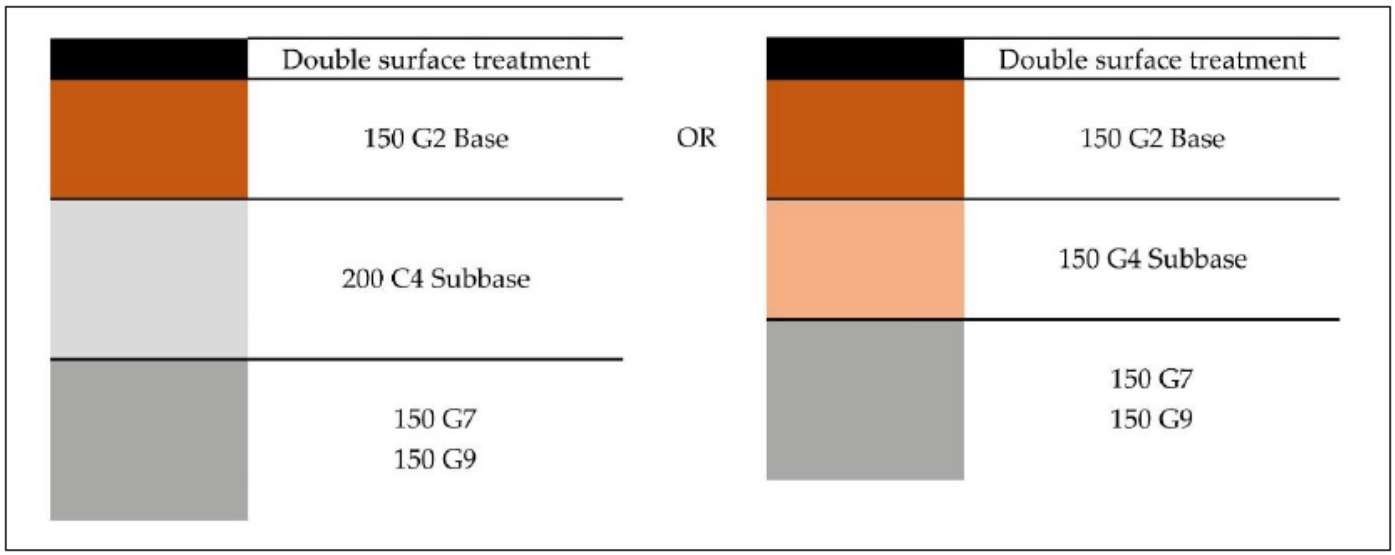


Figure 8: Proposed pavement structure according to TRH4 catalogue (granular base, wet region, ES3, Category C Road) (image obtained from the TIA)

2.2.5.4 Deviation of the W-Road within the Mining Area

When mining reaches the most northern part of the proposed footprint it may be necessary to realign the affected section of the W-Road so as to ensure that it runs

along the outside of the northern mining boundary. The TIA notes that the provincial road department will need to be informed prior to the proposed realignment of the road. The realignment needs to take place in accordance with the minimum requirements to be set by the provincial road authorities.

Figure 9: Image showing the section of the W-Road (blue line) that may need re-alignment once mining reaches the most northern part of the footprint area (image obtained from Google Earth).

2.2.5.5 TIA Conclusion

The TIA concluded that:

- The quarry currently gains access to the greater road network via the W-Road, linking to the National Route 6 to the west of the site and the B-Road, linking to the municipal Class 3 Municipal Main Road, R102, to the south of the site. The W-Road is classified as a Provincial Minor Road and the B-Road is classified as a Municipal Road. Both roads are unsurfaced.
- Existing traffic to and from the quarry is estimated to be approximately 100 loads per day, according to the operations manager. This is in line with the 12-hour traffic survey taken on 07 October 2020, at the intersection of the W-Road and the B-Road.
- Future traffic generated from the site expansion is estimated to be 200 loads per day. This additional traffic does not affect any peak capacities of the roads

or intersections but due to the heavy goods transport generated by the development, the pavement structure of the gravel roads is considered the main impact.

- Initial investigations into the impact of the heavy goods transport reveal that this proposed development would require a surfaced access route (W-Road). The surfaced access route would be required to conform to the provincial minimum standards for cross-section.
- As part of the road infrastructure considerations, the expected pavement bearing capacity was investigated as part of this report. It has been estimated that the design pavement class results in an ES3. The associated pavement structure to accommodate this traffic loading will need to be designed in further detail in future phases of this project.
- The expanded mining footprint crosses a portion of the provincial minor road (W-Road) that falls on the property. This will require realignment of a portion of the road and the provincial roads department should be informed of such action.

In light of the above and should the S102 application be successful, Wansley Quarry will cease to use the B-Road for the hauling of mined material with heavy vehicles.

Even though Wansley Quarry is committed to upgrade the W-Road from a gravel to a surfaced road, the proposed upgrade is not financially viable at the onset of the expansion of the quarry. The quarry therefore commits, in the interim, to maintain the gravel pavement structure of the W-Road by means of regular re-gravelling (at least once/year), vegetation clearance and side drainage clearance until the upgrading of the road to a paved surface is achievable. In light of the present economic state of the greater mining industry the quarry commits to the surfacing of the W-Road within the first three years of operation (from S102 approval and execution).

Also refer to Part A(1)(g)(viii) The *possible mitigation measures that could be applied and the level of risk* as well as Part A(1)(j) *Summary of specialist reports* for a list of the recommendations proposed by the TIA.

2.2.6 Establishment of Site Infrastructure

(Also refer to Part A(1)(g)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Hydrology and Geohydrology)

As mentioned earlier, only the processing plant was thus far established in the mining area.

2.2.6.1 Stormwater Management

(Information extracted from the Wansley Siyakhula (Pty) Ltd Mining Rights Area Storm Water Management Plan attached as Appendix J)

Should the S102 application be approved and the mining area be extended the proposed footprint will spread across two drainage lines that ultimately flows into the Qinira River to the east of the mining area. The presence of the drainage lines within the mining footprint necessitates (amongst others) a water use application in terms of Section 21 of the National Water Act, 1998 (Act No 36 of 1998) (NWA). As part of the water use application a stormwater management plan (SWMP) was compiled that requires the potential development of two stormwater dams (SWD's) as shown in the figure below.

Figure 10: Image showing the drainage lines within the mining footprint (blue lines) as well as the proposed position of the stormwater dams (light yellow polygons) (image obtained from the SWMP).

The stormwater dams must meet GN704 (DWS) design criteria to be considered a Stormwater Containment Dam. The stormwater specialist used an Excel-based simulation to calculate the size of the required SWD's to ensure that the dams will not spill more than once (on average) in 50 years. For the northern dam, the

specialist recommended a total storage capacity of 2 680 m³ and for the southern dam a total SWD storage capacity of 5 685 m³ was recommended.

In addition to the SWDs, the specialist also proposed stormwater containment systems to ensure dirty water generated on the site is contained. These systems will consist of a berm and channel component designed to accommodate a 1:50 year flood that will serve two main purposes:

- Diverting upstream clean water which would otherwise flow into the identified dirty areas; and
- Contain dirty water in the identified dirty areas (mining footprint) and direct towards the appropriate dirty water containment facilities (SWDs).

The main assumption in the stormwater diversion layout is that all water generated in the dirty area (mining area) will be able to drain under gravity, to the area allocated for the stormwater containment facility (SWDs). The proposed works are expected to level out much of the site, while site drainage is expected to facilitate the drainage of all areas into the proposed stormwater diversions.

The following figure represents a typical stormwater containment berm and channel. The berm component will be constructed from the material excavated from the channel and supplemented by topsoil stockpiling if required. The side slopes for all berms and channels will be kept constant at 1 (vertical) : 2 (horizontals). The channel component has been sized to meet the requirements of the 1:50 year flood. The collected water should be channelled to the neighbouring SWD.

a = Channel Depth

b = Channel base breadth

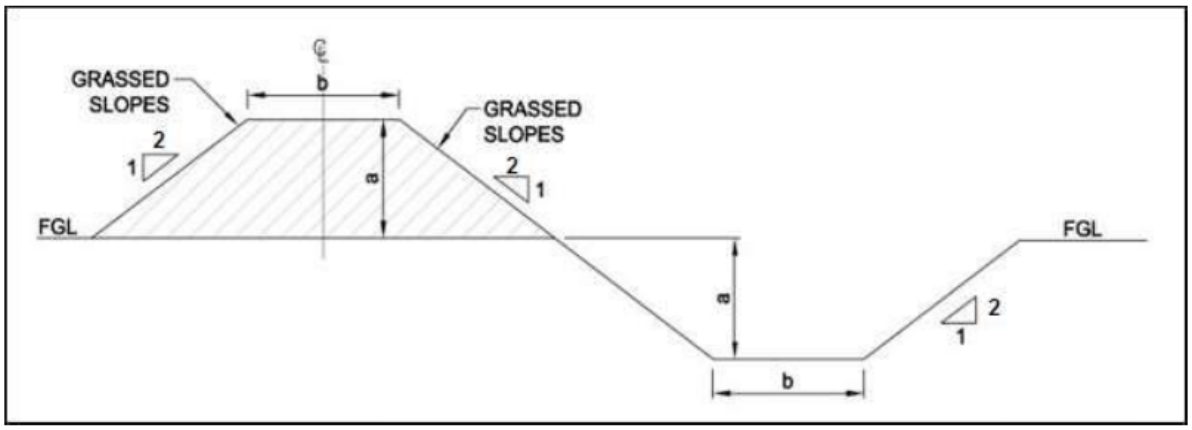


Figure 11: Typical berm and channel for dirty storm water systems (image obtained from the SWMP).

The following table presents the dimension for each of the berms and channels associated with the stormwater area.

Table 6: Dimensions for berm and channel.

Diversion	A (m)	B (m)	Average slope (m/m)
Dirty water	1	1.6	0.002

2.3 OPERATIONAL PHASE

Thus far, the operational phase of the mine involved the removal of the weathered dolerite through direct extraction with an excavator. Upon which a limited stockpile was established as most material was directly loaded onto haul trucks that transported it to the clients. A crushing and screening plant was established to process material when needed.

Should the S102 application be approved, the MR Holder intends to loosen the hard rock of the mining footprint by blasting, upon which it will be mechanically recovered with drilling-, excavating- and earthmoving equipment. The loosened rock will then be delivered to the crushing and screening plant where it will be reduced to various sized aggregate. The screened material will be delivered to various size category stockpiles. Transportation of the final product will be from the stockpile area to the end point by means of trucks. The mine will continue to make use of the workshops and storerooms at the farm yard, and the current workforce of twenty-two (22) employees will continue working at the mine.

Mining machinery that currently operates/will operate within the mining footprint consist of at least the following:

- Crushing and screening plant;
- Delivery trucks;
- Drilling equipment;
- Earthmoving machinery;
- Excavation equipment;
- Generator; and
- Water cart/s.

See Figure 12 for a schematic representation of the proposed mining activities should the S102 application be approved as well as Appendix C for a copy of the Site Activities Map.

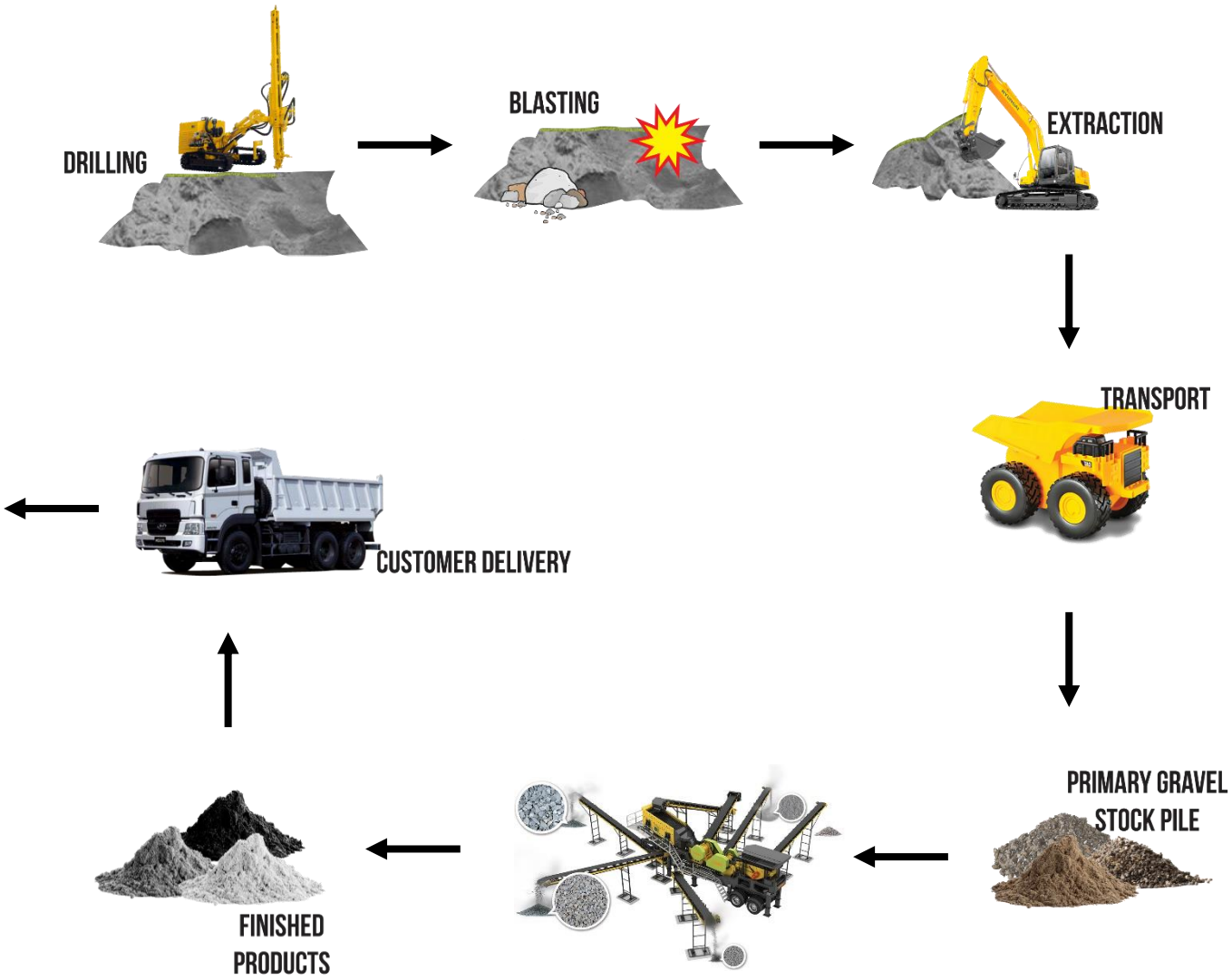


Figure 12: Schematic representation showing the proposed mining activities should the S102 application be approved.

2.3.1 Operating Hours

The current EMP (2008) of Wansley Quarries mentions that the activities at the quarry will be limited to normal working hours from Monday to Friday (06:00 to 18:00) and 06:00 to 13:00 on Saturdays.

With the proposed extension of the quarry footprint and amendment of the mining method, site management proposes that mining operations, including crushing and screening, will be limited to the same working hours mentioned above (Mon-Fri 06:00 to 18:00; Sat 06:00 to 13:00). Blasting will only take place during the week before 15:00, and trucks transporting material will use the W-Road from 06:00 to 20:30 during weekdays and 06:00 to 16:00 on Saturdays.

Should any mining related activities extend beyond the stipulated operating hours, site management will inform the DMRE and I&AP's in writing prior to the implementing of the extended workhours.

2.3.2 Mining Plan

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

MLB Consulting (MLB) was approached to compile a mine plan for the future mining of Wansley Quarry. The specialist notes that the minable resource consist of dolerite rock that is a low value product mainly extracted for use in the construction industry (roads and buildings).

In order to determine the optimum stable slope angles, MLB use the empirical approach that entails the application of the empirical design chart which requires rock mass quality as an input, and outputs the recommended slope angles based on acceptable safety factor. Based on the observations at Wansley Quarry, the MRMR (mining rock mass rating) was estimated at between 45 (weathered material) and 55 (fresh rock mass), and subsequently an overall slope angle of 62° for the weathered zone and 67° for the fresh rock mass was determined. This translates to a proposed bench height of 12 m and width of 8 m that will result in an overall slope angle of the high wall of ~55° down to a depth of 120 m below surface, assuming a single ramp of 20 m. The following figure shows the planned slope geometry, with the pit bottom approximately 120 m below surface, and the roadways at least 20 m in width.

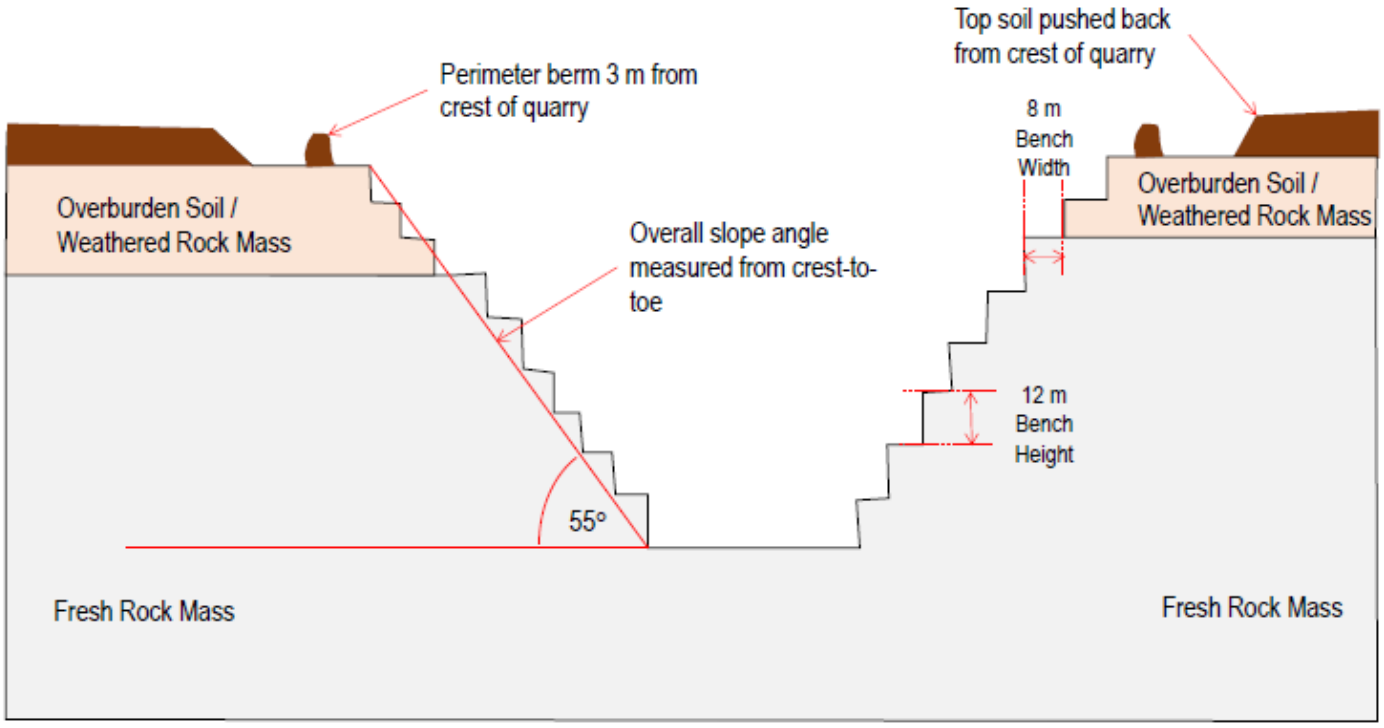


Figure 13: Schematic representation showing the slope design parameters recommended for Wansley Quarry (image obtained from the Mine Plan)

MLB recommended the following mining sequence, as presented in the figures below, with the mining direction extending from the southern boundary towards the northern boundary with increasing depth.

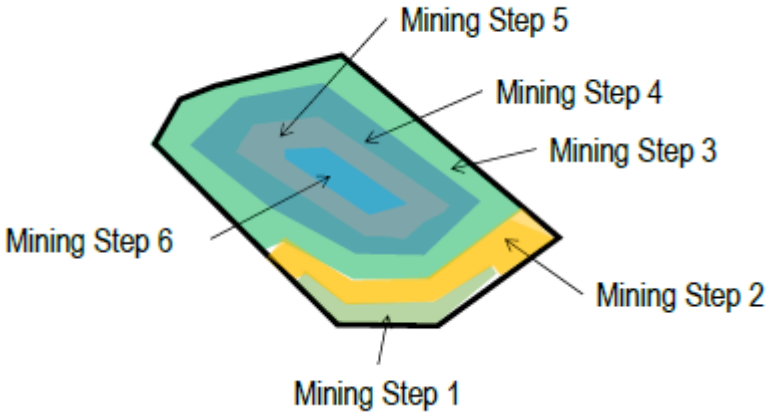


Figure 14: Schematic plan showing the recommended mining sequence for Wansley Quarry (image obtained from the Mine Plan)

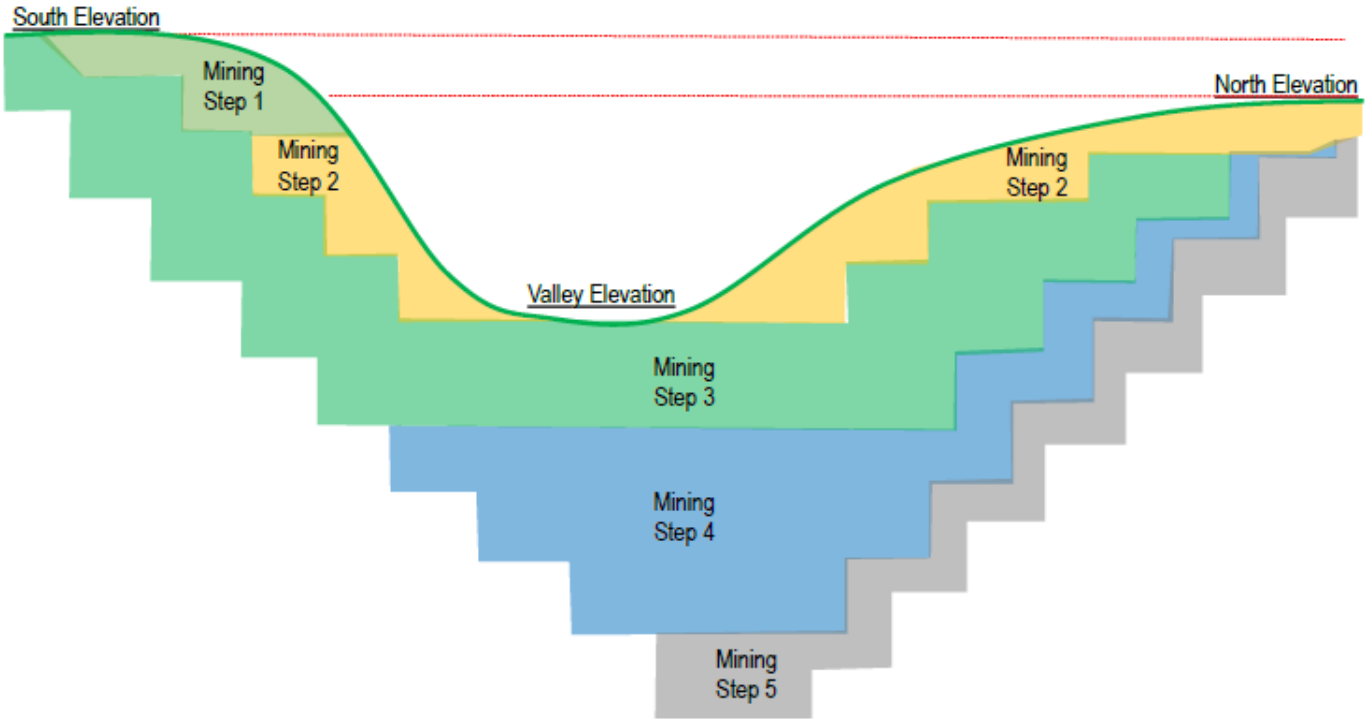


Figure 15: Schematic section showing the recommended mining sequence for Wansley Quarry (image obtained from the Mine Plan)

2.3.3 Blasting

(Also refer to Part A(1)(g)(iv)(c) Description of specific environmental features and infrastructure on site – Site Specific Air Quality and Noise Ambiance)

Should the S102 application be approved a blasting frequency of two blasts per month (maximum) is presently proposed. The type, duration and timing of the blasting procedures will be planned with due cognisance of the other land users and structure in the vicinity of the mining area. Blasting will be done by an appropriately qualified blaster in accordance with the USBM standards and measures will be implemented to limit flyrock.

Prior to the first blast, the structural integrity of the infrastructure near (within 500 m) the mining footprint will be determined. During the blast, vibration measuring equipment (seismograph) will be placed at strategic points to measure the ground vibrations that extents from the quarry. Should the vibration tests indicate excessive high readings the blasting at the quarry will be amended to lower the impact. Any structural damage, directly resulting from the mining at the quarry, will be repaired at the cost of the MR Holder. The surrounding landowners will all be notified in writing prior to each blast.

2.3.4 Water Use

(Also refer to Part B(1)(d)(vii) Volumes and rate of water use required for the mining, trenching or bulk sampling operation)

As mentioned earlier, the water used at Wansley Quarry is extracted from a borehole on the farm. This water will be supplemented with water from the SWD's once constructed. The water requirements will mainly consist of water needed for dust suppression on the haul roads and the processing plant.

2.3.5 Waste Management

The MR Holder will continue to manage the waste generated at the mine as described earlier under 1.2.3 *Waste Management Programme.*

2.3.6 Servicing and Maintenance

When needed, mining equipment will be serviced at the workshop on the farm (outside the mining area). No workshop will be established in the proposed extension area. 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. The mining site does not require the storage of diesel, and fuelling of the mining related equipment/vehicles is done at the farm yard.

2.3.7 Electricity

The mining operation will continue to be powered by generators until such time as a connection to the Eskom grid can be secured.

As the mining operation expands in a northern direction it will gradually approach the low voltage power line crossing the proposed expansion area (refer to Figure 3). The MR Holder will approach Eskom regarding the deviation of the power line from the mining footprint, but until such time as the deviation is finalised a buffer no-go area of 10 m will be maintained around the power line. Eskom will be informed (in writing) at least two weeks prior to each blasting event.

2.4 DECOMMISSIONING PHASE

Due to the nature of the project, no buildings/build structures, apart from the processing plant, will have to be demolished upon closure of the mining area. The closure objectives are for the quarry pit to be rendered safe, and to return the disturbed areas to agricultural use. Benches will be built with oversize rock and overburden, top-dressed with topsoil and

vegetated with an appropriate grass mix if vegetation does not naturally establish in the area within six months of the replacement of the topsoil (see Appendix Q for the Closure Plan).

The decommissioning activities will consist of the following:

- Sloping and landscaping the mining area;
- Replacing the topsoil;
- Vegetating the reinstated area; and
- Controlling the invasive plant species.

The future land use of the rehabilitated mining footprint will be agriculture. Upon the replacement of the topsoil, the area around and inside the excavation will once again be available for grazing purposes, and the planting of the cover crop (to protect the topsoil) will tie in with the proposed land use.

The MR Holder 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 in order 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 plant/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.

Final rehabilitation:

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 entire mining area was rehabilitated the MR 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 also be submitted in terms of Regulation 62 of the MPRDA, 2002, and Government Notice 940 of NEMA, 1998 (as amended).

Also refer to Part B(1)(d)(i) *Determination of closure objectives* and Appendix Q for the Closure Plan.

e) Policy and Legislative Context

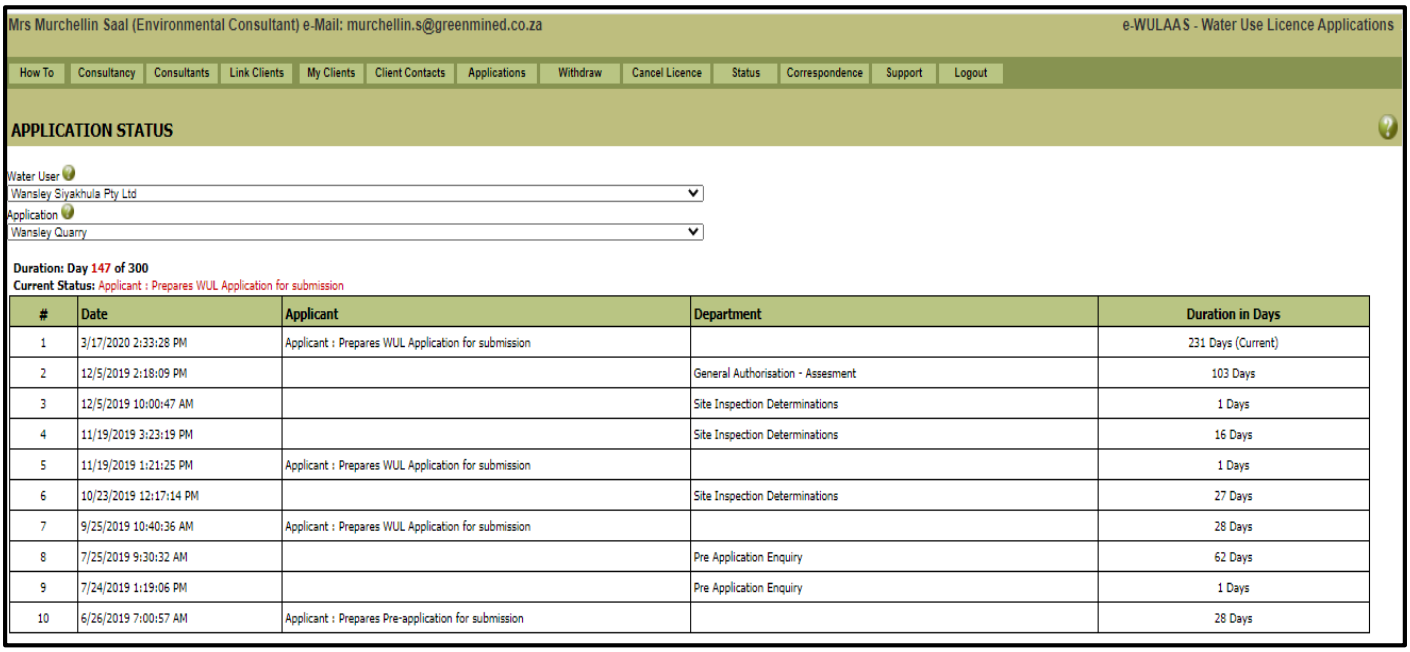
Table 7: Policy and legislative context.

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** (i.e. Where in this document has it been explained how the development complies with and responds to the legislation and policy context)	**HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE POLICY AND LEGISLATIVE CONTEXT** (E.g. in terms of the National Water Act: Water use license has/has not been applied for).
Buffalo City Metropolitan Municipality Integrated Development Plan 2016 – 2021 (IDP)	A(1)(g)(iv)(1)(a) Type of environment affected by the proposed activity – Socio-Economic Environment.	The IDP was used in the assessment of the socio economic profile of the receiving community.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE POLICY AND LEGISLATIVE CONTEXT
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983).	Part A(1)(g)(iv)(1)(b) Description of the current land uses. Part A(iv)(1)(viii) The possible mitigation measures that could be applied on the level of risk – *Management of Invasive Plant Species.*	The mitigation measures proposed for the site includes specifications of the CARA, 1983.
Eastern Cape Nature and Environmental Ordinance 19 of 1974 (as amended).	Part A(1)(g)(iv)(1)(a) Type of environment affected by the proposed activity - *Biological Environment* Part A(1)(g)(viii) The possible mitigation measures that could be applied on the level of risk – *Mining, Biodiversity Conservation Area, and Vegetation*.	The mitigation measures proposed for the site includes specifications of the ECNEO, 1974.
Guideline on Need and Desirability	Part A(1)(f) Need and desirability of the proposed activities.	The need and desirability of the project was assessed in accordance with these guidelines.
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)(g)(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.
Mineral and Petroleum Resources Development Act, 2002, (Act No. 28 of 2002) read together with applicable amendments and regulations thereto. ♦ Section 102 amendment application.	Part A(1)(d) Description of the scope of the proposed overall activity.	Application for a Section 102 amendment application submitted to the DMRE-EC. Ref No. EC30/5/1/2/2/228 MR.
National Environmental Management Act,1998 (Act No. 107 of 1998) and the Environmental Impact Assessment Regulations, 2014 (as amended by GNR 326 effective 7 April 2017): ♦ GNR 326 Section 31 Amendments to be applied for in terms of Part 2 ♦ GNR 324 Listing Notice 3 Activity 4 ♦ GNR 324 Listing Notice 3 Activity 12 ♦ GNR 324 Listing Notice 3 Activity 14 ♦ GNR 325 Listing Notice 2 Activity 15 ♦ GNR 325 Listing Notice 2 Activity 17	Part A1(d)(i) Listing and specified activities.	Application for a Part 2 amendment of the EMPR as well as an EA submitted to DMRE-EC. Ref No: EC 30/5/1/2/2/228 MR.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE POLICY AND LEGISLATIVE CONTEXT
♦ GNR 327 Listing Notice 1 Activity 12 ♦ GNR 327 Listing Notice 1 Activity 19 ♦ GNR 327 Listing Notice 1 Activity 22 ♦ GNR 327 Listing Notice 1 Activity 24 ♦ GNR 327 Listing Notice 1 Activity 28		
National Environmental Management: Air Quality Control Act, 39 (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)(g)(iv)(1)(a) Type of environment affected by the proposed activity – *Air Quality and Noise Ambiance.* Part A(1)(g)(viii) The possible mitigation measures that could be applied on the level of risk – *Air Quality and Noise Ambiance*.	The mitigation measures proposed for the site take into account 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 A1(g)(iv)(1)(a) Type of environment affected by the proposed activity - *Biological Environment* Part A(1)(g)(viii) The possible mitigation measures that could be applied on the level of risk – *Mining, Biodiversity Conservation Areas, and Vegetation.*	Should Site Alternative 1 be approved and the proposed mitigation measures be implemented no aspects of the project could be identified that triggers the NEM:BA, 2004. 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. NEM:WA, 2008: National norms and standards for the storage of waste (GN 9260).	Part A(ii) Description of the activities to be undertaken: *1.2.3 Waste Management Programme & 2.3.5 Waste Management* Part A(1)(g)(viii) The possible mitigation measures that could be applied on the level of risk – *Waste Management*.	The mitigation measures proposed for the site take into account the NEM:WA, 2008.
National Heritage Resources Act No 25 of 1999.	Part A(1)(g)(iv)(1)(a) Type of environment affected by the proposed activity – *Human Environment.* Part A(1)(g)(viii) The possible mitigation	The mitigation measures proposed for the site includes specifications of the NHRA, 1999.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE POLICY AND LEGISLATIVE CONTEXT
	measures that could be applied on the level of risk – *Cultural and Heritage Environment.*	
National Road Traffic Act, 1996 (Act No. 93 of 1996)	Part A(ii) Description of the activities to be undertaken: *2.2.5 Access Roads.* Part A(1)(g)(viii) The possible mitigation measures that could be applied on the level of risk – *Existing Infrastructure*.	The mitigation measures proposed for the project take into account the NRTA, 1996.
National Water Act, 1998 (Act No. 36 of 1998) read together with applicable amendments and regulations thereto. Department of Water Affairs and Forestry Best Practice Guideline Series (2007).	Part A(1)(g)(iv)(1)(a) Type of environment affected by the proposed activity – *Hydrology and Geohydrology.* Part B(1)(d)(viii) Has a water use licence been applied for?	The presence of the drainage lines within the mining footprint, and the use of borehole water necessitate a water use application in terms of Section 21 of the National Water Act, 1998 (Act No 36 of 1998) (NWA). The application was submitted in 2020 and is currently in the final review stage at the DWS (see figure below). The mitigation measures proposed for the site take into account the NWA, 1998.
Public Participation Guideline in terms of the NEMA EIA Regulations.	Part A(1)(g)(ii) Details of the Public Participation Process Followed	Public participation was conducted in accordance with the public participation guidelines.
Spatial Planning and Land Use Management Act, 2013 (Act No 16 of 2013)	Part A(1)(d)(ii) Details of the activities to be undertaken – 2.2.1 Zoning. Part A(1)(f) Need and desirability of the proposed activities.	DBP Consulting submitted a Land Use Application for the Departure to Permit Mining Rights on Portion 1 of Farm No 652 in terms of the SPLUMA legislation.
The South African Constitution.	Implied throughout the document.	To be upheld throughout the EIA assessment, planning-, construction-, operational- and decommissioning phases.



Mrs Murchellin Saal (Environmental Consultant) e-Mail: murchellin.s@greenmined.co.za — e-WULAAS - Water Use Licence Applications

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APPLICATION STATUS

Water User: Wansley Siyakhula Pty Ltd

Application: Wansley Quarry

Duration: Day 147 of 300

Current Status: Applicant : Prepares WUL Application for submission

#	Date	Applicant	Department	Duration in Days
1	3/17/2020 2:33:28 PM	Applicant : Prepares WUL Application for submission		231 Days (Current)
2	12/5/2019 2:18:09 PM		General Authorisation - Assesment	103 Days
3	12/5/2019 10:00:47 AM		Site Inspection Determinations	1 Days
4	11/19/2019 3:23:19 PM		Site Inspection Determinations	16 Days
5	11/19/2019 1:21:25 PM	Applicant : Prepares WUL Application for submission		1 Days
6	10/23/2019 12:17:14 PM		Site Inspection Determinations	27 Days
7	9/25/2019 10:40:36 AM	Applicant : Prepares WUL Application for submission		28 Days
8	7/25/2019 9:30:32 AM		Pre Application Enquiry	62 Days
9	7/24/2019 1:19:06 PM		Pre Application Enquiry	1 Days
10	6/26/2019 7:00:57 AM	Applicant : Prepares Pre-application for submission		28 Days

Figure 16: Proof of water use licence application pending at the DWS (screenshot taken November 2020).

f) Need and desirability of the proposed activities.

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

WANSLEY QUARRY:

(Information extracted from the approved Environmental Management Programme Report of Wansley Quarry, March 2008)

The approved EMP (2008) of Wansley Quarry mentions that Wansley Quarries is one of the larger suppliers of weathered dolerite in the greater East London area. The mine has been operational for the past 20 years and the mining right is valid until 2026 with the option of renewal. The material mined from the property is sold locally (in and around the Eastern Cape Province) to the building, construction and road maintenance sector. Customers include, but are not limited to:

- Block yards;
- Civil Contractors;
- Local hardware stores; and
- Local Municipalities.

The mine employs twenty-two staff members that are all from the local community. In addition, thereto the implementation of the Social and Labour Plan (which is obligatory for a mining right holder) contributes positively to the socio-economic environment of the local community.

This document, the amended EIAR and EMPR, entails the second revision of Wansley Quarry's approved EMPR, with the purpose of aligning the mining documentation with the Section 11, and

-102 amendment application to add dolerite as a commodity, and ±32.6426 ha to the current ±5.21 ha mining footprint.

SECTION 102 AMENDMENT APPLICATION:

The MR holder identified the need to extend the mining boundary so as to secure a larger portion of the dolerite resource on the property as this will ascertain and prolong the lifespan of the mine. The increase in building-, construction- and road maintenance projects in the vicinity of the property motivated the continued operation of the mine. The proposed amendment of the mining method to include blasting of the hard rock, will allow the MR Holder to access the more solid dolerite that underlie the weathered dolerite resource.

TOWN PLANNING MOTIVATION:

(Information extracted from the Town Planning Motivation attached as Appendix F2)

The SLUMA governs all spatial planning and land use management matters. Further to this, the five SPLUMA Principles are used to guide all legislative processes that apply to this act. In essence the SPLUMA Principles guide all land development matters and are used to protect all citizens of their land rights. The following table shows how the proposed expansion of Wansley Quarry aligns with the five SPLUMA Principles:

Table 8: Summary of how the proposed development aligns with the five SPLUMA Principles (DBP Consulting, 2021)

SPLUMA PRINCIPLES	QUARRY EXPANSION
Spatial Justice	1. Spatial Justice protects land owners from discrimination of any kind. This extends to both home ownership and business interests. 2. This principle protects the rights of the land owner to use their property to protect their livelihood. 3. The continuation of this business and its natural expansion is protected in terms of spatial justice. 4. This quarry has historical significance in this community and must be protected.
Spatial Sustainability	1. The sustainability of surrounding communities will be protected with the continued provision of jobs and economic security. 2. Land use systems must promote development that is within the fiscal, institutional, and administrative means of the Republic. 3. This mine has operated at various capacities over the past 20+ years and has become a key component of the community. 4. Promote and stimulate the effective and equitable.
Efficiency	1. This quarry efficiently makes use of natural resources and infrastructure to fulfil an important consumer demand. 2. The expansion of this quarry will allow more effective and efficient distribution of building materials to the construction industry. 3. This quarry is located outside of the urban edge and within a rural area. 4. This quarry is located within 4 km of the high mobility N6 highway.

SPLUMA PRINCIPLES	QUARRY EXPANSION
Spatial Resilience	1. The expansion of this quarry will enable the surrounding community to remain resilient and secure their livelihoods. 2. The BCM Spatial Development Framework does not prohibit a quarry in this area. 3. The expansion of the quarry footprint will result in no harm to any communities since it does not impede on the livelihood of any persons. 4. Should this quarry be removed or cease operation, there will be a significant negative impact on the local economy.
Good Administration	1. The rights to this quarry are being applied for in terms of the applicable legislation and the rights to submit an application are protected by this principle.

Character of the Surrounding Area:

It is the opinion of the Town and Regional Planner (DBP Consulting) that the impacts of the proposed project on the existing character of the area will be minimal. This is primarily due to the fact that the quarry has been operating in various capacities over the course of the past 20 years. It can therefore be state that this quarry is in fact a defining feature of this community and has been for many years. The increase in the size of this quarry will only add to an existing feature and will not disrupt the *status quo*.

The character of the study area can be broadly described as a rural agricultural based community outside of the urban edge. In relation to this, a quarry is seen as both suitable and appropriate within this rural space, since mining and agriculture are core rural economies throughout South Africa. Quarries in particular have unique locational requirements, whereby they need to remain close enough to their prospective consumer base, but remain outside the urban footprint. The rural area where Wansley Quarry is located is an ideal example of this.

Precedents:

The Town Planning Motivation attached as Appendix F2 notes various precedents with a similar circumstance to that of Wansley Quarry. DBP Consulting notes that the size, location and access associated with quarries is fairly standard and follows a common theme. Quarries are typically located on the outskirts of the urban footprint, generally 4-6 km at minimum from the nearest urban areas. They typically require access to higher order mobility routes (national or regional roads), and their standard operational size ranges around 50 ha. From a Town Planning perspective, the location and proposed size of Wansley Quarry aligns with these precedents and is not out of place among its competitors.

Conclusion:

DBP Consulting concluded that from a Town Planning perspective, Wansley Quarry is ideally located and its proposed expansion is in line with similar precedents that have been set. Per the

SPLUMA Principals the land owner has every right to make application for this expansion in order to protect their livelihood and promote further employment within the community. In terms of its role within the community, Wansley Quarry has been a contributor within this community for many years and has every right to grow along with the rest of the community.

In conclusion, DBP Consulting is of the opinion that the proposed project has no associated risk to the community from a land use or spatial planning point of view.

NEED AND DESIRABILITY:

The need and desirability of the proposed extension operation 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 9: 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?	As discussed under Heading A(1)(g)(iv)(1)(a) *Type of environment affected by the proposed activity*, the Mining and Biodiversity Map shows that the proposed footprint extends over an area of high biodiversity importance with a corresponding rating of high risk for mining. The ECBCP-CBA 2 (terrestrial) extends across the earmarked area, and the entire project site is located within an Aquatic CBA3_A3b due to the fact that this area falls within a hydrological primary catchment management area for an Aquatic CBA2_E2 Estuary. According to the National Wetland and NFEPA map of SANBI, the study area does not fall within a River FEPA. According to the NPAES spatial data, the study area is located well outside any Focus Areas. The Lombardy Private Nature Reserve is the nearest protected area (formal and/or informal) approximately 2 km to the east, and the vegetation type of the study area, Albany Coastal Belt (AT9), is classified as Least Threatened. Nkurenkuru Ecology and Biodiversity was appointed to determine the ecological integrity of the study area (see Appendix H2). During the sit visit it was found that a large portion of the Wansley property as well as some of the surrounding landscape do not meet the criteria that justify the area as a CBA2. Refer to Part A(1)(g)(iv)(c) *Description of the specific environmental features and infrastructure on site – Site Specific Mining and Biodiversity Conservation Areas* for a full discussion in this regard.	Desirable
How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity?	From an ecological perspective, no objective or motives (identification of impacts of high ecological significance, etc.) were identified which would hinder the establishment of this development. Activities and impacts are regarded as acceptable from an ecological perspective and will not cause detrimental impacts to the ecological features located within the affected area and surrounding properties. Therefore, it is the opinion of the ecologist that the development may be authorised, subject to the implementation of the recommended mitigation measures.	Desirable
How will this development pollute and/or degrade the biophysical environment?	Due to the nature of the project, and the fact that the workshop and storerooms are located off-site, very little general/hazardous waste is generated as a direct result of the mining activities. Should mine management implement the mitigation measures listed in this report, the mining related waste will be managed in a responsible manner with documented proof that complies with the cradle-to-grave principle. The SWMP proposes the addition of two SWD's to control the runoff from the mining area. In addition to the SWDs, the specialist also proposed dirty water containment systems to ensure dirty water generated on the site is contained. Apart from	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**
	possible dirty water that may be generated at the mine, the surrounding environment may also be affected by dust, noise, and/or weeds/invader plant species that originate from the operational areas. Mitigation measures to manage these impacts are proposed in this report to minimise the associated impacts.	
What waste will be generated by this development?	Due to the nature of the project, and the fact that the workshop and storerooms is located off-site, very little general waste is generated as a direct result of the mining activities. Any waste generated during the operational phase, will be contained in a sealable refuse bin that will be incorporated into the existing waste disposal system of the farm. As mentioned earlier, hazardous waste is mainly the result of accidental spillages/breakdowns. Such contaminated areas will be cleaned immediately (within first hour of the occurrence) and the contaminated soil contained in a designated hazardous waste container that will daily (when applicable) be removed to the MR holder's workshop on the farm, from where it is disposed of as part of the hazardous waste disposal system of the farm. Site employees make use of the ablution facilities on the farm, and no chemical toilets are/will be placed in the mining area. No waste will be disposed of or treated on the farm.	Highly Desirable
How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage?	Wansley Quarry has been operational for the past 20 years as one of the larger suppliers of weathered dolerite in the greater East London area. In light of this, dolerite mining is a known activity on Portion 1 of Farm No 652. The HIA notes that the previous disturbances relating to mining and agricultural developments are clearly visible in the study area. These developments would have impacted on heritage resources if any occurred in the study area and the field survey confirmed that no structures occur in the study area and no archaeological material of significance was noted.	Highly Desirable
How will this development use and/or impact on non-renewable natural resources?	Wansley Quarry sells the dolerite/gravel mined from the approved portion of Portion 1 of Farm No 652. Presently, it is believed that the proposed extension area may have an inferred reserve of >25 000 000 m³ dolerite. Based on the current production rate, the dolerite resource shows a potential life of mine of ±60 years. In light of this, it is believed that the MR holder responsibly consumes the dolerite 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?	Presently, the processing plant is powered by a generator until a connection to the Eskom grid can be secured. The water used at Wansley Quarry is extracted from a borehole on the farm. The water requirements mainly consist of water needed for dust suppression on the haul roads and the processing plant. The water used for dust suppression may be substituted when needed from the SWD proposed on the property. Also refer to Part B(d)(vii) *Volumes and rate of water use required for the mining, trenching or bulk sampling operation*.	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 were a risk-averse and cautious approach applied in terms of ecological impacts?	Please refer to Part A(1)(g)(iv)(c) *Description of the specific environmental features and infrastructure on site – Site Specific Hydrology and Geohydrology, Site Specific Mining and Biodiversity Conservation Areas, and Site Specific Vegetation* for a full discussion in this regard.	Desirable
How will the ecological impacts resulting from this development impact on people's environmental right?	Wansley Quarry has been in existence for the past 20 years, and the mine is therefore managed in accordance with the current land use practices at the farm. As mentioned in Part A(1)(u)(i)(1) *Impact on the socio-economic condition of any directly affected person*, the activity may impact the local traffic levels, have a visual impact, affect air quality and noise ambiance, or result in the spreading of weeds/invader plant species from the mining footprint. The degree and significance of the potential impacts are assessed 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 through the life of the activity*. If the mitigation measures and monitoring programs, as proposed in this document, is implemented, it is believed that the potential ecological impacts associated with the proposed activity can be reduced to an acceptable level.	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.	Gravel mining commenced in the year 2000 on the farm, and the revenue generated by the mine has since then been an important income to the owners. As mentioned earlier, Wansley Quarry is well known in the surrounding community, employing 22 local residents, and contributing to the community as part of its SLP obligations. The proposed extension (if approved) will contribute to the continued existence of the mine as an important dolerite/gravel supplier in the greater East London area.	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?	Please refer to Part A(1)(g)(iv)(c) *Description of the specific environmental features and infrastructure on site – Site Specific Hydrology and Geohydrology, Site Specific Mining and Biodiversity Conservation Areas, and Site Specific Vegetation* for a full discussion in this regard. The ecologist concluded that from an ecological perspective, no objective or motives (identification of impacts of high ecological significance, etc.) were identified which would hinder the establishment of this development. Activities and impacts are regarded as acceptable from an ecological perspective and will not cause detrimental impacts to the ecological features located within the affected area and surrounding properties. Therefore, it is the opinion of the ecologist that the development may be authorised, subject to the implementation of the recommended mitigation measures.	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	Kindly refer to the following sections of this report: ♦ Part A(1)(g) *Motivation for the preferred development footprint within the approved site including a full description of the process followed to reach the proposed development footprint within the approved site;* ♦ Part A(1)(g)(i) *Details of the development footprint alternatives considered;* ♦ Part A(1)(g)(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)(g)(x) *Statement motivating the alternative development location within the overall site.*	Desirable

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)(g)(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?	As mentioned earlier, Wansley Quarry has been operational for the past 20 years. The mine is a known supplier of dolerite/gravel in the greater East London community and contributes directly to the society through the employment of 22 local residents as well as the Local Economic Development (LED) commitments of the mine (stipulated in the SLP). Indirectly, the mine contributes to infrastructure development in the surrounding area (gravel supplier) and the spending of wages in the East London area.	
How will this development address the specific physical, psychological, developmental, cultural	The material mined at Wansley Quarry is sold locally (in and around the Eastern Cape Province) to the building, construction and road maintenance sector. Customers include, but are not limited to, the following: ♦ Block yards;	Highly Desirable

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		
Question	**Response**	**Level of Desirability**
and social needs and interests of the relevant communities?	♦ Civil Contractors; ♦ Local hardware stores; and ♦ Local Municipalities In addition, the mine has to meet the commitments of the SLP regarding Human Resources Development, Local Economic Development, and the process pertaining to management of downscaling and retrenchment. Also refer to the discussion under Part A(1)(g)(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.*	
Will the development result in equitable impact distribution, in the short- and long-term?	The proposed extension of the mining area and the addition of hard rock mining (as a result of blasting) will considerably prolong the lifespan of the mine, which will directly (positively) affect the work security of the employees. This is of crucial importance in the BCMM with an unemployment rate of 35.1%. Further hereto, the proposed project will operate in a socially and economically sustainable manner during both the short- and long term. The procurement progression plan of Wansley Siyakhula (Pty) Ltd entails the support of local enterprises, of which preference will be given to HDSA & women owned local suppliers. Wansley's employment equity is also in line with the provisions of the Mining Charter 2018, as well as the provisions of the Employment Equity Act, 1998 (as amended).	Highly Desirable
In terms of location, describe how the placement of the proposed development will contribute to the area.	The dolerite resource on the property has been mined since the year 2000, and as mentioned earlier, Wansley Quarry is a well-known dolerite/gravel supplier in the area. The proposed location of the extension area was identified within an already disturbed area with a low ecological significance. The placement of the proposed activity will contribute to the area in terms of the social and labour commitments proposed by the MR Holder.	Desirable
How were a risk-averse and cautious approach applied in terms of socio-economic impacts?	The mitigation measures proposed in this report, but more importantly those of the final EIAR and EMPR (to be drafted), are compiled in consultation with the specialists to reduce the potential impact that the proposed activity may have on the receiving environment. Once approved, the management outcomes are legally binding to be implemented by site management for the duration of the site establishment-, operational- and decommissioning phases.	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?	Wansley Quarry has been in existence for the past 20 years, and the mine is therefore managed in accordance with the current land use practices at the farm. As mentioned in Part A(1)(u)(i)(1) *Impact on the socio-economic condition of any directly affected person*, the activity may impact the local traffic levels, have a visual impact, affect air quality and noise ambiance, or result in the spreading of weeds/invader plant species from the mining footprint. The degree and significance of the potential impacts are assessed 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 through the life of the activity*. If the mitigation measures and monitoring programs, as proposed in this document, is implemented, it is believed that the potential ecological impacts associated with the proposed activity can be reduced to an acceptable level.	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?	Gravel mining commenced in 2000 on the farm, and the revenue generated by the mine has since then been an important income to the owners. As mentioned earlier, Wansley Quarry is well known in the surrounding community, employing 22 local residents, and contributing to the community as part of its SLP obligations. The proposed extension (if approved) will contribute to the continued existence of the mine as an important dolerite/gravel supplier in the greater East London area.	Highly Desirable
What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations?	The mitigation measures proposed in this report, but more importantly those of the final EIAR and EMPR (to be drafted), are compiled in consultation with the specialists to reduce the potential impact that the proposed activity may have on the receiving environment. Once approved, the management outcomes are legally binding to be implemented by site management for the duration of the site establishment-, operational- and decommissioning phases. Also refer to the discussion under Part A(1)(g)(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.*	Desirable
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?		

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 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 operates 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; Should the S102 amendment application be approved the extension area will also be subject to compliance with the above listed.	Highly Desirable
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.	The material mined at Wansley Quarry is sold locally to the building, construction and road maintenance sector. In addition, the mine has to meet the commitments of the SLP regarding Human Resources Development, Local Economic Development, and the process pertaining to management of downscaling and retrenchment.	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 operates in accordance with the specifications of the Mine Health and Safety Act, 1996 (MHSA). Site management holds daily discussions with the staff regarding the work to be performed and the environment in which the work will take place. Grievances/concerns can be lodged during the daily site meetings. The MHSA further requires the submission of quarterly occupational hygiene reports that record site specific occupational hygiene exposure assessments.	Highly Desirable

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		
Question	**Response**	**Level of Desirability**
Describe how the development will impact on job creation in terms of, amongst other aspects?	This application is for the extension of the existing mining area and no new job opportunities will be created. However, should the application be successful the job security of the current employees will be extended in accordance with the increased lifespan of the mine.	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.	Wansley Quarry operates under a valid mining right issued by the DMRE. Compliance of the mine with the approval conditions is reported on as per the departmental specifications. Should the S102 amendment application be approved the extension area will also be managed in accordance with all the mining and environmental related legislations.	Highly Desirable
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 quarry 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 grass mix and the area will be returned to agricultural use. 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 right 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. Wansley Quarry has a bank guarantee lodged with the DMRE that is deemed sufficient to cover the financial provision amount needed to rehabilitated the mining footprint. Should the S102 amendment application be approved and the DMRE require a change to the current bank guarantee the document will be amended accordingly.	Highly Desirable
Considering the need to secure ecological integrity and a healthy bio-physical environment,	Kindly refer to the following sections of this report:	Desirable

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		
Question	**Response**	**Level of Desirability**
describe how the alternatives identified, resulted in the selection of the best practicable environmental option in terms of socio-economic considerations	♦ Part A(1)(g) *Motivation for the preferred development footprint within the approved site including a full description of the process followed to reach the proposed development footprint within the approved site;* ♦ Part A(1)(g)(i) *Details of the development footprint alternatives considered;* ♦ Part A(1)(g)(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)(g)(x) *Statement motivating the alternative development location within the overall site.*	
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.	Refer to the discussion under Part A(1)(g)(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.*	

g) Motivation for the preferred development footprint within the approved site including a full description of the process followed to reach the proposed development footprint within the approved 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.

APPROVED WANSLEY QUARRY

Not applicable.

SECTION 102 APPLICATION

The environmental assessment considered one site alternative (S1), two project alternatives (P1 & P2) and two technology alternatives (T1 & T2), apart from the no-go alternative.

S1 entails the extension of the current mining footprint with ±32.6 ha. P1 allows only the use of the W-Road by mining related vehicles to and from the quarry, and T1 makes provision for the mining of the dolerite resource by means of blasting.

The following matters contributed to the identification of the preferred development alternatives (S1 & P1 & T1):

1. **Visual Characteristics –** The proposed mining extension will be screened from the western and southern neighbours. No permanent residences, within <1 km, were identified on the northern and/or eastern neighbouring properties that could be negatively affected by the potential visual impact associated with the proposed activity and therefore the potential visual impact is deemed to be of medium significance.

2. **Air Quality –** Blasting: **D**ust could hinder the occupants of properties number 5 and 6 (Figure 33) between December – February, where after the seasonal change in wind direction will most likely move any dust (due to blasting) away from the neighbouring properties. Monthly fallout dust monitoring will report on the direction and level of dust generated as a direct result of the mining activities, and based on these results the blasting plan could be adjusted should the dust levels exceed the allowable standard.

   Processing Plant: The potential dust impact to be created as a direct result of the crushing and screening of the dolerite can be reduced through the

implementation of the mitigation measures proposed in this document. As with the dust generated during a blast, it is proposed that the actual dust levels be monitored through the implementation of a monthly fallout dust monitoring programme that will identify problem areas in need of additional mitigation.

Stockpile areas, handling and transport of material: Minimising the amount of material stockpiled at the site, moistening denuded areas and gravel roads within the mining footprint, as well as the W-Road for as long as it remains unsurfaced will contribute to mitigating the potential increase in dust levels as a result of the mining activity.

3. **Noise Ambiance** – Blasting: The modelling results (provisional) show that the predicted disturbance levels are within acceptable limits at 500 meters from the quarry workings, and as the distance increases the disturbance levels decrease.

4. **Geology –** The site (S1) is underlain predominantly by an elongated north-south trending, near vertical dolerite dyke. Presently, it is believed that the proposed extension area may have an inferred reserve of >25 000 000 m^3 dolerite with a potential life of mine of ±60 years.

5. **Hydrology and Geohydrology** –The EFRSA states that the loss of the two drainage lines (within the mining footprint) is acceptable as these drainage lines are already in severe degraded and transformed state with very limited functionality maintained. Activities and impacts are regarded as acceptable from an ecological perspective and will not cause detrimental impacts to the ecological features located within the affected area and surrounding properties. Two stormwater dams and –containment systems will be used to manage the stormwater from the mining area.

6. **Biodiversity and Conservation** – Ground truthing confirmed that a large portion of the Wansley property as well as some of the surrounding landscape do not meet the criteria that justify the area as a CBA2. These areas should rather be regarded as Other Natural Areas. S1 is outside of the High Sensitive (No-Go) areas and will not contribute to a further reduction in landscape connectivity.

7. **Groundcover –** The EFRSA concludes that the vegetation within the study site resembles a severely modified and transformed form of Albany Coastal Thicket, and as such, the current layout is regarded as acceptable from an ecological point.

8. **Fauna** – No faunal species of conservation concern were identified within the approved mining area or proposed extension footprint.

   Blasting impact on caged birds: The projected features suggest that there is a real potential for a negative impact on the caged birds. However, the nature of this impact is unclear. It is proposed that baseline vibration- and noise monitoring be done at the bird enclosures prior to the first blast, and thereafter with each blast to determine the exact ground vibration and noise levels experienced during a blast at the bird enclosures. Following the first readings (after the first blast) guidance could be obtained from an ornithologist regarding the best way forward to minimise the potential impact of blasting on the caged birds in question.

9. **Existing infrastructure** – Power Line: The MR Holder will approach Eskom regarding the deviation of the power line from the mining footprint, but until such time a buffer no-go area of 10 m will be maintained around the power line.

   Blasting: Prior to the first blast, the structural integrity of the infrastructure within 500 m of the mining footprint will be determined. During the blast, vibration measuring equipment will be placed at strategic points. Should the vibration tests indicate excessive high readings the blasting at the quarry will be amended to lower the impact. Any structural damage, directly resulting from the mining at the quarry, will be repaired at the cost of the MR Holder.

   Access Roads: Upon approval of the S102 application, Wansley Quarry will only make use of the W-Road to haul mined material with heavy vehicles. The W-Road will be surfaced within three years of operation (S102 approval), and in the interim the gravel pavement structure of the W-Road will be maintained by the MR Holder as proposed in this report.

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.

APPROVED WANSLEY QUARRY

Project/site alternatives does not apply to the current Wansley operation, as the mine has been in operation since 2000.

S102 APPLICATION

During the EIA phase, apart from the no-go alternative, one site alternative, two project alternatives and two technology alternatives, discussed in more detail below, were considered upon review of the site specific information, comments received from the public, and the results of the specialist studies.

Site Alternatives:

Site Alternative 1 (S1) (Preferred Alternative): Site Alternative 1 entails the extension of the current mining footprint (±5.2 ha) with ±32.6 ha over Portion 1 of Farm No 652, within the boundaries of the GPS coordinates presented in the following table.

Table 10: GPS Coordinates of Site Alternative 1 (Preferred Site Alternative).

NUMBER	DEGREES, MINUTES, SECONDS		DECIMAL DEGREES	
	LAT (S)	LONG (E)	LAT (S)	LONG (E)
A	32º54'43.53"	27º55'18.20"	-32.912092º	27.921722º
B	32º54'40.46"	27º55'20.88"	-32.911240º	27.922466º
C	32º54'38.70"	27º55'23.42"	-32.910751º	27.923173º
D	32º54'37.25"	27º55'28.39"	-32.910348º	27.924552º
E	32º54'36.18"	27º55'34.28"	-32.910052º	27.926190º
F	32º54'54.49"	27º55'55.51"	-32.915137º	27.932086º
G	32º54'59.18"	27º55'42.07"	-32.916439º	27.928354º
H	32º54'59.14"	27º55'33.87"	-32.916428º	27.926074º

Figure 17: Satellite view showing the position of Site Alternative 1 within the surrounding landscape, where the red polygon shows the current mining footprint, the yellow polygon shows the proposed extension area and the white lines show the access road. (Image obtained from Google Earth)

S1 is deemed the only viable site alternative as the position of the dolerite deposit and the property boundaries dictate the layout. The proposed extension area (S1) borders directly onto the southern and western farm boundaries. Moving the mining footprint to the north, will impact the encroaching thicket vegetation between the access road and the riparian fringe of the Qinira River as well as remove the mining footprint from the optimal dolerite resource. The proposed mining footprint (S1) cannot be moved to the east due to the presence of the Qinira River, associated riparian fringe and farming infrastructure. In light of this, S1 is deemed the only viable alternative site.

S1 was identified during the EIA phase by the MR Holder and project, as the preferred site alternative due to the following:

- The proposed footprint offers the MR holder access to the dolerite deposit on the property.
- The extension of the mining area will prolong the lifespan of Wansley Quarry.

- The extension footprint was chosen over an area that was previously used for pineapple cultivation, and no areas of CBA importance need to be disturbed to allow the proposed activity.
- The proposed mining footprint falls outside the sensitive riparian areas identified by the ecologist.
- The proposed mining sequence will ensure a mining area with a slope geometry that conforms to the norms and standards of the DMRE, and mining the quarry in bench-form will simplify the rehabilitation of the disturbed area during the closure phase.

Project Alternatives:

During the EIA phase, the roads used to access Wansley Quarry, and the associated traffic impact of the mining activities on the B- and W-Roads were identified as a matter in need of assessment. Following receipt of the public comments and outcome of the traffic impact assessment, the use of both roads (B- & W-Road) (P2) was compared to the use of only the W-Road (P1). Subsequently, the use of only the W-Road (P1) by mining related vehicles to and from the quarry was identified as the preferred option in light of the following:

- Wansley Quarry already makes use of the existing W-Road to access the quarry, and enter the N6 national road via a formal (existing) entrance;
- If only the W-Road is used, mining related traffic will no longer have an impact on the B-Road, -road users, or surrounding residents;
- The use of only the W-Road will focus maintenance resources to one route instead of dividing it between both the B- and W-Roads;
- Although the proposed future increase in traffic does not affect any peak capacities of the road or intersections, the transport of heavy goods generated by the quarry does/will impact the pavement structure of the gravel roads. The TIA therefore proposed that the W-Road be surfaced. This will culminate in a surfaced road (W-Road) (within 3 years of approval of the S102) that will conform to the provincial minimum standards. Surfacing of the W-Road will address impacts such as increased road noise, dust generation, and with proper alignment controlling driver speed;
- Until such time as the W-Road is surfaced, quarry management will be responsible for the maintenance of the W-Road as discussed earlier.

Technology Alternatives:

The S102 application entails adding blasting to the proposed mining method of Wansley Quarry. During the EIA process the mining of the proposed dolerite resource on the property by means of blasting (T1) was assessed opposed to the continued mining of only the weathered material through mechanical excavation (T2). Subsequently, the use of blasting was identified as the preferred option due to the following:

- As confirmed by the mine planner, Wansley Quarry is underlain predominantly by a near vertical dolerite dyke that could be mined to a limiting depth of 120 m (based on present data). The topsoil and weathered zone extends to ±40 m in depth (varying over the proposed footprint), where after the fresh rock mass zone extends to >120 m in depth. Should the mining method be restricted to only mechanical excavation (no blasting), ±67% of the available dolerite resource on the property cannot be mined. In other words, excluding blasting from the mining method will sterilise ±67% (±17 125 631 m^3) of the available resource on the property;
- The mine planner estimated that based on the current available data and the planned volume to be mined, the predicted Life of Mine (LoM) is approximately 60 years (departmental approval dependent). If, the mining method is restricted to only mechanical excavation it reduces the LoM to ±20 years. A reduction in the LoM will directly affect the employees of the quarry and discontinue the contributions of the quarry in terms of the SLP requirements. Indirectly, it will reduce the contribution of the operation to the local- and national economy;
- Although blasting will periodically increase the dust levels of the receiving environment (directly after a blast), it was shown that the potential hindrance to occupants of the nearest properties, to the north-west, will most likely only be between December – February where after the seasonal changes in wind direction will probably move a dust plume away from existing housing infrastructure (except those of the landowner). If, the mitigation measures proposed in this document is implemented by site management, it is believed that this impact can be reduced to a Low-Medium significance;
- The model proposed by Cambrian CC, showed that the predicted disturbance levels (PPV and dB) will be well below the USBM standards,

and within acceptable limits at 500 meters from the quarry workings. The initial mining direction is proposed to be from the southern boundary towards the north, until Step 3 (refer to Figure 14) is reached where after the quarry pit will be mined from the outside boundaries towards the centre. This translates to the initial blasting impact being centred along the southern property/mining boundary. If, the mitigation measures proposed in this document is implemented by site management, it is believed that blasting at the quarry will not affect any structures in the surrounding environment, and the impact can be reduced to Low significance.

No-go Alternative:

The no-go alternative entails no change to the *status quo* and is therefore a real alternative to be considered. In the event that the no-go alternative is implemented the land use of the earmarked footprint will remain that of agriculture, with the solid dolerite resource unmined. The following matters were considered regarding the no-go alternative:

- Should the no-go option be implemented the MR Holder would not be able to expand the mining footprint and the gravel and dolerite deposits on the property will not be exploited. This will result in a direct loss of income to Wansley Siyakhula (Pty) Ltd as well as the landowner;
- The weathered dolerite that can be removed by mechanical excavation from the approved mining footprint (5.2 ha) has been depleted, and if the no-go option is implemented Wansley Quarry has to close down. Although closing the Quarry will remove the traffic, noise, and dust impacts from the surrounding environment it will also result in the loss of twenty-two job opportunities, discontinue the contributions of the quarry in terms of the SLP requirements, and forfeit the economic contribution of the operation on a local- and national scale;
- Adding blasting to the mining method will allow the proper alignment of the southern high wall at the quarry in order for it to comply with DMRE health and safety standards. This cannot be achieved if the *status quo* prevails;
- The present EMPR of Wansley Quarry does not prevent the use of the B-Road by mining vehicles, nor requires the surfacing of the W-Road (by site management) as proposed in this EIAR. Should the S102 application be rejected and therefore the no-go option prevails, the mitigation- and

monitoring measures proposed as part of this study will become superfluous nor will site management have to adhere thereto.

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 attend 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).

S102 APPLICATION

During the initial public participation process, of this S102 application, the stakeholders and I&AP's were informed of the project by means of background information documents that were sent directly to the contact persons. A 30 days commenting period was allowed that expired 13 October 2020. The following table provides a list of the I&AP's and stakeholders that were informed of the project:

Table 11: List of the landowners, I&AP's and stakeholders that were supplied with a copy of the background information document.

SURROUNDING LANDOWNERS & INTERESTED AND AFFECTED PARTIES	STAKEHOLDERS
♦ Warren Farms CC Portion 1 of Farm No 653 ♦ Mette Pi La Cour Nielsen Portion 15 of Farm No 652 ♦ Boniface Trust Portion 14 of Farm No 652 ♦ Johan Frank Page Portion 42 of Farm No 821 ♦ Paul Francis Jonker Portion 44 of Farm No 821 ♦ Penelope Anne Stapleton Portion 45 of Farm No 821 ♦ Bruce Gordon McMillan / Lombardy Private Nature Reserve Portion 0 of Jagger No 656 ♦ Allen Brian Lennard Portion 41 of Farm No 821 ♦ BJ Cilliers Boorkontrakteurs (Pty) Ltd Portion 73 of Farm No 821	♦ Amathole District Municipality; ♦ Buffalo City Metro Municipality – Ward 15 ♦ Buffalo City Metro Municipality; ♦ Department of Economic Development, Environmental Affairs and Tourism; ♦ Department of Labour; ♦ Department of Public Works; ♦ Department of Rural Development and Agrarian Reform; ♦ Department of Rural Development and Land Reform; ♦ Department of Transport; ♦ Department of Human Settlements, Water and Sanitation; ♦ Eskom; ♦ SANRAL; ♦ South African Heritage Resources Agency (SAHRA).

SURROUNDING LANDOWNERS & INTERESTED AND AFFECTED PARTIES	STAKEHOLDERS
♦ Leon Joubert Portion 74 of Farm No 821 ♦ Alfred Willem Wild Portion 46 of Farm No 821 ♦ Mader van Niekerk	

I&AP'S AND STAKEHOLDERS THAT REGISTERED / COMMENTED DURING THE INITIAL NOTIFICATION PERIOD

- Boniface, Francois & Trevor;
- Boniface, Trevor & Tammy;
- Cilliers, Jaco;
- Dakiso, Judith, Liz and Mteto;
- Department of Water and Sanitation;
- Joubert, Cathy;
- Lennard, Michele Adriana;
- Masters, Robert;
- Mette Pi la Cour Nielsen & Vaughn Bruce;
- Moss, Andrew;
- Reynhardt, Debbie;
- Scheun, EW;
- Scheun, Andre;
- Stapleton, Penny;
- Webber, Dean;
- Wild, Alfred.

An advertisement was placed in Go & Express on 10 September 2020 and on-site notices were placed on 11 September 2020 at the turn-off from the N6 onto W-Road, the R102 and B-Road intersection, and the W-Road and B-Road T-junction. The advertisement, background information document (BID) and on-site notices invited the recipients to register/comment on the project on/before 13 October 2020.

In accordance with the timeframes stipulated in the EIA Regulations, 2014 (as amended by GNR 326 effective 7 April 2017) the Draft Scoping Report (DSR) was compiled to allow perusal of the report by the I&AP's and stakeholders listed above. A 30-day commenting period, ending 08 January 2021, was allowed for perusal of the documentation and submission of comments. This commenting period was extended with 7 days to 15 January 2021. The following table provides a list of the I&AP's and stakeholders that were invited to comment on the project:

Table 12: List of the landowners, I&AP's and stakeholders invited to comment on the DSR.

SURROUNDING LANDOWNERS & INTERESTED AND AFFECTED PARTIES	STAKEHOLDERS
♦ Warren Farms CC Portion 1 of Farm No 653 ♦ Mette Pi La Cour Nielsen Portion 15 of Farm No 652 ♦ Boniface Trust Portion 14 of Farm No 652 ♦ Johan Frank Page Portion 42 of Farm No 821 ♦ Paul Francis Jonker Portion 44 of Farm No 821 ♦ Penelope Anne Stapleton Portion 45 of Farm No 821 ♦ Bruce Gordon McMillan / Lombardy Private Nature Reserve Portion 0 of Jagger No 656 ♦ Allen Brian Lennard Portion 41 of Farm No 821 ♦ BJ Cilliers Boorkontrakteurs (Pty) Ltd Portion 73 of Farm No 821 ♦ Leon Joubert Portion 74 of Farm No 821 ♦ Alfred Willem Wild Portion 46 of Farm No 821 ♦ Andre Scheun ♦ Andrew Moss ♦ Awie Scheun ♦ Dean Webber ♦ Debbie Reinhardt ♦ Eddie Scheun ♦ Judith Dakiso ♦ Mader van Niekerk ♦ Rob Masters	♦ Amathole District Municipality; ♦ Buffalo City Metro Municipality – Ward 15 ♦ Buffalo City Metro Municipality; ♦ Department of Economic Development, Environmental Affairs and Tourism; ♦ Department of Human Settlements, Water and Sanitation; ♦ Department of Labour; ♦ Department of Public Works; ♦ Department of Rural Development and Agrarian Reform; ♦ Department of Rural Development and Land Reform; ♦ Department of Transport; ♦ Eskom; ♦ SANRAL; ♦ South African Heritage Resources Agency (SAHRA).

SURROUNDING LANDOWNERS & INTERESTED AND AFFECTED PARTIES	STAKEHOLDERS
♦ Trevor & Tammy Boniface ♦ Wylde Attorneys Inc.	

I&AP'S AND STAKEHOLDERS THAT COMMENTED/RESPONDED ON THE DSR OR THEREAFTER
♦ Boniface, Francois; ♦ Boniface, Tammy; ♦ Cilliers, Jaco; ♦ Dakiso, Liz; ♦ Jonker, Paul; ♦ Lennard, Michele; ♦ Masters, Robert; ♦ Mette Pi la Cour Nielsen; ♦ Scheun, Andre; ♦ Van Niekerk; Mader; ♦ Whittington, Phil (Dr).

The comments and responses received on the DSR were incorporated into the Final Scoping Report that was submitted to the DMRE on 26 January 2021 for decision making. Upon approval of the Final Scoping Report (31 May 2021) this report the Draft Environmental Impact Assessment Report was compiled that will be circulated for public comments over a 30-day period that extends until 24 August 2021. The comments received on the draft EIA & EMPR will be incorporated into the final EIA & EMPR to be submitted to the DMRE for decision making.

See attached as Appendix G proof that the I&AP's and stakeholders were contacted.

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

(Complete the table summarizing comments and issues raised, and reaction to those responses)

Table 13: Summary of issues raised by I&AP's.

Interested and Affected Parties **List the names 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					
Landowner/s		-	-	-	-
Mr DP Coetzer Portion 1 of Farm No 652	**X**	Mr DP Coetzer is aware of the S102 application, where supplied with a copy of the DSR and will be informed of the availability of the DEIAR.			
Lawful occupiers/s of the land	No lawful occupiers, other than the landowner and Eskom has access to the property.				
N/A	**-**	**-**	**-**	**-**	**-**
Landowners or lawful occupiers on adjacent properties	**X**	**-**	**-**	**-**	**-**
Warren Farms CC ♦ Portion 1 of Farm No 653	**X**	-	To date no comments were received. Any comments received on the DEIAR and draft EMPR will be incorporated into the final EIAR and EMPR.		
Mette Pi La Cour Nielsen ♦ Portion 15 of Farm No 652	**X**	08/10/2020	The following comments were submitted by Mette Pi la Cour Nielsen and Vaughn Bruce on the proposed S102 application.	Greenmined acknowledged receipt of the comments on 13 October 2020 and responded as follows.	Refer to Appendix G for proof of the public participation process.

Interested and Affected Parties List the names 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

Comments received during the initial public participation phase:

"As a neighbour to the existing quarry my husband and I are worried about the proposed extension. I have gathered some thoughts and questions regarding the proposed extension and would like more information as the background information seemed vague on many important points. Please know that even with more information we both object to this extension. We bought our farm to live on a small farm surrounded by nature and the proposed size of the quarry will make it impossible. The quarry has been working at odd hours of the day and in weekends. One of my main worries as a neighbour is how and who is going to monitor the operation, since it's already not following its regulations.

Please note the following concerns and questions:

1. *The Listed Activities triggered by the proposed extension note the construction of a road, kindly indicate on a plan where the expected roads will be placed/ constructed?*
2. *The Listed Activities triggered by the proposed extension note the construction of dams/ weirs, kindly indicate on a plan where the expected dam/ weirs will be placed/ construct?*
3. *It appears from aerial imagery that the extension area has been recently burnt. Please confirm if this was routine burning or uncontrolled fire? Please describe the circumstances surrounding the fire.*
4. *Please elaborate, if one can at this stage, proposed operational times should the mining right be approved? Further to this, please clarify times that trucks will utilise haul roads, blasting times, crushing and screening times etc?*
5. *Please clarify management measures that are and will be in place to mitigate dust emanating from haul roads and crushing and screening operations?*
6. *Will there be an independent organisation that will routinely monitor compliance with the various approvals? And also, has there been audits done to date on the current mining operations and the associated compliance of such with the current approvals? It must be noted that the BID clearly shows the current mining approved mining area (in red) having been exceeded by the mining operations. It is concerning that the current approved area has been exceeded of which the likelihood of the extended mining area being exceeded is a potential risk that should be addressed with routine compliance audits.*
7. *The BID notes that the extent of the proposed extension area is ±37.8575 ha. This is significantly larger than the current footprint. Has the proponent investigated any alternatives (site and layout)? We would like to propose that the proponent presents alternatives for the extension.*
8. *The activities are taking place on Portion 1 of Farm 652. The extent of the property is approximately 133 ha. The area to be mined will comprise almost 30% of the property. Is there a requirement for the area where the property is to be mined to be rezoned and or/ subdivided for a specific land use? Or a departure from the land use be required for the duration of the mining licence? It is assumed the property has an agricultural zoning and the mining operations on the specific portion of the property don't comprise agricultural zoning activities.*
9. *Whilst we note the 2012 vegetation map used identifies the area as falling within Albany Coastal Belt vegetation type, we are aware that there is a more updated vegetation map available (2018 version). This is the third and latest update to the original 2006 Vegetation Map of South Africa, Lesotho and Swaziland. Changes made in the 2009 and 2012 versions were retained and additional portions of the 2006 map have been mapped at a finer scale, with 47 new vegetation types mapped since 2012. Based on this, the new vegetation type name that the site falls in is the "South Eastern Coastal Thornveld" vegetation type. Please update your information. This vegetation unit has a range of endemic (to South Africa) species that are often found in this vegetation type and*

Interested and Affected Parties List the names 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

the area that was burnt (intentionally or not) may have included such species. It is also noted that the extension area encroaches on "intact" vegetated area and clarification regarding the management/ mitigation of encroaching onto potentially protected (forest or non-forest) plant species is required.

10. *While it is noted that the various water use approvals/ registration processes are underway, adding more dams and water uses when there is no current valid water use licence in place seems risky when the current water uses have yet been approved. Please advise the stage of water use application phase that the current water use applications are at?*
11. *Given that the BID does not provide a location for the proposed dams, we are assuming the location of the dams are on the same drainage line that two existing dams are located on. Placing additional in stream structures to store water is expected to reduce water further from accessing the catchment downstream and the associated water uses. Clarification regarding the exact size of the dam as well as the locality of the dam is requested.*
12. *The following fauna species are often seen in this area:*
    - *Bushbuck*
    - *Common Duiker*
    - *Blue Duiker*
    - *Blesbok*

All these species are protected under the Provincial Nature Conservation Ordinance and further investigation regarding the impact of the mining operations on the habitat, breeding and movement of the above species is requested to be investigated, especially since the boundary of the extension area is encroaching on areas where vegetation is relatively thick in some sections. It must be further noted that the first three species are shy and sensitive species. Thank you for taking our worries, questions and objection in to consideration when continuing the report."

Greenmined's response to the above listed comments:

"Greenmined herewith acknowledge receipt of, and thank you for your detailed correspondence received 08 October 2020 on the proposed Section 102 amendment application of Wansley Siyakhula (Pty) Ltd in the East London area. We registered you both as Interested and Affected Parties on the project, and will henceforth keep you posted on the progress of the Environmental Impact Assessment process as well as supply you with a copy of the draft scoping report (DSR) for your perusal.

We acknowledge your concerns and have forwarded it to the project team for consideration and assessment. Our response to your concerns will be discussed in the EIA documents that will follow in due course, that will also be available to you for commenting. All your comments will be included in the Draft Scoping Report and discussed and assessed in the Environmental Impact Assessment Report that will all be available for your perusal and commenting. Further to this, please feel free to send us your suggestions regarding operational hours."

Interested and Affected Parties List the names 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

Additional response to the above listed comments (as included in the FSR):

- Operating hours:
  A proposal regarding the operating hours of the mine (including blasting-, crushing and screening times, and hours trucks will utilise the roads) will be compiled as part of the EIA process, and the outcome will be discussed in the DEIAR that will follow should the DMRE approve the Final Scoping Report.

- Compliance:
  Should the S102 application be approved, compliance with the mitigation measures and conditions approved as part of the EMPR and the Environmental Authorisation (EA) will be compulsory to the Right Holder as both the EMPR and EA are legally binding documents. In terms of Section 34 of the NEMA EIA Regulations, 2014 (as amended 2017) the holder of an EA must: *"(a) ensure that the compliance with the conditions of the environmental authorisation and the EMPR, and where applicable the closure plan, is audited; and (b) submit an environmental audit report to the relevant competent authority".* The regulations further stipulate that the environmental audit report (EAR) must be prepared by an independent person with the relevant environmental auditing expertise; provide verifiable findings on the level of performance against and compliance with the provisions of the requisite EA, EMP and Closure Plan, and the ability of the measures contained in the EMPR and Closure Plan to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking. Within 7 days of the date of submission of an EAR to the competent authority (DMRE) the holder of the EA must notify all potential and registered I&AP's of the submission of that report, and make such report immediately available to anyone on request, and on a publicly accessible website.

  The previous EAR of the mining operation was compiled and submitted to the DMRE in 2018. Should the Section 102 application be approved the areas that were mined outside the boundaries of the current mining right will be incorporated into the amended footprint of the mine.

- Road related listed activities:
  As mentioned earlier, when mining reaches the most northern part of the proposed extension footprint (refer to Figure 2) it may be necessary to divert the road (Mn10118 St / W-Road) along the northern mining boundary, this matter will be discussed in detail in the draft Environmental Impact Assessment Report. Should haul roads be needed where no farm roads exist the roads will be extended as mining progress. The footprint of the haul roads will be contained to the approved mining area.

- Dam/weir related listed activities:
  The stormwater management plan proposes the potential development of two stormwater dams (SWD) (refer to Figure 4). The development of the SWD's will be discussed in detail in the draft Environmental Impact Assessment Report once the relevant specialist recommendations were received.

- Burning of veld:
  The veld fire at the property was due to illegal fires set by trespassers that had to be extinguished by the community.

Interested and Affected Parties List the names 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
♦ Dust Management: The preliminary mitigation measures regarding the control of fugitive dust emissions are listed in this document under heading *2(l) The possible mitigation measures that could be applied and the level of risk – Fugitive Dust Emission Mitigation.* The mitigation measures will be updated/elaborated on upon receipt of the specialist's recommendations and presented in the DEIAR. ♦ Alternatives: Please refer to heading 2(h)(i) Details of all alternatives considered. ♦ Rezoning: The potential rezoning/temporary departure of the earmarked footprint area from agricultural to industrial use was referred to a town and regional planner. The outcome of the town and regional planner's findings will be included in the DEIAR. ♦ Vegetation description: The comment is noted and sent to the ecologist to incorporate into the ecological and surface hydrological study and assessment. ♦ Water use: The SWD's proposed as part of the stormwater management plan needs to be approved by the DWS prior to construction, and as mentioned earlier, the applicant is in the process of registering the use of the borehole on the farm with the DWS. The Water Use Licence Application (WULA) is presently in phase 1 – Application phase (refer to Figure 5). ♦ Faunal impact: The potential impact of the mining activities on the habitat, breeding and movement of local faunal species will be investigated as part of the EIA process and elaborated on in the DEIAR.				
Comments received on the DSR on 07 January 2021: "…*Regarding the compliance – I understand that they will have to follow the regulations. But it raises a concern when we already know that they have been operating outside the permitted area, had trucks working at odd hours and I believe blasting without permission. How often will an audit be required from them?* *Regarding operational hours – normal working hours (8-17). No late nights and no weekends. It's hard to imagine the noise pollution from the operational process, so please if that could be taken in to consideration when the hours are discussed. We live and work on our farm, so are here all day.*				

Interested and Affected Parties List the names 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
Regarding blasting – I have been told that blasting has a big effect on structures around it, if this is the case has it been considered? The proposed area for mining is close to our boundary fence/property therefore I would like to know more it. *That leads me to the road that will be needed on the north side of the proposed area. Again it is close to our boundary fence. Is there any regulations on how many meters a road like that is allowed to be from a boundary fence? And has it been considered?* *Will the vegetation that used to be on the site of the veld fire be taken in to consideration? It must be hard to do a full site report when it has all been burned*."				
Greenmined's response to the DSR comments, sent on 12 January 2021: "*Greenmined herewith acknowledge and thank you for the comments you submitted on 07 January 2021 regarding the draft Scoping Report for the Wansley Quarry Section 102 Amendment Application.* *Please see the following in response to your comments/questions:* • *Audit frequency: The audit frequency will be determined by the Department of Mineral Resources and Energy. However, at this stage we expect that an annual Environmental Audit Report will have to be submitted.* • *Work hours: Thank you for your input, we will take it into consideration.* • *Blasting: The draft Environmental Impact Assessment (DEIAR) will include more specific information on the blasting and the potential impact it may have on the surrounding environment and nearby structures as we have contacted a qualified blaster in this regard. The proximity of your property to the proposed extension area will also be taken into account, and discussed in the DEIAR that will be available to you for commenting.* • *Access Road: Your enquiry regarding the proximity of the road to a boundary fence will be directed to the road engineer that is responsible for the traffic impact assessment. His response will be incorporated into the DEIAR for your perusal.* • *Vegetation: We taken note of your comment and directed it to the ecologist. However, we can confirm that the ecologist has visited the farm on numerous occasions and therefore his findings will not only be based on a single inspection of the property*."				

Interested and Affected Parties List the names 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

Additional response to the above listed comments following the compilation of the DEIAR:

- Character of the area / Zoning:
  - Refer to Part A(1)(d)(ii) Description of the activities to be undertaken – 2.2.1 Zoning;
  - Refer to Part A(f) Need and desirability of the proposed activities – Town Planning Motivation;
  - Appendix F2: Town Planning Motivation.

- Operating hours:
  - Refer to Part A(1)(d)(ii) Description of the activities to be undertaken – 2.3.1 Operating Hours;
  - Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Noise Handling;
  - Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Access Road Mitigation and Traffic Accommodation;
  - Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR;
  - Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases;
  - Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon.

- Compliance / Audit frequency:
  - Refer to Part B(1)(l) Indicate the frequency of the submission of the performance assessment report.

- Road related listed activities:
  - Refer to Part A(1)(d)(ii) Description of the activities to be undertaken – 2.2.5 Access Roads.

- Dam/weir related listed activities:
  - Refer to Part A(1)(d)(ii) Description of the activities to be undertaken – 2.2.6.1 Stormwater Management.
  - Refer to Part A(1)(g)(iv)(c) Description of specific environmental features and infrastructure on the site – Site Specific Hydrology and Geohydrology;
  - Appendix H2 – Ecological and Freshwater Resource Study and Assessment;
  - Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Hydrology and Geohydrology;
  - Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR;
  - Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases;
  - Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon.

Interested and Affected Parties List the names 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

- Dust Management:
  - Refer to Part A(1)(d)(ii) Description of the activities to be undertaken – 2.2.5 Access Road;
  - Refer to Part A(1)(g)(iv)(c) Description of specific environmental features and infrastructure on the site – Site Specific Air Quality and Noise Ambiance;
  - Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Air Quality and Noise Ambiance;
  - Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR;
  - Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases;
  - Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon.

- Alternatives:
  - Please refer to Part A(1)(g) Motivation for the preferred development footprint within the approved site including a full description of the process followed to reach the proposed development footprint within the approved site.

- Vegetation description:
  - Refer to Part A(1)(g)(iv)(c) Description of specific environmental features and infrastructure on the site – Site Specific Mining and Biodiversity Conservation Areas;
  - Refer to Part A(1)(g)(iv)(c) Description of specific environmental features and infrastructure on the site – Site Specific Vegetation;
  - Appendix H2 – Ecological and Freshwater Resource Study and Assessment.

- Faunal impact:
  - Refer to Part A(1)(g)(iv)(c) Description of specific environmental features and infrastructure on the site – Site Specific Fauna;
  - Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Fauna;
  - Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR;
  - Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases;
  - Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon.

- Blasting:
  - Refer to Part A(1)(d)(ii) Description of the activities to be undertaken - 2.3.3 Blasting;
  - Refer to Part A(1)(g)(iv)(c) Description of specific environmental features and infrastructure on the site – Site Specific Air Quality and Noise Ambiance;
  - Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Air Quality and Noise Ambiance;
  - Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR;
  - Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases;

Interested and Affected Parties List the names 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
▪ Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon.				
Mette Pi la Cour Nielsen enquired on 20 June 2021 to the progress of the project, to which Greenmined responded (23 June 2021) as follows: "*The Department of Mineral Resources and Energy approved the Scoping Report that was submitted for this project in May 2021. Following receipt of the approval, we are now in the process of drafting the EIA report inclusive of all the specialist studies. Once the report is ready it will be available to all the registered I&AP's for their perusal and commenting over a 30 days period. You will be informed about the availability of the report in due course*."				
Additional comments received from Mette Pi la Cour Nielsen on 23 June 2021: "*I do have one concern I would like to highlight. I would love to know what the refusal facilities and solutions they are using and will be using as there is no municipal collection out here and a lot of farms are either burning or pilling up their refuse. Now I have already been a bit nervous for the refuse as the operation is now and I can only imagine it'll get worse if they get bigger and there will be more people and bigger operations happening. It is therefore extremely important for me to know that the right actions will be taken and not just on paper but in actual week to week practice*."				
Response to the above comments: As mentioned earlier, the mining activities generate very little general- and/or hazardous waste as the workshop and storerooms are located off-site, and no routine servicing takes place at the mine. The general waste generated at the mine is kept in general waste bins until a full load is available, upon which it is transported to the Berlin landfill site. Further to this, the quarry has oil spill kits that can be used to clean accidental hydrocarbon spills. The hazardous waste generated by the mine is kept in hazardous waste bins in a bunded area (at the workshop); when a full load is available the hazardous waste is removed from the farm by East London Bricks (Gonubie). Wansley Quarry makes use of general- and hazardous waste registers to monitor the waste loads removed from the farm. Safe disposal certificates are also filed for auditing purposes. ♦ Also refer to Part A(1)(d)(ii) Description of the activities to be undertaken – 1.2.3 Waste Management Programme ♦ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Waste Management; ♦ Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR; ♦ Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases; ♦ Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon.				

Interested and Affected Parties List the names 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
Boniface Trust ♦ Portion 14 of Farm No 652	**X**	28/09/2020	Francois and Trevor Boniface objected to the project and am concerned about noise, dust and the speed/number of trucks.	Greenmined acknowledged receipt of the comments on 30 September 2020,and responded as follows.	Refer to following rows and Appendix G for proof of the public participation process.
Response from Greenmined on 30 September 2020: *"Greenmined herewith acknowledge receipt of your objection received 28 September 2020 on the proposed Section 102 amendment application of Wansley Siyakhula (Pty) Ltd in the East London area. We registered you as an Interested and Affected Party on the project, and will henceforth keep you posted on the progress of the Environmental Impact Assessment process as well as supply you with a copy of the draft scoping report (DSR) for your perusal. We acknowledge your concerns regarding the noise, dust and mining related traffic and have forwarded it to the project team. The access road and traffic impact has been identified as a matter of importance and the project team is in the process of investigating the best possible options. All your comments, and the findings of the project team will be discussed in the EIA documents that will follow in due course, on which you will be able to comment."*					
On 05 October 2020 the following additional comments were received: *"Our property was purchased by us for the purpose of not only living out of town for the peace and quiet, but also for our exotic bird business, therefore we cannot accept the plans of extending the size of the quarry. When we first settled down, we had no concerns as the road was well maintained for our vehicles, but now the amount of trucks that are utilizing the W road are not only causing the road to worsen over time, but they are also driving irresponsibly as well as driving up and down late at night to sometimes early morning (this includes Saturdays and Sundays) which breaks our pattern of sleep and we have to work the next day. The noise, dust and no respect from the truck drivers are not acceptable.* *The constant up and down of the trucks are not only making our farm living noisy, but it is also depreciating the value of all of our lands and homes as it is no longer peaceful and well maintained. Apart from my family and I coming in to close contact and almost having accidents with these trucks, we cannot afford any farm animal to be on the road as it is too dangerous. As to Francois birds, they are very sensitive to loud noise as it is, we cannot have any birds stressed out as this will affect his business, we have invested up to R3 million for his birds as well as all the aviaries, we cannot allow any more noise and disruptions as this is a source of income for us. Farm living is supposed to provide us with the peace and tranquility that cannot be found in town, this extension will take the last bit of quiet that we have away from us, we should be looking forward to coming home and relaxing without constant noise and our animals cannot afford to be affected by any more blasting, noise and traffic by the trucks."*					

Interested and Affected Parties List the names 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
Additional response regarding the above comments: ♦ Impact of the mining activity on the keeping of birds: The potential impact of the proposed extension of the mining area and the addition of blasting to the mining method on the keeping of exotic birds on a nearby property will be assessed as part of the EIA process and discussed in the DEIAR. ♦ Dust-, noise- and traffic impact caused by mining related trucks: BVI consulting engineers were appointed to conduct a Traffic Impact Assessment (TIA) on both roads (W- & B-Road) presently used by the mine. The associated impacts, findings and recommendations of the TIA will be discussed in the DEIAR. Upon receipt of the specialist's recommendations, the list of mitigation measures will also be updated and/or elaborated on. ♦ Depreciation of property value: The potential of the proposed extension of the mining area having a depreciating effect on the property value of the surrounding farms will be assessed as part of the EIA process and discussed in the DEIAR.				
Mr Boniface requested an electronic copy of the DSR on 19 November 2020 that was sent to him on the same day. To date no additional comments were received from Mr Boniface.				
Additional response to the above listed comments following the compilation of the DEIAR: ♦ Character of the area / Zoning: ▪ Refer to Part A(1)(d)(ii) Description of the activities to be undertaken – 2.2.1 Zoning; ▪ Refer to Part A(f) Need and desirability of the proposed activities – Town Planning Motivation; ▪ Appendix F2: Town Planning Motivation ♦ Operating hours: ▪ Refer to Part A(1)(d)(ii) Description of the activities to be undertaken - 2.3.1 Operating Hours; ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Noise Handling; ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Access Road Mitigation and Traffic Accommodation; ▪ Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR; ▪ Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases; ▪ Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon.				

Interested and Affected Parties List the names 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
♦ Access roads: ▪ Refer to Part A(1)(d)(ii) Description of the activities to be undertaken - 2.2.5 Access Roads; ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Access Road Mitigation and Traffic Accommodation; ▪ Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR; ▪ Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases; ▪ Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon. ▪ Appendix I – Traffic Impact Assessment. ♦ Dust and noise management: ▪ Refer to Part A(1)(g)(iv)(c) Description of specific environmental features and infrastructure on the site – Site Specific Air Quality and Noise Ambiance; ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Air Quality and Noise Ambiance; ▪ Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR; ▪ Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases; ▪ Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon. ♦ Impact of the mining activity on the keeping of birds: ▪ Refer to Part A(1)(g)(iv)(c) Description of specific environmental features and infrastructure on the site – Site Specific Fauna; ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Fauna; ▪ Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR; ▪ Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases; ▪ Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon; ▪ Appendix K - Literature review by Dr DJ van Niekerk.					
Johan Frank Page ♦ Portion 42 of Farm No 821	**X**	-	To date no comments were received. Any comments received on the DEIAR and draft EMPR will be incorporated into the final EIAR and EMPR.		
Paul Francis Jonker ♦ Portion 44 f Farm No 821	**X**	09/02/2021	Mr Jonker submitted the following comments regarding this project.	Greenmined acknowledged receipt of the comments on 10 February 2021, and	Refer to following rows and Appendix

Interested and Affected Parties List the names 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
				confirmed that this concern will be forwarded to the Wansley Quarry management and also included in this report.	G for proof of the public participation process.
Comments received from Mr Jonker: "*My farm W6 Holmhill borders on the quarry....whilst having no objection to furthering the extent of the quarry, the concern I have is that there are no fences or bunting tape to protect people or animals falling into the quarry. There are shear faces with life threatening drops into the pits. So my request is for more stringent protection measure around the pits*."					
Additional response to the above listed concern following the compilation of the DEIAR: Mr Jonker's concern was forwarded to Wansley Quarry and their Health and Safety Consultant on 09 March 2021. The quarry confirmed on the same day that the matter will be addressed, and following a telecom, the Health and Safety Consultant advised that white painted boulders must be placed a meter from the edge of the quarry as well as signage prohibiting entry to the quarry area. Should the S102 application be approved, and the MR Holder be allowed to expand the quarry and add blasting to the mining method, the quarry pit will be developed according to the mine plan (refer to Fig. 13) described earlier that incorporates the necessary safety measures to minimise the risk of injury to humans/animals.					
Penelope Anne Stapleton ♦ Portion 45 of Farm No 821	**X**	16/09/2020	Mrs Stapleton submitted the following comments regarding this project.	Greenmined acknowledged receipt of the comments on 02 October 2020,and responded as follows.	Refer to following rows and Appendix G for proof of the public participation process.
Comments received during the initial public participation phase: *"1. As I am the direct neighbour to the right of this quarry how are all these changes i.e. blasting, crushing and general noise etc going to impact on me and to the value of my property? I already hear work going on all hours and weekends.*					

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2. The B Road, always in a shocking state with constant usage of huge trucks, this is a narrow road with many resident's living along it having to put up with a lot of dust, noise, arrogant drivers who have had and caused many accidents in the past and still do, and our vehicles that take huge strain. I want this road closed to these trucks as they have a perfectly good other option, the W road which is much wider and they seem to be able to keep it in a better condition i.e. grading it, and it is shorter and goes directly out on to the N6. *3. Safety and security, has also become a problem because this area has been opened up to many undesirables which also think using these once unknown roads attractive*."				
Greenmined's response to the comments: *"Greenmined herewith acknowledge receipt of, and thank you for your correspondence received 02 September* (should have been October) *2020 on the proposed Section 102 amendment application of Wansley Siyakhula (Pty) Ltd in the East London area. We registered you as an Interested and Affected Party on the project, and will henceforth keep you posted on the progress of the Environmental Impact Assessment process as well as supply you with a copy of the draft scoping report (DSR) for your perusal. We acknowledge your concerns and have forwarded it to the project team. Their findings will be discussed in the EIA documents that will follow in due course, and on which you will be able to comment. Please note that your comments will be included in the Draft Scoping Report and discussed and assessed in the Environmental Impact Assessment Report that will all also be available for your perusal and commenting."*				
Additional response to the above listed comments: ♦ <u>Character of the area / Zoning:</u> ▪ Refer to Part A(1)(d)(ii) Description of the activities to be undertaken – 2.2.1 Zoning; ▪ Refer to Part A(f) Need and desirability of the proposed activities – Town Planning Motivation; ▪ Appendix F2: Town Planning Motivation. ♦ <u>Operating hours:</u> A proposal regarding the operating hours of the mine will be compiled as part of the EIA process, and the outcome will be discussed in the DEIAR that will follow should the DMRE approve the Final Scoping Report. ♦ <u>Traffic impact on the B-Road:</u> BVI consulting engineers were appointed to conduct a Traffic Impact Assessment (TIA) on both roads (W- & B-Road) presently used by the mine. The associated impacts, findings and recommendations of the TIA will be discussed in the DEIAR. Upon receipt of the specialist's recommendations, the list of mitigation measures will also be updated and/or elaborated on.				

Interested and Affected Parties List the names 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
♦ Safety and security: The potential of the proposed extension of the mining area having a negative impact on the safety and security of the surrounding area will be assessed as part of the EIA process and discussed in the DEIAR.				

Additional response to the above listed comments following the compilation of the DEIAR:

♦ Blasting:
- Refer to Part A(1)(d)(ii) Description of the activities to be undertaken - 2.3.3 Blasting;
- Refer to 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.
- Refer to Part A(1)(g)(iv)(c) Description of specific environmental features and infrastructure on the site – Site Specific Air Quality and Noise Ambiance;
- Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Air Quality and Noise Ambiance;
- Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR;
- Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases;
- Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon.

♦ Character of the area / Zoning:
- Refer to Part A(1)(d)(ii) Description of the activities to be undertaken – 2.2.1 Zoning;
- Refer to Part A(f) Need and desirability of the proposed activities – Town Planning Motivation;
- Appendix F2: Town Planning Motivation.

♦ Operating hours:
- Refer to Part A(1)(d)(ii) Description of the activities to be undertaken - 2.3.1 Operating Hours;
- Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Noise Handling;
- Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Access Road Mitigation and Traffic Accommodation;
- Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR;
- Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases;
- Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon.

♦ Access roads:
- Refer to Part A(1)(d)(ii) Description of the activities to be undertaken - 2.2.5 Access Roads;
- Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Access Road Mitigation and Traffic Accommodation;

Interested and Affected Parties List the names 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
▪ Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR; ▪ Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases; ▪ Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon. ▪ Appendix I – Traffic Impact Assessment. ♦ <u>Safety and security:</u> ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Socio-Economic Environment / Land Use; ▪ Refer to 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. ▪ Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR; ▪ Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases; ▪ Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon.					
Bruce Gordon McMillan / Lombardy Private Nature Reserve ♦ Portion 0 of Jagger No 656	**X**	-	To date no comments were received. Any comments received on the DEIAR and draft EMPR will be incorporated into the final EIAR and EMPR.		
Municipal councillor Ward 15	**X**	-	To date no comments were received. Any comments received on the DEIAR and draft EMPR will be incorporated into the final EIAR and EMPR.		
Municipality Buffalo City Metro Municipality (BCMM)	**X**	-	To date no comments were received. Any comments received on the DEIAR and draft EMPR will be incorporated into the final EIAR and EMPR.		
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA, etc	**X**	**-**	**-**	**-**	**-**

Interested and Affected Parties List the names 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 Transport (DoT)	**X**	-	To date no comments were received. Any comments received on the DEIAR and draft EMPR will be incorporated into the final EIAR and EMPR.		
Department of Public Works (DPW)	**X**	-	To date no comments were received. Any comments received on the DEIAR and draft EMPR will be incorporated into the final EIAR and EMPR.		
Department of Water and Sanitation (DWS)	**X**	14/09/2020	Me Molepo Khuthadzo registered the DWS as an commenting stakeholder on the 14th of September 2020.	Greenmined acknowledged receipt of the registration on 14 September 2020 and provided the DWS with a copy of the DSR for their perusal. To date no additional comments were received from DWS.	Part A(1)(e) Policy and Legislative Context; Part B(1)(d)(viii) Has a water use licence been applied for?
Eskom Ltd	**X**	-	To date no comments were received. Any comments received on the DEIAR and draft EMPR will be incorporated into the final EIAR and EMPR.		
SANRAL	**X**	-	To date no comments were received. Any comments received on the DEIAR and draft EMPR will be incorporated into the final EIAR and EMPR.		
Communities	N/A	No communities border the mining area or were identified within 100 m from the site.			
Dep. Land Affairs	N/A	Not applicable as this is an application for a Section 102 amendment of the approved mining right on the same property.			
Traditional Leaders	N/A	No tradition leaders borders the mining area or were identified within 100 m from the site.			

Interested and Affected Parties List the names 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. Environmental Affairs	**X**	-	-		
Department of Economic Development, Environmental Affairs and Tourism (DEDEAT)		-	To date no comments were received. Any comments received on the DEIAR and draft EMPR will be incorporated into the final EIAR and EMPR.		
Other Competent Authorities affected	**-**	**-**	**-**	**-**	**-**
Amathole District Municipality	X	-	To date no comments were received. Any comments received on the DEIAR and draft EMPR will be incorporated into the final EIAR and EMPR.		
Department of Labour	X	-	To date no comments were received. Any comments received on the DEIAR and draft EMPR will be incorporated into the final EIAR and EMPR.		
Department of Rural Development and Agrarian Reform (DRDAR)	X	-	To date no comments were received. Any comments received on the DEIAR and draft EMPR will be incorporated into the final EIAR and EMPR.		
Department of Rural Development and Land Reform (DRDLR)	X	-	To date no comments were received. Any comments received on the DEIAR and draft EMPR will be incorporated into the final EIAR and EMPR.		
South African Heritage Resources Agency (SAHRA)	X	-	To date no comments were received. Any comments received on the DEIAR and draft EMPR will be incorporated into the final EIAR and EMPR.		
OTHER AFFECTED PARTIES		-	-	-	-

Interested and Affected Parties List the names 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
INTERESTED PARTIES	-	-	-	-
Allen Brian Lennard ♦ Portion 41 of Farm No 821	04/10/2020	Mrs Lennard objected to the proposed S102 application and listed the following concerns.	Greenmined acknowledged receipt of Mrs Lennard's objection on 13 October 2020 and responded as follows.	Refer to following rows and Appendix G for proof of the public participation process.
Response received during the initial participation process: *"I absolutely object to the plans of extending the size of the quarry. Living on the W road has been nothing short of hell. The amount of crush and sabunga going out from the quarry is going to increase substantially. The amount of trucks using the road is going to increase as well. The trucks do not have any respect for the resident drivers, there have been quite a few near accidents. The speed the trucks drive is dangerous. As the trucks do not belong to the Quarry they do not really care what happens after a truck leaves their property. Even after being assured that matters would be attended to nothing does happen. Even us residents phoning the truck owners has had no effect on the speed limit driven by these trucks. These trucks also operate till late night hours sometimes only ending at 10 or 11pm. They are definitely removing sabunga. Coming in empty and going out full again. Trying to sleep is impossible. The noise and dust is appalling . This area is a lifestyle smallholding area, we live here for peace and quiet, which is just impossible as the quarry has become so busy. We bought our properties for the lifestyle of living on farmland with our horses, ducks, goats, pigs and other farm animals. The first few years of living here were quite pleasant even though there were some rogue drivers we could at least ride our horses around the area. This cannot be done now unless you have a death wish. Our quality of life has gone down the drain. It's not pleasant living here anymore. Regarding the road used by the trucks and I can only comment on the W road as this is where I live. The dust created by these trucks is something terrible. Normal traffic does not travel at that speed so in that instance the dust is not a problem. The Quarry owners have only just recently made an effort to fix the road properly. Before that it resembled a cattle track. We once out of our own pockets paid to have someone grade and camber the road. That cost us R10,000 which I know is nothing but at least the road was good for a while. Once the quarry increases in size I cannot imagine how many trucks are going to be using the road to the N6. I don't need to spell it out to you what a disaster our lives will be. The amount of smallholding owners around the area of the Quarry are going to be badly affected. By the blasting, by the noise, by the traffic caused by the trucks."*			
Greenmined's response to the objection received: *"Greenmined herewith acknowledge receipt of, and thank you for your detailed correspondence received 06 October 2020 on the proposed Section 102 amendment application of Wansley Siyakhula (Pty) Ltd in the East London area. We registered you as an Interested and Affected Party on the project, and will henceforth keep you posted on the progress of the Environmental Impact Assessment process as well as supply you with a copy of the draft scoping report (DSR) for your perusal and commenting. We acknowledge your concerns and have forwarded it to the project team for their consideration and assessment. The access road and traffic impact have been identified as a matter of importance and the project team is in the process of investigating the best possible options. Their*				

Interested and Affected Parties List the names 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
findings will be discussed in the EIA documents that will follow in due course, and on which you will be able to comment. The rest of your comments will also be included in the Draft Scoping Report and discussed and assessed in the Environmental Impact Assessment Report that will all be available for your perusal and commenting."				
Additional response to the above listed comments: ♦ Traffic impact on the W-Road: BVI consulting engineers were appointed to conduct a Traffic Impact Assessment (TIA) on both roads (W- & B-Road) presently used by the mine. The associated impacts, findings and recommendations of the TIA will be discussed in the DEIAR. Upon receipt of the specialist's recommendations, the list of mitigation measures will also be updated and/or elaborated on. ♦ Operating hours: A proposal regarding the operating hours of the mine will be compiled as part of the EIA process, and the outcome will be discussed in the DEIAR that will follow should the DMRE approve the Final Scoping Report. ♦ Noise- and Dust Management: The preliminary mitigation measures regarding the control of fugitive dust emissions and noise are listed in this document under heading *2(l) The possible mitigation measures that could be applied and the level of risk – Fugitive Dust Emission Mitigation / Noise Handling.* The mitigation measures will be updated/elaborated on upon receipt of the specialist's recommendations and presented in the DEIAR. ♦ Blasting: The DEIAR will elaborate on the proposed blasting frequency and associated impacts.				
Additional comments received from Mrs Lennard on 14 January 2021: "*I would like to bring to your attention what we are having to cope with on a daily basis. These trucks have no control by their owners and the quarry could not care less. I have just been to the accident scene and no-one from the quarry is there. This particular owner has 4 trucks. One of them nearly had a head on collision with me the other day. I had to drive straight into the bush scratching my car badly on the side. This situation cannot continue. My camera at the gate shows an expanded view of the road and the speed the trucks are doing is absolutely insane. You will have to deal with it somehow, either re-route the road away from residential properties or have some control in place. It's not the first accident of this nature and it will not be the last. We have had to just deal with it in the past but now it ends*."				

Interested and Affected Parties List the names 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
Greenmined's response sent on 18 January 2021: "*Greenmined acknowledge receipt of your email sent 14 January 2021. We do take note of your concern and am in the process of assessing the traffic impact on the B-Road in collaboration with the road engineer and applicant. As mentioned previously, the findings in this regard will be discussed in the draft Environmental Impact Assessment Report that will follow should the Department of Mineral Resources and Energy approve the Scoping Report*."				
Additional comments received from Mrs Lennard on 18 January 2021: "*Just to clarify matters, I am on the W road – W4 to be exact. This is a relatively straight road with a few hills so the trucks use the downhills to gain speed which becomes really dangerous. The road being of such a nature that its not a 2-way size road the oncoming cars are in danger of being collided with as the trucks do not deviate or slow down at all*."				
Additional response to the above listed comments following the compilation of the DEIAR: ♦ <u>Access roads:</u> ▪ Refer to Part A(1)(d)(ii) Description of the activities to be undertaken - 2.2.5 Access Roads; ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Access Road Mitigation and Traffic Accommodation; ▪ Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR; ▪ Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases; ▪ Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon. ▪ Appendix I – Traffic Impact Assessment. ♦ <u>Operating hours:</u> ▪ Refer to Part A(1)(d)(ii) Description of the activities to be undertaken - 2.3.1 Operating Hours; ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Noise Handling; ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Access Road Mitigation and Traffic Accommodation; ▪ Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR; ▪ Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases; ▪ Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon.				

Interested and Affected Parties List the names 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
♦ <u>Character of the area / Zoning:</u> ▪ Refer to Part A(1)(d)(ii) Description of the activities to be undertaken – 2.2.1 Zoning; ▪ Refer to Part A(f) Need and desirability of the proposed activities – Town Planning Motivation; ▪ Appendix F2: Town Planning Motivation. ♦ <u>Dust and noise management:</u> ▪ Refer to Part A(1)(g)(iv)(c) Description of specific environmental features and infrastructure on the site – Site Specific Air Quality and Noise Ambiance; ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Air Quality and Noise Ambiance; ▪ Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR; ▪ Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases; ▪ Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon. ♦ <u>Blasting:</u> ▪ Refer to Part A(1)(d)(ii) Description of the activities to be undertaken - 2.3.3 Blasting; ▪ Refer to Part A(1)(g)(iv)(c) Description of specific environmental features and infrastructure on the site – Site Specific Air Quality and Noise Ambiance; ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Air Quality and Noise Ambiance; ▪ Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR; ▪ Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases; ▪ Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon.				
BJ Cilliers Boorkontrakteurs (Pty) Ltd ♦ Portion 37 of Farm No 821	13/10/2020	Mr Jaco Cilliers registered on the project and submitted the following comments.	Greenmined acknowledged receipt of Mr Cilliers registration on 13 October 2020 and responded as follows.	Refer to following rows and Appendix G for proof of the public participation process.
Comments received during the initial public participation process: *"Me and my father live on Farm 73/821 on B Road which is roughly 500m from Wansley Quarry. I have read through the Background Information Document and I would just like to raise some concerns as summarised in my completed I&AP form:*				

Interested and Affected Parties List the names 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

1. *The state of the B Road is of great concern. It is safe to assume that the high volumes of tipper/haulage trucks moving to and from Wansley quarries with their heavy loads, has a great part in the deterioration of the B Road. The road is becoming undriveable and the tipper/haulage trucks moving on it also makes driving difficult and dangerous. The B Road is narrow and has deep erosions next to and on it. Wansley does supply material to fill some of these erosions, but the rain washes it away each time and it is only a short term solution. The only suggestion is for the trucks to drive only on the W Road, which is in a better state and also wider. This suggestion unfortunately, is also dependent if the residents on W Road will accept the trucks driving only on that road.*
2. *We do not border the quarry directly, so a direct concern with blasting would only be the sound/shockwave.*
3. *The noise levels can possibly become a major concerning factor because the quarry operating hours might alter and run throughout the night? Are there any set regulations for the operating hours and types of operation to minimize the noise?*
4. *As for the dust, East London does have notoriously strong and sporadic wind patterns. There is no mention on mitigations for dust and can become problematic if not addressed properly.*
5. *Also a concern to note is that with the possible blasting, dust, noise and unbearable road conditions, the property value might decline. All of these factors can make the property less attractive to any potential buyer in the future.*
6. *Can I also ask for clarification on the actual footprint of the mining size that is allocated? I noticed on Fig 1 of WC 30/5/1/2/2/8/7 that the size of excavations seems to be larger than the allocated size on the red polygon?"*

Response from Greenmined to the above listed comments:

"Greenmined herewith acknowledge receipt of, and thank you for your detailed correspondence received 13 October 2020 on the proposed Section 102 amendment application of Wansley Siyakhula (Pty) Ltd in the East London area. We registered you as an Interested and Affected Party on the project, and will henceforth keep you posted on the progress of the Environmental Impact Assessment process as well as supply you with a copy of the draft scoping report (DSR) for your perusal and commenting. We acknowledge your concerns and have forwarded it to the project team. The access road and traffic impact have been identified as a matter of importance and the project team is in the process of investigating the best possible options. Their findings will be discussed in the EIA documents that will follow in due course, and on which you will be able to comment. The rest of your comments will also be included in the Draft Scoping Report and discussed and assessed in the Environmental Impact Assessment Report that will all be available for your perusal and commenting."

Additional response to the above listed comments:

- <u>Traffic impact on the B-Road:</u>
  BVI consulting engineers were appointed to conduct a Traffic Impact Assessment (TIA) on both roads (W- & B-Road) presently used by the mine. The associated impacts, findings and recommendations of the TIA will be discussed in the DEIAR. Upon receipt of the specialist's recommendations, the list of mitigation measures will also be updated and/or elaborated on.

- <u>Blasting:</u>
  The DEIAR will elaborate on the proposed blasting frequency and associated impacts.

Interested and Affected Parties List the names 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
♦ Noise- and Dust Management: The preliminary mitigation measures regarding the control of fugitive dust emissions and noise are listed in this document under heading *2(l) The possible mitigation measures that could be applied and the level of risk – Fugitive Dust Emission Mitigation / Noise Handling.* The mitigation measures will be updated/elaborated on upon receipt of the specialist's recommendations and presented in the DEIAR. ♦ Operating hours: A proposal regarding the operating hours of the mine (including blasting-, crushing and screening times, and hours trucks will utilise the roads) will be compiled as part of the EIA process, and the outcome will be discussed in the DEIAR that will follow should the DMRE approve the Final Scoping Report. ♦ Depreciation of property value: The potential of the proposed extension of the mining area having a depreciating effect on the property value of the surrounding farms will be assessed as part of the EIA process and discussed in the DEIAR. ♦ Mining footprint: Presently, the approved mining right area is 5.2149 ha. The Section 102 application entails extending the mining area with 32.6426 ha to a total of 37.8575 ha. Should the Section 102 application be approved the areas that were mined outside the boundaries of the current mining right will be incorporated into the amended footprint of the mine.				
Mr Cilliers acknowledged receipt and perusal of the DSR on 08 January 2021, and confirmed that there are no additional objections or concerns other than the ones already noted. Mr. Cilliers awaits further correspondence.				
Additional response to the above listed comments following the compilation of the DEIAR: ♦ Access roads: ▪ Refer to Part A(1)(d)(ii) Description of the activities to be undertaken - 2.2.5 Access Roads; ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Access Road Mitigation and Traffic Accommodation; ▪ Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR; ▪ Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases; ▪ Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon. ▪ Appendix I – Traffic Impact Assessment.				

Interested and Affected Parties List the names 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
♦ <u>Blasting:</u> ▪ Refer to Part A(1)(d)(ii) Description of the activities to be undertaken - 2.3.3 Blasting; ▪ Refer to Part A(1)(g)(iv)(c) Description of specific environmental features and infrastructure on the site – Site Specific Air Quality and Noise Ambiance; ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Air Quality and Noise Ambiance; ▪ Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR; ▪ Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases; ▪ Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon. ♦ <u>Dust and noise management:</u> ▪ Refer to Part A(1)(g)(iv)(c) Description of specific environmental features and infrastructure on the site – Site Specific Air Quality and Noise Ambiance; ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Air Quality and Noise Ambiance; ▪ Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR; ▪ Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases; ▪ Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon. ♦ <u>Operating hours:</u> ▪ Refer to Part A(1)(d)(ii) Description of the activities to be undertaken - 2.3.1 Operating Hours; ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Noise Handling; ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Access Road Mitigation and Traffic Accommodation; ▪ Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR; ▪ Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases; ▪ Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon. ♦ <u>Character of the area / Zoning:</u> ▪ Refer to Part A(1)(d)(ii) Description of the activities to be undertaken – 2.2.1 Zoning; ▪ Refer to Part A(f) Need and desirability of the proposed activities – Town Planning Motivation; ▪ Appendix F2: Town Planning Motivation.				
Leon Joubert ♦ Portion 74 of Farm No 821	15/09/2020	Mrs Cathy Joubert commented on the S102 application as listed below.	Greenmined acknowledged receipt of the registration and responded as listed below.	Refer to following rows and Appendix

Interested and Affected Parties List the names 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
				G for proof of the public participation process.

Comments received during the initial public participation process:

"Why haven't all the residents living on the B Road not been notified of this study and how it will impact on them living here. This specific road is a "private Servitude" road for the residents living along the road. Surely they also have a say in this matter? Please revert back to me if you are needing e-mail addresses."

Greenmined's response to the above sent on 16 September 2020:

"Thus far the publishing of the proposed activity (initial public participation process) included the following:

- *an advertisement in The Rep,*
- *three A2 notices that were placed at:*
  - *the turnoff from the N6 onto the MN10118 St,*
  - *the turnoff from the R102 onto the B road,*
  - *the T-junction where the MN10118 St and B road meets.*
- *Background Information Documents (BID's) that were send directly to the neighbouring landowners as well as a few additional residents in the area that we were requested to include;*
- *BID's that were send to all the relevant State Departments.*

The reasoning behind the initial public participation process is to inform the public of the proposed project and allow a registration and commenting period. Each person that registers his/her interest in the project are listed on a register, and they will be kept informed throughout the entire EIA process that will follow. For ease of reference I have attached a copy of the BID and Project Map to this email. As mentioned on page 12 of the BID, we gladly invite you to provide us with the contact details of persons you feel should be contacted. Therefore, in answer to your question, we would highly appreciate it if you can provide us with the email addresses of the people you feel should be contacted.

Regarding the B road – the use of the road has been highlighted by a few I&AP's (interested and affected parties). The matter has therefore been directed as a priority to the project team that will assess the various possibilities and propose the best possible option. The findings of the project team will be discussed and assessed in the Draft Basic Assessment Report (DBAR) that will be published for public review and commenting over a further 30-days period. The comments received on the DBAR will then be incorporated into the Final Basic Assessment Report that will be submitted to the Department of Mineral Resources and Energy for decision making."

Interested and Affected Parties List the names 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
Additional response: *"This project will not have a DBAR and Final Basic Assessment as mentioned earlier. We will incorporate the initial comments into the **Draft Scoping Report** that will be published for a 30 days commenting period, upon which the additional comments will be added to the Final Scoping Report (FSR). The FSR will then be submitted to the DMRE for decision making. Should DMRE approve the FSR, we will continue with the draft Environmental Impact Assessment Report (DEIAR) that will contain amongst others the findings of the specialists. The DEIAR will again be published for a 30 days commenting period and the comments received on the DEIAR will be incorporated into the Final EIAR that will be submitted to the DMRE for decision making. The matter of the access roads will be added to the DSR and FSR and will be assessed in detail in the DEIAR and FEIAR."*				
Further comments received from Mrs Joubert on 29 September 2020: *"This is our issues regarding the Up grading of the Wansley Quarry* 1. *Blasting, crushing and general noise is going to make a huge impact on our property value? They have already started increasing production as work is going on all hours and weekends which never was the case before….i.e. trucks up and down the B road all the time* 2. *The B Road is in a shocking state with constant usage of huge trucks, The B road was originally a tarred road but due to the constant trucks up and down carrying huge loads the tar has disintegrated and now it is just a huge disaster called a road!!!!!! It is also has become very dangerous because of these trucks speeding up and down and has caused many accidents … to name but a few….writing off a residents vehicle as they were turning out of the driveway, damaging numerous fences due to brake failures, killing pets in the road, almost writing me off a few times just coming out of my driveway……..I can go on and on>* 3. *Safety and security, has also become a problem because this area has been opened up to many undesirables which also think using these once unknown roads attractive."*				
Greenmined responded as listed below on 30 September 2020: *"We will include your comments into the Scoping Report (next report), forward it to the project team (including specialists), and discuss and assess it in the Environmental Impact Assessment Report that will follow once the DMR accepts the Scoping Report and allows the Environmental Impact Assessment Process to continue (this is not an approval of the mining application yet). Both the Scoping Report and the Environmental Impact Assessment Report will be available for your perusal and commenting. I can also confirm that we have contracted the expertise of a road engineer that will be looking at both the B- and W roads and make recommendations regarding the traffic management of the access roads. The findings of the Traffic Impact Assessment will also be incorporated into the Environmental Impact Assessment Report."*				

Interested and Affected Parties List the names 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

Additional response to the above listed comments:

- Depreciation of property value:
  The potential of the proposed extension of the mining area having a depreciating effect on the property value of the surrounding farms will be assessed as part of the EIA process and discussed in the DEIAR.

- Operating hours:
  A proposal regarding the operating hours of the mine (including blasting-, crushing and screening times, and hours trucks will utilise the roads) will be compiled as part of the EIA process, and the outcome will be discussed in the DEIAR that will follow should the DMRE approve the Final Scoping Report.

- Traffic impact on the B-Road:
  BVI consulting engineers were appointed to conduct a Traffic Impact Assessment (TIA) on both roads (W- & B-Road) presently used by the mine. The associated impacts, findings and recommendations of the TIA will be discussed in the DEIAR. Upon receipt of the specialist's recommendations, the list of mitigation measures will also be updated and/or elaborated on.

- Safety and security:
  The potential of the proposed extension of the mining area having a negative impact on the safety and security of the surrounding area will be assessed as part of the EIA process and discussed in the DEIAR.

Additional response to the above listed comments following the compilation of the DEIAR:

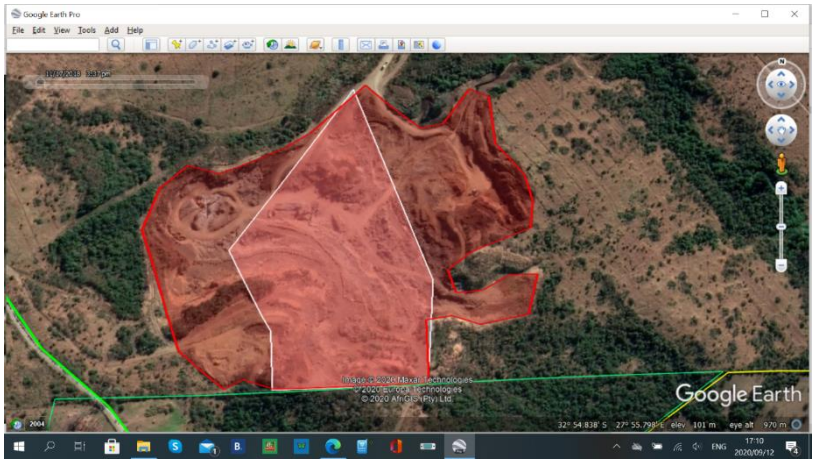
- Character of the area / Zoning:
  - Refer to Part A(1)(d)(ii) Description of the activities to be undertaken – 2.2.1 Zoning;
  - Refer to Part A(f) Need and desirability of the proposed activities – Town Planning Motivation;
  - Appendix F2: Town Planning Motivation.

- Operating hours:
  - Refer to Part A(1)(d)(ii) Description of the activities to be undertaken - 2.3.1 Operating Hours;
  - Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Noise Handling;
  - Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Access Road Mitigation and Traffic Accommodation;
  - Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR;

Interested and Affected Parties List the names 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
▪ Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases; ▪ Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon. ♦ <u>Access roads:</u> ▪ Refer to Part A(1)(d)(ii) Description of the activities to be undertaken - 2.2.5 Access Roads; ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Access Road Mitigation and Traffic Accommodation; ▪ Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR; ▪ Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases; ▪ Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon. ▪ Appendix I – Traffic Impact Assessment. ♦ <u>Safety and security:</u> ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Socio-Economic Environment / Land Use; ▪ Refer to 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. ▪ Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR; ▪ Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases; ▪ Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon.				
Alfred Willem Wild ♦ Portion 46 of Farm No 821	30/09/2020	Mr Wild registered on the project and submitted the following comments.	Greenmined acknowledged receipt of the registration on 02 September 2020 and responded as listed below.	Refer to following rows and Appendix G for proof of the public participation process.
Comments received during the initial public participation process: *"2. The information supplied in the form of headings such as "QNR 324 Activity 4" are extremely vague and do not detail exactly what the intentions of the applicant are. I am concerned about any activity which will affect the water run off quantity and quality. This includes construction of dams / weirs, washing of mined product, movement of material from or into FEPA pronounced waterways. I would like more specific information to be made available.*				

Interested and Affected Parties List the names 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

3. It is noted that the existing mining licence gives authority for 5.2149 ha to be mined, but in fact mining is taking place over an area of some 11 plus ha, which surely places Wansley Quarries in serious breach of their mining licence. Your satellite view photo (fig 1) clearly shows the extent of mining in breach of the existing licence. It also shows excavation that has been carried out through one of the two FEPA on the property, which I believe is also a breach of regulations. The photograph below shows the extent of "overmining" if you can call it that, outside the white outlined licenced area.



4. The neighbouring farms (W-6 / B-23 and B-17), and servitude are in the immediate area of the current mining, and proposed extended mining area, and have animals and people moving on them at any time. Blasting at the quarry would therefore pose a physical danger to both people and animals unless restrictions are applied. My understanding is that regulations state no blasting may take place within 500 feet of persons, and so I recommend that a restriction of "no blasting within 500 feet of the Wansley farm boundary may be undertaken", if a blasting licence is granted.

5. The degradation of the "B road" due to the heavy truck traffic to and from Wansley Quarry is of great concern to all residents in the area. Although Wansley do supply Subunga and grade sections of the road occasionally, the danger posed by speeding and inconsiderate truck drivers are a constant danger to pedestrians, motorists, and animals in the area, which is zoned as agricultural. The local municipality and Provincial authority refuse to carry out any maintenance on this road. I believe that all heavy trucks should be routed via the "W road", which is wider, and does not travel through the centre of any owner's farm.

6. Property values in the immediate vicinity of the increase proposed mining will be adversely affected, due to noise, dust, potential blasting dangers.

7. Please register me as I&AP."

Interested and Affected Parties List the names 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

Greenmined's response to the above listed comments:

"Greenmined herewith thank you for your participation and acknowledge receipt of your correspondence received 30 September 2020 on the proposed Section 102 amendment application of Wansley Siyakhula (Pty) Ltd in the East London area. We registered you as well as Me Stapleton as Interested and Affected Parties on the project, and will henceforth keep you posted on the progress of the Environmental Impact Assessment process as well as supply you with a copy of the draft scoping report (DSR) for your perusal and commenting. We acknowledge and take note of your concerns regarding the possible impact on water quality, extent of the mining footprint, potential blasting impact, access road and property values and have forwarded your comments to the various specialists that form part of the project team. Further to the above, please note that all your comments will be included in the draft scoping report, and will be discussed and assessed (once feedback from the various specialists were received) in the Environmental Impact Assessment Report that will follow once the Scoping Report was approved by the Department of Mineral Resources and Energy. You will be notified as soon as the above mentioned reports are available for your perusal and commenting."

Additional response to the above listed comments:

- Hydrology / Water use
  Please refer to heading *2(h)(iv)(1)(a) Type of environment affected by the proposed activity – Hydrology and Geohydrology; and*
  Heading 2(h)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Hydrology and Geohydrology.
  All hydrology and water use related matters will be discussed in detail in the DEIAR upon receipt of the specialist's inputs.

- Mining footprint:
  Should the Section 102 application be approved the areas that were mined outside the boundaries of the current mining right will be incorporated into the amended footprint of the mine.

- Blasting:
  The DEIAR will elaborate on the proposed blasting frequency and associated impacts, and will also propose mitigation measures to minimise the potential impact on the receiving environment.

- Traffic impact on the B-Road:
  BVI consulting engineers were appointed to conduct a Traffic Impact Assessment (TIA) on both roads (W- & B-Road) presently used by the mine. The associated impacts, findings and recommendations of the TIA will be discussed in the DEIAR. Upon receipt of the specialist's recommendations, the list of mitigation measures will also be updated and/or elaborated on.

Interested and Affected Parties List the names 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
♦ Depreciation of property value: The potential of the proposed extension of the mining area having a depreciating effect on the property value of the surrounding farms will be assessed as part of the EIA process and discussed in the DEIAR.				

Additional response to the above listed comments following the compilation of the DEIAR:

♦ Hydrology / Water Use:
- Refer to Part A(1)(d)(ii) Description of the activities to be undertaken – 1.2.4 Water Management.
- Refer to Part A(1)(d)(ii) Description of the activities to be undertaken – 2.2.6.1 Stormwater Management.
- Refer to Part A(1)(d)(ii) Description of the activities to be undertaken – 2.3.4 Water Use.
- Refer to Part A(1)(g)(iv)(c) Description of specific environmental features and infrastructure on the site – Site Specific Hydrology and Geohydrology;
- Appendix H2 - Ecological and Freshwater Resource Study and Assessment;
- Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Hydrology and Geohydrology;
- Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR;
- Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases;
- Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon.

♦ Blasting:
- Refer to Part A(1)(d)(ii) Description of the activities to be undertaken - 2.3.3 Blasting;
- Refer to Part A(1)(g)(iv)(c) Description of specific environmental features and infrastructure on the site – Site Specific Air Quality and Noise Ambiance;
- Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Air Quality and Noise Ambiance;
- Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR;
- Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases;
- Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon.

♦ Access roads:
- Refer to Part A(1)(d)(ii) Description of the activities to be undertaken - 2.2.5 Access Roads;
- Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Access Road Mitigation and Traffic Accommodation;
- Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR;
- Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases;
- Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon.

Interested and Affected Parties List the names 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
▪ Appendix I – Traffic Impact Assessment. ♦ Character of the area / Zoning: ▪ Refer to Part A(1)(d)(ii) Description of the activities to be undertaken – 2.2.1 Zoning; ▪ Refer to Part A(f) Need and desirability of the proposed activities – Town Planning Motivation; ▪ Appendix F2: Town Planning Motivation.				
Mr Mader van Niekerk	23/11/2020	Mr Van Niekerk commented as follows on the DSR.	Greenmined acknowledged receipt of the comments and responded as follows.	Refer to following rows and Appendix G for proof of the public participation process.
Comments received on the DSR on 23 November 2020: "*…I do not have a problem with the mining as such, as long as the required rehabilitation is done. My biggest concern are the many trucks on the roads, safety first, as some of them are driving like maniacs and a danger to all road users. Secondly the condition and maintenance of the road, as the trucks are doing some serious damaging to the roads and lastly the clearing of the overgrowth and bushes on the side of the road, which makes it difficult for vehicles to pass one another safely, especially the truck, which are much bigger and wider than the normal traffic*."				
Greenmined's response to the DSR comments sent on 23 November 2020: "*…We do acknowledge your concern regarding the traffic impact of the mine on the roads and -users. Please note that the matter has been handed to the road specialist and will be discussed in more detail upon receipt of the Traffic Impact Assessment (TIA). The findings of the TIA will be incorporated into draft Environmental Impact Assessment Report (DEIAR) that will follow upon approval of the final Scoping Report by the Department of Mineral Resources and Energy. The DEIAR will be available for your commenting in due course*."				
Additional response to the above listed comments following the compilation of the DEIAR: ♦ Rehabilitation: ▪ Refer to Part A(1)(d)(ii) Description of the activities to be undertaken - 2.3.2 Mining Plan; ▪ Refer to Part A(1)(d)(ii) Description of the activities to be undertaken - 2.4 Decommissioning Phase; ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Landscaping of Mining Area;				

Interested and Affected Parties List the names 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
▪ Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR; ▪ Refer to Part B(1)(d)(i) Determination of closure objectives; ▪ Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases; ▪ Refer to Part B(1)(f)(i)(1)(a) Describe the closure objectives and the extent to which they have been aligned to the baseline environment described under Regulation 22 (2) (d) as described in 2.4 herein ▪ Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon. ▪ Appendix Q – Closure Plan. ♦ <u>Access roads:</u> ▪ Refer to Part A(1)(d)(ii) Description of the activities to be undertaken - 2.2.5 Access Roads; ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Access Road Mitigation and Traffic Accommodation; ▪ Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR; ▪ Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases; ▪ Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon. ▪ Appendix I – Traffic Impact Assessment.				
Trevor & Tammy Boniface	12/10/2020	Trevor and Tammy Boniface objected against the project with the following comments.	Greenmined acknowledged the registration on 13 October 2020 and responded as follows.	Refer to following rows and Appendix G for proof of the public participation process.
Response received during the initial public participation process: *"Kindly receive this as an official objection to the expansion of the Wansley Siyakhula (Pty) Ltd quarry. We are direct fence sharing neighbours with Wansley and will be greatly affected should the quarry expand by any degree. We have chosen to live in Holm Hill for the lifestyle benefits of the lower noise levels and quiet surroundings. The wild animal life which we enjoy is already diminishing and will decrease even further if the quarry is given a greater area to mine. Currently the traffic flow on the W road is very high due to the cartage trucks, many of which speed and disregard other vehicles. These heavily loaded trucks are causing damage to the road and create constant dust for the adjacent properties. The noise from these cartage vehicles is also an issue as they often run before and after normal business hours. It is important to note that the W road, as we refer to it, is a private road. It is merely a servitude for Wansley Farm as noted in our title deeds (our boundary is on the other side of the road). Permission has not been granted to Wansley Quarries for their business use and they do have an alternative route available. It is also of concern that as per the aerial image (Figure 1) on your report it seems that the quarry has already exceeded their current approved mining area. Rehabilitation of the land does also not appear to have been done."*				

Interested and Affected Parties List the names 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

Greenmined's response to the above listed comments:

"Greenmined herewith acknowledge receipt of, and thank you for your detailed correspondence received 12 October 2020 on the proposed Section 102 amendment application of Wansley Siyakhula (Pty) Ltd in the East London area. We registered you as an Interested and Affected Party on the project, and will henceforth keep you posted on the progress of the Environmental Impact Assessment process as well as supply you with a copy of the draft scoping report (DSR) for your perusal and commenting. We acknowledge your concerns and have forwarded it to the project team. The access road and traffic impact have been identified as a matter of importance and the project team is in the process of investigating the best possible options. Their findings will be discussed in the EIA documents that will follow in due course, and on which you will be able to comment. The rest of your comments will also be included in the Draft Scoping Report and discussed and assessed in the Environmental Impact Assessment Report that will all be available for your perusal and commenting."

Additional response on the above listed objection:

- Faunal impact:
  The potential impact of the mining activities on the surrounding faunal component will be investigated as part of the EIA process and elaborated on in the DEIAR.

- Operating hours:
  A proposal regarding the operating hours of the mine (including blasting-, crushing and screening times, and hours trucks will utilise the roads) will be compiled as part of the EIA process, and the outcome will be discussed in the DEIAR that will follow should the DMRE approve the Final Scoping Report.

- Traffic impact on the W-Road:
  BVI consulting engineers were appointed to conduct a Traffic Impact Assessment (TIA) on both roads (W- & B-Road) presently used by the mine. The associated impacts, findings and recommendations of the TIA will be discussed in the DEIAR. Upon receipt of the specialist's recommendations, the list of mitigation measures will also be updated and/or elaborated on.

- Mining footprint:
  Should the Section 102 application be approved the areas that were mined outside the boundaries of the current mining right will be incorporated into the amended footprint of the mine.

Mrs Boniface enquired, on 19 November 2020, whether their objection still stands.

Greenmined confirmed on 20 November 2020 that the objection was still valid, and noted that it has been incorporated into the Draft Scoping Report (DSR). The matters highlighted by Mrs Boniface will be discussed/assessed in the draft Environmental Impact Assessment Report that will follow should the Final Scoping Report be approved by the Department of Mineral Resources and Energy.

Interested and Affected Parties List the names 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

Mrs Boniface then enquired on the work hours of the quarry, to which Greenmined responded (25 November 2020) as follows:

"*The work hours, specified in the Environmental Management Plan (EMP), of Wansley Quarry are:*

- *Monday – Friday from 6:00 to 18:00; and*
- *Saturdays from 6:00 to 13:00.*

Please note that the EMP does not restrict loading/transporting of material to specific hours. In light of the comments thus far received as part of the public participation process for the Section 102 extension application, the work hours (including mining, crushing, blasting and transporting of material) of the quarry will be reassessed. The new/amended (if applicable) work hours will be specified in the draft Environmental Impact Assessment that will follow should the DMRE approve the Scoping Report. The DEIAR will be available for public commenting over another 30-days period. Please feel free to provide us with your suggestions should you have any."

Additional response to the above listed comments following the compilation of the DEIAR:

- <u>Faunal impact:</u>
  - Refer to Part A(1)(g)(iv)(c) Description of specific environmental features and infrastructure on the site – Site Specific Fauna;
  - Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Fauna;
  - Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR;
  - Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases;
  - Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon.

- <u>Access roads:</u>
  - Refer to Part A(1)(d)(ii) Description of the activities to be undertaken - 2.2.5 Access Roads;
  - Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Access Road Mitigation and Traffic Accommodation;
  - Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR;
  - Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases;
  - Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon.
  - Appendix I – Traffic Impact Assessment.

Interested and Affected Parties List the names 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
♦ Operating hours: ▪ Refer to Part A(1)(d)(ii) Description of the activities to be undertaken - 2.3.1 Operating Hours; ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Noise Handling; ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Access Road Mitigation and Traffic Accommodation; ▪ Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR; ▪ Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases; ▪ Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon.				
Liz & Mteto & Judith Dakiso	16/09/2020	An objection against the proposed project was received with the following comments.	Greenmined acknowledged the objection on 18 October 2020 and responded as listed below.	Refer to following rows and Appendix G for proof of the public participation process.
Comments received during the initial public participation process: *"Regarding the study being done and the extension of quarry and Usage of W road to connect to N6, I would like to object to this project as I am the resident and we were never all consultant and given an opportunity to voice out the impact of this to us. The Portion on W road is on my property which I still need to sort out as surveyors recommendation last year. I would like to put it on record we will not approve any extension unless a different route is use not W or C road."*				
Greenmined's response send on the 18th of September 2020: *"Greenmined herewith acknowledge receipt of your correspondence received 16 September 2020 on the proposed Section 102 amendment application of Wansley Siyakhula (Pty) Ltd in the East London area. We registered you as an Interested and Affected Party on the project, and will henceforth keep you posted on the progress of the Environmental Impact Assessment (EIA) process as well as supply you with a copy of the draft scoping report (DSR) for your perusal and commenting. Further to the above, I have also attached a copy of the Background Information Document and Project Map should you like to share it with additional interested parties. Alternatively, please feel free to provide me with the contact detail of the person/s you wish to be included and we will gladly supply them with the documents. We acknowledge your concern regarding the access road and have forwarded it to the project team. The access road and traffic impact have been identified as a matter of*				

Interested and Affected Parties List the names 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
importance and the project team is in the process of investigating the best possible options. Their findings will be discussed in the EIA documents that will follow in due course, and on which you will be able to comment."				
Additional response regarding the above listed comments: ♦ <u>Traffic impact on the W-Road:</u> BVI consulting engineers were appointed to conduct a Traffic Impact Assessment (TIA) on both roads (W- & B-Road) presently used by the mine. The associated impacts, findings and recommendations of the TIA will be discussed in the DEIAR. Upon receipt of the specialist's recommendations, the list of mitigation measures will also be updated and/or elaborated on.				
Me Dakiso enquired, on 19 November 2020, whether their objection still stands. Greenmined confirmed on 20 November 2020 that the objection was still valid, and noted that it has been incorporated into the Draft Scoping Report (DSR). The matters highlighted by Me Dakiso will be discussed/assessed in the draft Environmental Impact Assessment Report that will follow should the Final Scoping Report be approved by the Department of Mineral Resources and Energy.				
Additional response to the above listed comments following the compilation of the DEIAR: ♦ <u>Access roads:</u> ▪ Refer to Part A(1)(d)(ii) Description of the activities to be undertaken - 2.2.5 Access Roads; ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Access Road Mitigation and Traffic Accommodation; ▪ Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR; ▪ Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases; ▪ Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon. ▪ Appendix I – Traffic Impact Assessment.				
Robert Masters ♦ Farm B12A	05/10/2020	Mr Masters objected against the proposed project and listed the following comments.	Greenmined acknowledged receipt of the objection and responded as listed below.	Refer to following rows and Appendix G for proof of the public participation process.

Interested and Affected Parties List the names 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
Comments received during the initial public participation process: *"I would like to raise an objection due to the following reasons:* 1. *the increased noise & traffic volumes;* 2. *the poor maintenance & upkeep of the potholed B Road;* 3. *excessive speed limits of the heavy trucks and dust;* 4. *for the personal safety/security of our wives and children;* 5. *current maintenance and upkeep of the roads is not satisfactory."*				
Greenmined's response send on the 13th of October 2020: *"Greenmined herewith acknowledge receipt of, and thank you for your correspondence received 05 October 2020 on the proposed Section 102 amendment application of Wansley Siyakhula (Pty) Ltd in the East London area. We registered you as an Interested and Affected Party on the project, and will henceforth keep you posted on the progress of the Environmental Impact Assessment process as well as supply you with a copy of the draft scoping report (DSR) for your perusal. We acknowledge your concerns and have forwarded it to the project team. The access road and traffic impact have been identified as a matter of importance and the project team is in the process of investigating the best possible options. Their findings will be discussed in the EIA documents that will follow in due course, and on which you will be able to comment. Your objection will also be included in the Draft Scoping Report and discussed and assessed in the Environmental Impact Assessment Report that will also all be available for your perusal and commenting."*				
Additional response to the above listed comments: ♦ <u>Noise- and Dust Management:</u> The preliminary mitigation measures regarding the control of fugitive dust emissions and noise are listed in this document under heading *2(l) The possible mitigation measures that could be applied and the level of risk – Fugitive Dust Emission Mitigation / Noise Handling.* The mitigation measures will be updated/elaborated on upon receipt of the specialist's recommendations and presented in the DEIAR. ♦ <u>Traffic impact on the B-Road:</u> BVI consulting engineers were appointed to conduct a Traffic Impact Assessment (TIA) on both roads (W- & B-Road) presently used by the mine. The associated impacts, findings and recommendations of the TIA will be discussed in the DEIAR. Upon receipt of the specialist's recommendations, the list of mitigation measures will also be updated and/or elaborated on.				

Interested and Affected Parties List the names 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
♦ Safety and security: The potential of the proposed extension of the mining area having a negative impact on the safety and security of the surrounding area will be assessed as part of the EIA process and discussed in the DEIAR.				
Comments received on the DSR on 24 November 2020: "*Thank you for this information received, I have had a brief study of the content and don't see where all the various objections have been dealt with?* *Could you please be so kind to direct me to the place where we can study the detailed responses to all the various objections that were raised?* *It would appear this report lists the "actual comments" raised by the various interest/effected parties, which I imagined would have been dealt with in "complete confidentiality"?* *Anyway, it would be great now if we could ALL see the actual response to ALL these objections raised, before any further progress is made regarding this development*?"				
Greenmined's response to the DSR comments sent 13 January 2021: "…*According to Appendix 2 of the NEMA EIA Regulations, 2014 (as amended 2017) "the objective of the scoping process (of which the Scoping Report is the associated document) is to, through a consultative process—* *(a) identify the relevant policies and legislation relevant to the activity;* *(b) motivate the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;* *(c) identify and confirm the preferred activity and technology alternative through an impact and risk assessment and ranking process;* *(d) identify and confirm the preferred site, through a detailed site selection process, which includes an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment;* *(e) identify the key issues to be addressed in the assessment phase;* *(f) agree on the level of assessment to be undertaken, including the methodology to be applied, the expertise required as well as the extent of further consultation to be undertaken to determine the impacts and risks the activity will impose on the preferred site through the life of the activity, including the nature, significance, consequence, extent, duration and probability of the impacts to inform the location of the development footprint within the preferred site; and* *(g) identify suitable measures to avoid, manage or mitigate identified impacts and to determine the extent of the residual risks that need to be managed and monitored"* *Appendix 3 of the NEMA EIA Regulations, 2014 (as amended 2017) notes that "The objective of the environmental impact assessment process (of which the Environmental Impact Assessment Report (EIAR) is the associated document) is to, through a consultative process—* *(a) determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context;* *(b) describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;*				

Interested and Affected Parties List the names 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

(c) identify the location of the development footprint within the preferred site based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment;

(d) determine the—-

(i) nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives; and

(ii) degree to which these impacts—

(aa) can be reversed;

(bb) may cause irreplaceable loss of resources, and

(cc) can be avoided, managed or mitigated;

(e) identify the most ideal location for the activity within the preferred site based on the lowest level of environmental sensitivity identified during the assessment;

(f) identify, assess, and rank the impacts the activity will impose on the preferred location through the life of the activity;

(g) identify suitable measures to manage, avoid or mitigate identified impacts; and

(h) identify residual risks that need to be managed and monitored."

In light of the above, the comments/objections received during the initial public participation process as well as on the draft Scoping Report (DSR) were all listed in the DSR as it were formally received during the various commenting periods. The comments/objections contribute to the identification of the aspects in need of further assessment during the environmental impact assessment (EIA) process. Should the DMRE (Department of Minerals and Energy) approve the Scoping Report, the project team will commence with the subsequent EIA phase, where the identified aspects (of the Scoping Report) are assessed and discussed in the draft EIAR. Accordingly, the comments/objections received to date are also dealt with and responded to in the EIAR as many of the comments require specialist input that isn't available during the scoping phase. Further to this, please take note that all comments/objections submitted during the public participation process of an EIA have to be treated as public knowledge unless otherwise instructed by the writer or the DMRE. In summary, we therefore confirm that the comments/objections received to date were all listed in the Scoping Report, and will be dealt with/responded to in the Environmental Impact Assessment Report that will follow should the DMRE approve the Scoping Report and thereby permit the subsequent EIA phase."

Additional response to the above listed comments following the compilation of the DEIAR:

- <u>Dust and noise management:</u>
  - Refer to Part A(1)(g)(iv)(c) Description of specific environmental features and infrastructure on the site – Site Specific Air Quality and Noise Ambiance;
  - Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Air Quality and Noise Ambiance;
  - Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR;
  - Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases;
  - Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon.

Interested and Affected Parties List the names 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
♦ Access roads: ▪ Refer to Part A(1)(d)(ii) Description of the activities to be undertaken - 2.2.5 Access Roads; ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Access Road Mitigation and Traffic Accommodation; ▪ Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR; ▪ Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases; ▪ Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon. ▪ Appendix I – Traffic Impact Assessment. ♦ Safety and security: ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Socio-Economic Environment / Land Use; ▪ Refer to 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. ▪ Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR; ▪ Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases; ▪ Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon.				
Debbie Reynhardt	11/10/2020	Me Reynhardt registered as an I&AP on the project and submitted the following comments.	Greenmined registered Me Reynhardt as an I&AP on 13 October 2020 and responded as follows.	Refer to following rows and Appendix G for proof of the public participation process.
Comments received from Me Reynhardt on 13 October 2020: *"I require an extension of the period for comment, as I haven't received the DSR yet. Just briefly though, my objections and concerns are related to loss of sense of place, in holm hill; additional noisy road traffic, (as the truck load bodies and tail gates rattle terribly as they go down the b road) and it makes it unpleasant and unsafe to cycle, run or ride horses on our farm roads. Speeding of the trucks has also been an issue in the past.* *Additionally, the proposed footprint is in a STEP vegetation corridor and Insufficient detail has been given regarding a number of pertinent issues, regarding water, wildlife, blasting magnitudes, frequency, times etc. and other impacts; alternatives, monitoring, compliance, etc.* *I would like to submit more detailed comment. Could you advise if there will be opportunity to do this? And will there be a public meeting regarding this?"*				

Interested and Affected Parties List the names 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

Response from Greenmined on the above listed comments:

"We are still in the process of drafting the Scoping Report, and therefore it has not yet been published for comments. As soon as the document is ready we will inform all the registered interested and affected parties (I&AP's) (of which you form part) and stakeholders and allow for another 30-days commenting period.

We do take note of the concerns you listed below, and will include them in the Scoping Report. Your concerns will also be forwarded to the project specialists (for instance ecologist, road engineer etc.) that will consider and assess them. The outcome of the specialist studies will be included in the Draft Environmental Impact Assessment Report (DEIAR) that will follow should the Department of Mineral Resources and Energy accept the Scoping Report. The DEIAR will once again be distributed to all the registered I&AP's and stakeholders for another 30-days commenting period. You will therefore still have at least two more opportunities to provide us with your comments.

Due to the uncertainties/difficulties regarding COVID, we do not at the moment plan to hold a community meeting. However, should you wish to meet we are happy to arrange a virtual meeting with you to discuss the project."

Additional response to the above listed comments:

- Potential impact on the sense of place:
  The potential impact of the mining activities on the sense of place will be investigated as part of the EIA process and elaborated on in the DEIAR.

- Noise Management:
  The preliminary mitigation measures regarding the control of noise are listed in this document under heading *2(l) The possible mitigation measures that could be applied and the level of risk – Noise Handling.* The mitigation measures will be updated/elaborated on upon receipt of the specialist's recommendations and presented in the DEIAR.

- Traffic impact on the B-Road:
  BVI consulting engineers were appointed to conduct a Traffic Impact Assessment (TIA) on both roads (W- & B-Road) presently used by the mine. The associated impacts, findings and recommendations of the TIA will be discussed in the DEIAR. Upon receipt of the specialist's recommendations, the list of mitigation measures will also be updated and/or elaborated on.

- Vegetation description:
  The comment is noted and sent to the ecologist to incorporate into the ecological and surface hydrological study and assessment.

Interested and Affected Parties List the names 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
Additional response to the above listed comments following the compilation of the DEIAR: ♦ <u>Character of the area / Zoning:</u> ▪ Refer to Part A(1)(d)(ii) Description of the activities to be undertaken – 2.2.1 Zoning; ▪ Refer to Part A(f) Need and desirability of the proposed activities – Town Planning Motivation; ▪ Appendix F2: Town Planning Motivation ♦ <u>Dust and noise management:</u> ▪ Refer to Part A(1)(g)(iv)(c) Description of specific environmental features and infrastructure on the site – Site Specific Air Quality and Noise Ambiance; ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Air Quality and Noise Ambiance; ▪ Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR; ▪ Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases; ▪ Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon. ♦ <u>Access roads:</u> ▪ Refer to Part A(1)(d)(ii) Description of the activities to be undertaken - 2.2.5 Access Roads; ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Access Road Mitigation and Traffic Accommodation; ▪ Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR; ▪ Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases; ▪ Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon. ▪ Appendix I – Traffic Impact Assessment. ♦ <u>Vegetation description:</u> ▪ Refer to Part A(1)(g)(iv)(c) Description of specific environmental features and infrastructure on the site – Site Specific Mining and Biodiversity Conservation Areas; ▪ Refer to Part A(1)(g)(iv)(c) Description of specific environmental features and infrastructure on the site – Site Specific Vegetation; ▪ Appendix H2 - Ecological and Freshwater Resource Study and Assessment.				
Eddie Scheun	14/09/2020	Mr Scheun objected against the proposed project as listed below.	Greenmined acknowledged receipt of the objection on 16 September 2020 and responded as follows.	Refer to following rows and Appendix G

Interested and Affected Parties List the names 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
				for proof of the public participation process.

Comments received during the initial public participation process:

"We have been handed the documentation by a neighbour. We are concerned that we are not receiving the documentation from your office directly, and we are further concerned that we may have missed documentation. Kindly and as a matter of urgency register us as interested parties. Please note further that unless we receive an firm undertaking that the road between the quarry and the N6 will not be used in this operation, we will without any doubt oppose the application, and we insist on being granted the opportunity to do so."

Response from Greenmined:

"Greenmined herewith acknowledge receipt of your correspondence received 14 September 2020 on the proposed Section 102 amendment application of Wansley Siyakhula (Pty) Ltd in the East London area. We registered you as an Interested and Affected Party on the project, and will henceforth keep you posted on the progress of the Environmental Impact Assessment process as well as supply you with a copy of the draft scoping report (DSR) for your perusal. Please note that you have not missed previous correspondence, and that the attached Background Information Document and Project Map were the first documents that were circulated regarding the proposed project. We acknowledge your concern regarding the access road and have forwarded it to the project team. The access road and traffic impact has been identified as a matter of importance and the project team is in the process of investigating the best possible options. Their findings will be discussed in the EIA documents that will follow in due course, and on which you will be able to comment."

Additional comments submitted by Mr Scheun on 16 September 2020:

"The access road is a real concern. Currently, Wansley farm hold a servitude to utilise a road over my land. We will not extend the use of the road to a business being conducted on Wansley farm. Please, we must make this point very clear."

Additional comments submitted by Mr Scheun on 30 September 2020:

"We have requested to be included in the list of interested and affected parties. We are the owners of the remainder of portion 2 of farm 652. I note that you refer to " the expertise of a road engineer that will be looking at both the B- and W roads and make recommendations regarding the traffic management of the access". We again confirm that the W road is on private land. It is not a public road. The road engineer would have no business looking at the W road. In terms of our title deed. The quarry does not hold a servitude to use the road. Unless we receive as a matter of urgency confirmation that the quarry will immediately desist from using the road, we will be physically closing the road for all cartage vehicles."

Interested and Affected Parties List the names 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
Additional response on the above listed comments: ♦ <u>Traffic impact on the W-Road:</u> BVI consulting engineers were appointed to conduct a Traffic Impact Assessment (TIA) on both roads (W- & B-Road) presently used by the mine. The associated impacts, findings and recommendations of the TIA will be discussed in the DEIAR. Upon receipt of the specialist's recommendations, the list of mitigation measures will also be updated and/or elaborated on.				
Additional response to the above listed comments following the compilation of the DEIAR: ♦ <u>Access roads:</u> ▪ Refer to Part A(1)(d)(ii) Description of the activities to be undertaken - 2.2.5 Access Roads; ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Access Road Mitigation and Traffic Accommodation; ▪ Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR; ▪ Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases; ▪ Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon. ▪ Appendix I – Traffic Impact Assessment.				
Andre Scheun	01/10/2020	Mr Scheun objected against the project with the following comments.	Greenmined acknowledge the objection and responded as follows.	Refer to following rows and Appendix G for proof of the public participation process.
Comments received from Mr Scheun with the response of Greenmined (02 October 2020) thereon: *"I have 3 questions that I am putting to you to better understand this Wansley issue:* 1. *Are you situated in East London?* *I am situated in Ballito, and the rest of the project team are from various areas including East London, Johannesburg, Bloemfontein, Somerset-West, and Cape Town.* 2. *Did you visit Wansley Farm before compiling the document you sent to Boniface Trust?* *I have visited the farm before.* 3. *Did you consider having a meeting with the residents of Holm Hill, specifically all those on the B and W roads, before compiling the above document?*				

Interested and Affected Parties List the names 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
The Background Information Document that was send out forms part of the initial public participation phase associated with a Section 102 amendment application (such as this one). The reasoning behind an initial public participation process is to identify and notify the interested and affected parties (I&AP's) and stakeholders and provide the public with a period to register on the EIA process (still to follow). As the initial public participation phase takes place at the onset of the EIA (environmental impact assessment), the technical information regarding the project still needs to be obtained as well as the input of the specialists. Once this information was obtained it is presented in a report (environmental impact assessment report) that is then circulated to the registered I&AP's and stakeholders for their perusal and commenting. In light of this it is (in our opinion) more effective to meet with interested parties once the technical information is available and the recommendations of the specialists were received. However, should you wish so we will gladly set up a virtual meeting with you to discuss the project."				
Additional comments received from Mr Scheun on 02 October 2020: *"public participation phase? The document that was put up at the entrance to W-road, and most probably at the other entrances to Holm Hill too, was put up on a S-turn in the road at an uphill opposite an informal settlement. There is no way that I would stop to read the notice that, as you know, was small print on a small temporary board. If it were not for the community of Holm Hill spreading the document amongst ourselves, very few members of the public would actually have known about this project and able to participate - that includes immediate neighbours and private road owners. No further response required."* *"No idea what all the references to roads in your document means. I assume they refer to roads on the premises – Wansley Farm. When do you expect the proposed MR will expire?* *1. I have come to the conclusion that your MR holder has not been acting in good faith over the years and that they are not following good business practice.* *1.1 According to your document and maps it is obvious that the current mining footprint is already far greater than the "approved mining area", which is in violation of the mining rights issued* *1.2 According to your document the distance from city centre to Wansley farm is ± 30 kilometres.* *1.2.1 East London Tourism (Argyle street) to Wansley Quarries via North East Expressway and Lavender Blue is 15,5kms* *1.2.2 East London Tourism to Wansley Quarries via North East Expressway and the N2 and B-road is 16.5kms* *1.2.3 East London Tourism to Wansley Quarries via Vincent, N2, Meiseshalt, and B-road is 18,1kms* *1.2.4 East London Tourism to Wansley Quarries via North East Expressway, the N6, and W-road is 15,4kms.* *1.2.5 Outer edge of Beacon Bay to Wansley Quarries is 6,2 kms and possibly only 5 kms as the crow flies.* *1.3 Blasting has been taking place from time to time which is in violation of the mining rights issued.* *1.4 Promised road maintenance to the private roads being used is not being done properly.* *1.5 Watering the W-road on Mondays, Wednesdays, and Fridays to curb dust as was agreed by the owner of Wansley Farm in 2007 is not being done.* *1.6 Oil spills due to accidents where cartage vehicles overturned on the private road were not attended to in an environmentally friendly way. On one instance the oil spill was covered with soil in a ditch that is a waterway to one of our dams.* *1.7 The MR holder has no concern for the rights and expectations of its neighbours and the local community at large. Complaints, even on WhatsApp groups of which the MR holder and staff are participants, fall on deaf ears. Here they have dropped the ball and the opportunity to involve the community in addressing issues affecting the community.*				

Interested and Affected Parties List the names 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

2. *Noise Pollution*
   - 2.1 *As of late up to 35 cartage trucks have been counted over an hour and a half period using the W-road passing our homesteads that are right next to the road. I have requested records from the MR holder to see how many cartage trucks actually use our private road on average per day, but that has not been forthcoming.*
   - 2.2 *The excavators and crushes and blasting can be heard from our property depending on the wind or lack thereof.*
   - 2.3 *The operation is not limited to office hours as vehicles could be on the road from sun rise to after 20h00, and even over weekends. It is all dependent on customer demands.*

3. *Dust Pollution*
   - 3.1 *The cartage trucks cause dust pollution on/in:*
     - 3.1.1 *Grazing to the effect that certain areas next to the road cannot be grazed due to the build-up of dust and dying vegetation.*
     - 3.1.2 *Building roofs from where water runs into our water tanks for household use.*
     - 3.1.3 *Our homes and other buildings and laundry, as our buildings are right next to the W-road.*

4. *Traffic*
   - 4.1 *Excessive speeds by the cartage drivers on our private road*
   - 4.2 *Reckless driving by the cartage drivers on our private W-road sometimes literally forcing vehicles off the road*
   - 4.3 *High volumes of cartage trucks*
   - 4.4 *Long hours of cartage trucks on the road*
   - 4.5 *Loads are not secured and lost partial loads are not attended to.*

5. *Other*
   - 5.1 *When the MR holder does work on the road, they continuously block the under-road drainage pipes to our dam and block the road run-offs to our property.*
   - 5.2 *When the MR holder has idle cartage trucks, they will dump loads of sabunga on the road surface for later use which is a risk to all road users as these dumped loads could lie there for weeks on end.*
   - 5.3 *The deteriorating condition of our roads due to the heavy traffic has a very negative effect on our own vehicles.*
   - 5.4 *Horse riding on our roads has come to an end due to the cartage truck traffic."*

Interested and Affected Parties List the names 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

Additional response to the above listed comments:

- Road related listed activities:
  As mentioned earlier, when mining reaches the most northern part of the proposed extension footprint (refer to Figure 2) it may be necessary to divert the road (Mn10118 St / W-Road) along the northern mining boundary, this matter will be discussed in detail in the draft Environmental Impact Assessment Report. Should haul roads be needed where no farm roads exist the roads will be extended as mining progress. The footprint of the haul roads will be contained to the approved mining area.

- Expiry date of mining right:
  The mining right is valid until 16 June 2026, with the option of renewal.

- Traffic impact on, and management of the W-Road:
  BVI consulting engineers were appointed to conduct a Traffic Impact Assessment (TIA) on both roads (W- & B-Road) presently used by the mine. The associated impacts, findings and recommendations of the TIA will be discussed in the DEIAR. Upon receipt of the specialist's recommendations, the list of mitigation measures will also be updated and/or elaborated on.

- Noise- and Dust Management:
  The preliminary mitigation measures regarding the control of fugitive dust emissions and noise are listed in this document under heading *2(l) The possible mitigation measures that could be applied and the level of risk – Fugitive Dust Emission Mitigation / Noise Handling.* The mitigation measures will be updated/elaborated on upon receipt of the specialist's recommendations and presented in the DEIAR.

- Operating hours:
  A proposal regarding the operating hours of the mine will be compiled as part of the EIA process, and the outcome will be discussed in the DEIAR that will follow should the DMRE approve the Final Scoping Report."

Mr Scheun informed Greenmined, on 19 November 2020, that according to Appendix 5 of the DSR the correspondence of Peter Warren was sent to Warren Page.

Interested and Affected Parties List the names 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
Comments received on the DSR on 20 November 2020: *"….1. I acknowledge that our complaints/reservations have been logged and that most of them will only be responded to once the xperts produce their responses. Just make sure that Peter Warren, not just Warren Page, has received the correspondence and had the opportunity to respond as I saw that correspondence directed to Peter Warren had been sent to Warren Page at some stage as per the DSR.* *2. Regarding our complaints that have been logged regarding the current mining footprint that is already outside the mining right, which is proof that the applicant is not acting in good faith, Christine has responded by saying that the footprint outside the MR will be incorporated into the amended footprint of the mine - so as if to say that it is okey to mine illegally and to trust the applicant that he will not transgress in future - how will this be policed?* *3. The DSR states incorrectly that the average precipitation per year is 593mm (Wansley farm = 782mm) with March being the highest with about 79mm. The minimum rainfall is 16mm average for June or July. I am 1300m from the Wansley farm entrance and my recordings for the past 12 years is as follows: Average annual precipitation is 817mm (close to Wansley farm's average) with the highest 12 year average is October with 109.1mm, followed by February with 98.5mm The lowest 12 year average is June/July with about 31mm. See attachment.* *4. Temperatures are listed way lower than that measured on our farm during the last 12 years. Unfortunately I no longer have those readings which I had to keep on a daily basis as I was producing tomatoes under cover and the up-to-date records were required for irrigation planning and GLOBALGAP certification.* *5. The wind speeds are way below those stated in the DSR, ask me, I have lost enough plastic from the tunnels due to excessive wind speeds of up to and over 50kms/h over the years.* *6. The potential impact on the access road Mn10118 St (W-Road) has a significance of only "9" meaning it is Low-Medium, meaning "impact would be of a low order and with little effect. In the case of negative impact, mitigation and / or remedial activity would be either easily achieved or little would be required, or both". To us as residents it is actually one, if not THE major concern*."				
Greenmined's response to the DSR comments sent on 23 November 2020: "*Greenmined herewith acknowledge receipt of your correspondence dated 19 & 20 November 2020 respectively. We thank you for highlighting the matter regarding our correspondence with Messrs Peter Warren and Warren Page. Attached hereto please find proof that Mr Peter Warren was indeed contacted during the previous commenting period. The delivery note will be corrected in the Final Scoping Report (FSR).* *Thank you for your comments as contained in clauses 2, 3, 4 & 5 of your correspondence under reply. Your comments will be taken into consideration and we will update the FSR accordingly, for evaluation and determination by the DMRE.*				

Interested and Affected Parties List the names 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
We do acknowledge your concern regarding the impact of the mine on the W-road. Please note that the matter has been handed to the road specialist and will be discussed in more detail upon receipt of the Traffic Impact Assessment."				
Additional response to the above listed comments following the compilation of the DEIAR: ♦ Access roads: ▪ Refer to Part A(1)(d)(ii) Description of the activities to be undertaken - 2.2.5 Access Roads; ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Access Road Mitigation and Traffic Accommodation; ▪ Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR; ▪ Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases; ▪ Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon. ▪ Appendix I – Traffic Impact Assessment. ♦ Dust and noise management: ▪ Refer to Part A(1)(g)(iv)(c) Description of specific environmental features and infrastructure on the site – Site Specific Air Quality and Noise Ambiance; ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Air Quality and Noise Ambiance; ▪ Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR; ▪ Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases; ▪ Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon. ♦ Operating hours: ▪ Refer to Part A(1)(d)(ii) Description of the activities to be undertaken - 2.3.1 Operating Hours; ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Noise Handling; ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Access Road Mitigation and Traffic Accommodation; ▪ Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR; ▪ Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases; ▪ Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon. ♦ Compliance / Audit frequency: ▪ Refer to Part B(1)(l) Indicate the frequency of the submission of the performance assessment report.				

Interested and Affected Parties List the names 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
Dean Webber ♦ Farm B1	18/09/2020	Dean Webber registered on the project and submitted the following comments.	Greenmined registered Mr Webber on 23 September 2020 and responded as follows.	Refer to following rows and Appendix G for proof of the public participation process.

Comments received during the initial public participation period:

"My family have been living on Farm B1 since the sixties (One of the first families to settle in this area.) Regarding the quarry....

TRUCKS

It is blatantly obvious that the quarry trucks that move the earth from the quarry have the following effect on us... Destruction of the B Road (my parents along with Ray Rogers and one or two other residents pooled their hard earned cash together and had a large portion of the B Road tarred. The tar did not last long due to the quarry trucks. It would seem that a fair way to deal with the transport of earth from the quarry by the trucks to the main roads should be controlled by the quarry - / speeding - / what routes the trucks should take etc (Lip service does not do it for me..I am talking about a system in place that is controlled and monitored by the quarry and a third party that has an interest in the community of Holmhill. It is suggested that the trucks delivering to Gonubie use the B road only. Trucks delivering anywhere else, should use the W Road. Why can this not be implemented and monitored by the quarry (+3rd party) since the only people who benefit from the transport of this earth is the quarry. Discipline and control of the drivers from the quarry to the main roads should be monitored and controlled by the quarry (+3rd party). The quarry brushes off any incident or problem caused by the truck drivers and pass the responsibility onto the truck drivers. Once again, the only people benefiting from the trucks is the quarry, so it seems fair that they should be responsible for monitoring and discipline of the truck drivers and also give feedback as to the actions taken regarding any incidence regarding the trucks.

ROAD (If you can call it that)

Since the quarry is directly responsible for the majority of destruction of B Road, it is only fair that the quarry does regular maintenance to the B Road. The quarry should not call on the residence to contribute to any repairs.

DUST

We already live in a permanent dust cloud caused mainly by the quarry trucks. Should the quarry expand, the dust will increase due to more traffic. Clearly, I am opposed to the quarry expansion.

NOISE

Same points as above.

Interested and Affected Parties List the names 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
BLASTING *Absolutely opposed to this. It will be like a mini earthquake. Noise pollution in a rural setting with a lot of animals and residents living here. Absolutely opposed to this.* *SPEEDING TRUCKS* *Same story...* *Bottom line is that, I have the impression from all that has happened on Holmhill, that the quarry is only focused on activities of the quarry and anything that happens outside of the quarry property is brushed off by putting the blame on the contracted truck drivers and have no interest in anything that outside of that. This has to change. I am not against progress, but when it is done for profit and no consequences for the people dealing with the negative side of that progress, I am highly opposed to any support for that progress and am willing to personally get involved to adjust those dynamics by any means necessary."*				
Response from Greenmined on the above listed comments: *"Greenmined herewith acknowledge receipt of, and thank you for your detailed correspondence received 18 September 2020 on the proposed Section 102 amendment application of Wansley Siyakhula (Pty) Ltd in the East London area. We registered you as an Interested and Affected Party on the project, and will henceforth keep you posted on the progress of the Environmental Impact Assessment process as well as supply you with a copy of the draft scoping report (DSR) for your perusal. We acknowledge your concerns and have forwarded it to the project team. The access road and traffic impact have been identified as a matter of importance and the project team is in the process of investigating the best possible options. Their findings will be discussed in the EIA documents that will follow in due course, and on which you will be able to comment. The rest of your comments will also be included in the Draft Scoping Report and discussed and assessed in the Environmental Impact Assessment Report that will all be available for your perusal and commenting."*				
Additional response to the above listed comments: ♦ <u>Dust-, noise- and traffic impact caused by mining related trucks:</u> BVI consulting engineers were appointed to conduct a Traffic Impact Assessment (TIA) on both roads (W- & B-Road) presently used by the mine. The associated impacts, findings and recommendations of the TIA will be discussed in the DEIAR. Upon receipt of the specialist's recommendations, the list of mitigation measures will also be updated and/or elaborated on. ♦ <u>Blasting:</u> The DEIAR will elaborate on the proposed blasting frequency and associated impacts.				

Interested and Affected Parties List the names 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
Additional response to the above listed comments following the compilation of the DEIAR: ♦ <u>Access roads:</u> ▪ Refer to Part A(1)(d)(ii) Description of the activities to be undertaken - 2.2.5 Access Roads; ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Access Road Mitigation and Traffic Accommodation; ▪ Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR; ▪ Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases; ▪ Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon. ▪ Appendix I – Traffic Impact Assessment. ♦ <u>Dust and noise management:</u> ▪ Refer to Part A(1)(g)(iv)(c) Description of specific environmental features and infrastructure on the site – Site Specific Air Quality and Noise Ambiance; ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Air Quality and Noise Ambiance; ▪ Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR; ▪ Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases; ▪ Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon. ♦ <u>Blasting:</u> ▪ Refer to Part A(1)(d)(ii) Description of the activities to be undertaken - 2.3.3 Blasting; ▪ Refer to Part A(1)(g)(iv)(c) Description of specific environmental features and infrastructure on the site – Site Specific Air Quality and Noise Ambiance; ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Air Quality and Noise Ambiance; ▪ Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR; ▪ Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases; ▪ Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon.				
Andrew Moss ♦ Portion 13 (Portion of Portion 2) of Farm No 652	06/10/2020	Mr Moss objected against the project as listed below.	Greenmined acknowledged receipt of Mr Moss's comments on 6 October 2020.	Refer to following rows and Appendix G for proof of the public participation process.

Interested and Affected Parties List the names 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
Comments received during the initial public participation phase: *"With reference to the Background Information Document dated 11th September 2020, I, Andrew Moss, hereby submit my objections to the project proposal as the property owner of Portion 13 (A Portion of Portion 2) Farm 652 – Farm W8.* *W Road* *With reference to the attached Title Deed for the property, there is a servitude at the top of the property which allows access to Portion 1 Farm 652. This servitude is termed "W Road" and is linked to the servitudes of the two adjacent properties and is in essence a private road. The servitude is intended for access to Portion 1 Farm 652 and not for haulage vehicles belonging to Wansley Siyakhula (WS), which are in breach of the conditions of the Title Deed. The haulage vehicles cause excessive damage to the rural road which is not designed for over usage by heavy vehicles. WS does not adequately maintain the road which is used by the surrounding property owners for access to and from their properties.* *Safety of other road users* *The haulage vehicles and a threat to the safety of other road users. Every road user has a "near miss" storey to tell when avoiding a collision with a haulage vehicle driving at excessive speeds. Mothers transporting young children to and from school activities during the day are the most vulnerable. It is a matter of time before a serious incident does happen, which unfortunately will be too late.* *Groundwater* *Most properties in the area rely on boreholes for their water supply, which are at risk of being damaged due to the proposed blasting activities.* *Conclusion* *W Road and the surrounding properties are already under stress due to the current operations of Wansley Siyakhula, an extension to the project area and the introduction of blasting will have a severe effect on the area and the inhabitants. Wansley Siyakhula have not adhered to any agreements with regards to the safe usage and maintenance of W Road to date and are unlikely to do so in the future. The existing quarry area has already exceeded the approved demarcated boundary, which is a clear indication of Wansley Siyakhula's attitude towards the environment."*				
Additional response to the above listed comments: ♦ <u>Traffic impact on the W-Road:</u> BVI consulting engineers were appointed to conduct a Traffic Impact Assessment (TIA) on both roads (W- & B-Road) presently used by the mine. The associated impacts, findings and recommendations of the TIA will be discussed in the DEIAR. Upon receipt of the specialist's recommendations, the list of mitigation measures will also be updated and/or elaborated on.				

Interested and Affected Parties List the names 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
♦ Potential impact of blasting on the groundwater The potential of blasting activities affecting the surrounding groundwater will be assessed as part of the EIA process and discussed in the DEIAR.				
Additional response to the above listed comments following the compilation of the DEIAR: ♦ Access roads: ▪ Refer to Part A(1)(d)(ii) Description of the activities to be undertaken - 2.2.5 Access Roads; ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Access Road Mitigation and Traffic Accommodation; ▪ Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR; ▪ Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases; ▪ Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon. ▪ Appendix I – Traffic Impact Assessment. ♦ Hydrology / Water Use: ▪ Refer to Part A(1)(d)(ii) Description of the activities to be undertaken – 1.2.4 Water Management. ▪ Refer to Part A(1)(d)(ii) Description of the activities to be undertaken – 2.2.6.1 Stormwater Management. ▪ Refer to Part A(1)(d)(ii) Description of the activities to be undertaken – 2.3.4 Water Use. ▪ Refer to Part A(1)(g)(iv)(c) Description of specific environmental features and infrastructure on the site – Site Specific Hydrology and Geohydrology; ▪ Appendix H2 - Ecological and Freshwater Resource Study and Assessment; ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Hydrology and Geohydrology; ▪ Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR; ▪ Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases; ▪ Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon. ♦ Blasting: ▪ Refer to Part A(1)(d)(ii) Description of the activities to be undertaken - 2.3.3 Blasting; ▪ Refer to Part A(1)(g)(iv)(c) Description of specific environmental features and infrastructure on the site – Site Specific Air Quality and Noise Ambiance; ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Air Quality and Noise Ambiance; ▪ Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR; ▪ Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases;				

Interested and Affected Parties List the names 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
▪ Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon.				
Dr Phil Whittington	06/05/2021	Dr Whittington registered on the project and enquired to the stage at which the application was.	Greenmined acknowledged that Dr Whittington was registered as an I&AP on the project and informed him on the progress of the project. Dr Whittington will be invited to comment on the DEIAR.	Refer to Appendix G for proof of the public participation process.
Unknown	13/10/2020	An email was received from an unknown person with the following comments.	Greenmined acknowledged receipt of the email on 19 October 2020 and requested the contact details of the sender. To date no response was received.	Refer to following rows and Appendix G for proof of the public participation process.
Comments received from unknown sender: *"It is with great concern that I write to you regarding the expansion of Wansley Quarries. We have long had a strained view of the quarry which has a habit of working after reasonable hours, on weekends, on public holidays and with heavy industrial equipment making an extremely loud noise. This noise pollution, dust, constant heavy vehicles traffic as well as the unsightly industrial view only negatively affects our future plans and our property value. We would never have bought our property had we known that this quarry, which is in the middle of a smallholder, residential farming community, would be allowed to expand as such. It is inconceivable that this expansion is even being considered without sufficient review of the environmental and community impacts. We live across the valley and probably have more noise pollution and disruption from quarry as an eyesore than the neighbouring farms and yet we were never consulted. It is through the farming community that we have been alerted of such expansions. The negative impact on the surrounding area and community needs to be thoroughly assessed. Our very own business plan, job creation plan through eco-tourism in the surrounding area will be seriously negatively affected and the very viability of these plans will be in question because of the expansion of such an unsightly, invasive industry on our doorstep."*				
Additional response to the above listed comments following the compilation of the DEIAR: ♦ <u>Operating hours:</u> ▪ Refer to Part A(1)(d)(ii) Description of the activities to be undertaken - 2.3.1 Operating Hours; ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Noise Handling; ▪ Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Access Road Mitigation and Traffic Accommodation; ▪ Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR;				

Interested and Affected Parties List the names 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

- Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases;
- Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon.

♦ <u>Dust and noise management:</u>
- Refer to Part A(1)(g)(iv)(c) Description of specific environmental features and infrastructure on the site – Site Specific Air Quality and Noise Ambiance;
- Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Air Quality and Noise Ambiance;
- Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR;
- Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases;
- Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon.

♦ <u>Visual impact:</u>
- Refer to Part A(1)(g)(iv)(c) Description of specific environmental features and infrastructure on the site – Site Specific Visual Characteristics;
- Refer to Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk – Visual Characteristics;
- Refer to Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR;
- Refer to Part B(1)(d)(ix) Impacts to be mitigated in their respective phases;
- Refer to Part B(1)(k) Mechanism for monitoring compliance with and performance assessment the EMPR and reporting thereon.

♦ <u>Character of the area / Zoning:</u>
- Refer to Part A(1)(d)(ii) Description of the activities to be undertaken – 2.2.1 Zoning;
- Refer to Part A(f) Need and desirability of the proposed activities – Town Planning Motivation;
- Appendix F2: Town Planning Motivation.

iv) The Environmental attributes associated with the development footprint alternatives.

(The environmental attributed 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 pre-mining (in terms of the proposed extension area) biophysical-, cultural- and socio-economic environment of the larger study area. It is important to note that Wansley Quarry has been operational for ±20 years, and through the years developed into a landscape feature. The following discussion of the type of environment to be affected therefore includes the *status quo* associated with the extension area.

PHYSICAL ENVIRONMENT

CLIMATE

(Information extracted from the Wansley Siyakhula (Pty) Ltd Mining Rights Areas Storm Water Management Plan)

According to SAExplorer the East London area receives an average of 593 mm of precipitation per year (left chart). The Stormwater Management Plan (SWMP) however reported the MAP (mean annual precipitation) for the study area to be 782 mm/year. According to the SAExplorer data the highest rainfall usually occurs in March averaging 79 mm, while the lowest occurs in July with an average of 16 mm.

Climatic data recorded and extrapolated for Ducats (from Climate-Data.org; https://en.climate-data.org/africa/south-africa/eastern-cape/ducats-771137/) indicates an average annual precipitation of 834 mm. According to this source, precipitation is generally the lowest in June (33 mm) with March receiving the greatest amount of precipitation (averaging ±94 mm). Rainfall data collected by Mr Scheun on his property ±1,3 km from Wansley Farm shows the average annual precipitation to be 817 mm, with the highest 12-year average being in October (109.1 mm) while the lowest 12-year average was recorded in June/July (31 mm).

According to SAExplorer the average midday temperatures range from 20˚C in July to 26˚C in February (centre chart), and the region is the coldest during July (9.3°C on average). Consult the chart below (right) for an indication of the monthly variation of average night-time temperatures.

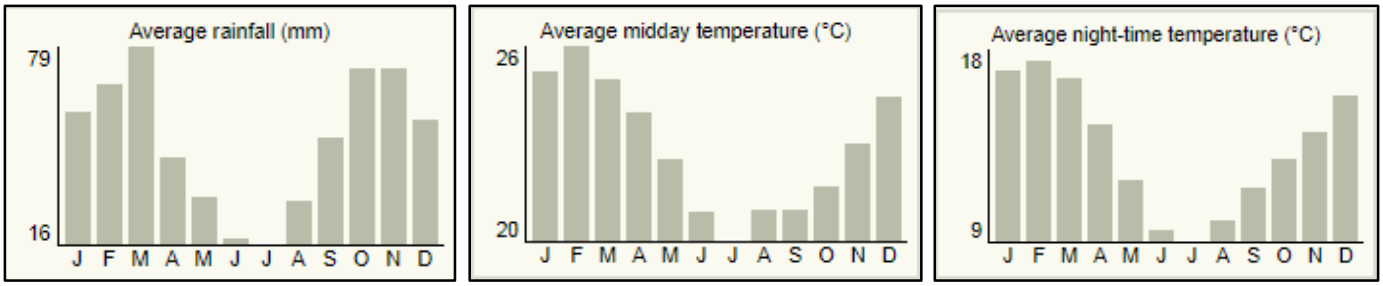


Figure 18: Charts showing the climatic averages of the East London area (information obtained from SAExplorer).

According to Climate-Data.org (see link above) the Ducats region has a mild, generally warn, temperate climate. The temperate average 18.3°C, with February being the warmest (average 21.7 °C) and July being the coldest (average 15.1°C) months. Frost is uncommon within the region.

During the summer/spring months the south to south-eastern wind dominates in the East London area (blowing in a northern/north-western direction), whilst during the winter/autumn months the west to south-western wind is dominant as presented in the figure below. According to the data of windfinder.com the average wind speeds range between 8 - 12 kts during the year.

Figure 19: Dominant wind direction of the East London area (information obtained from windfinder.com).

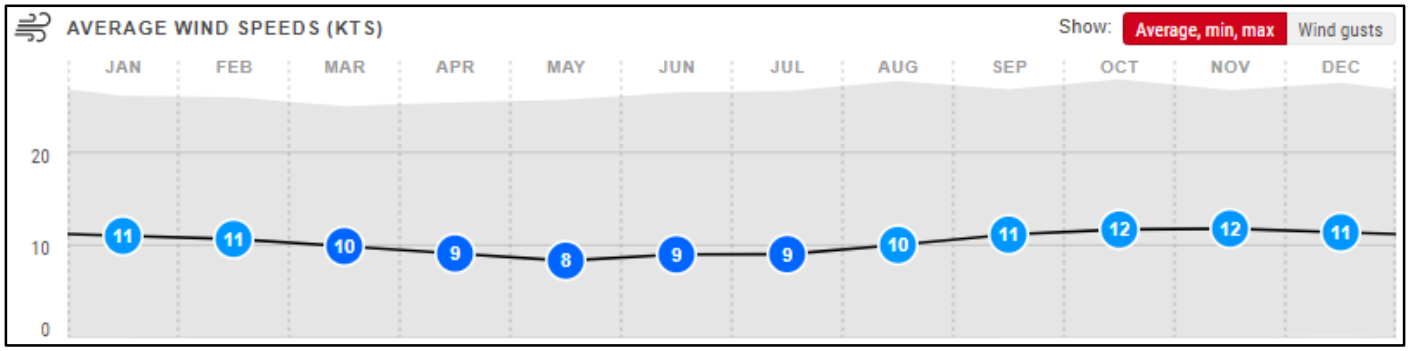
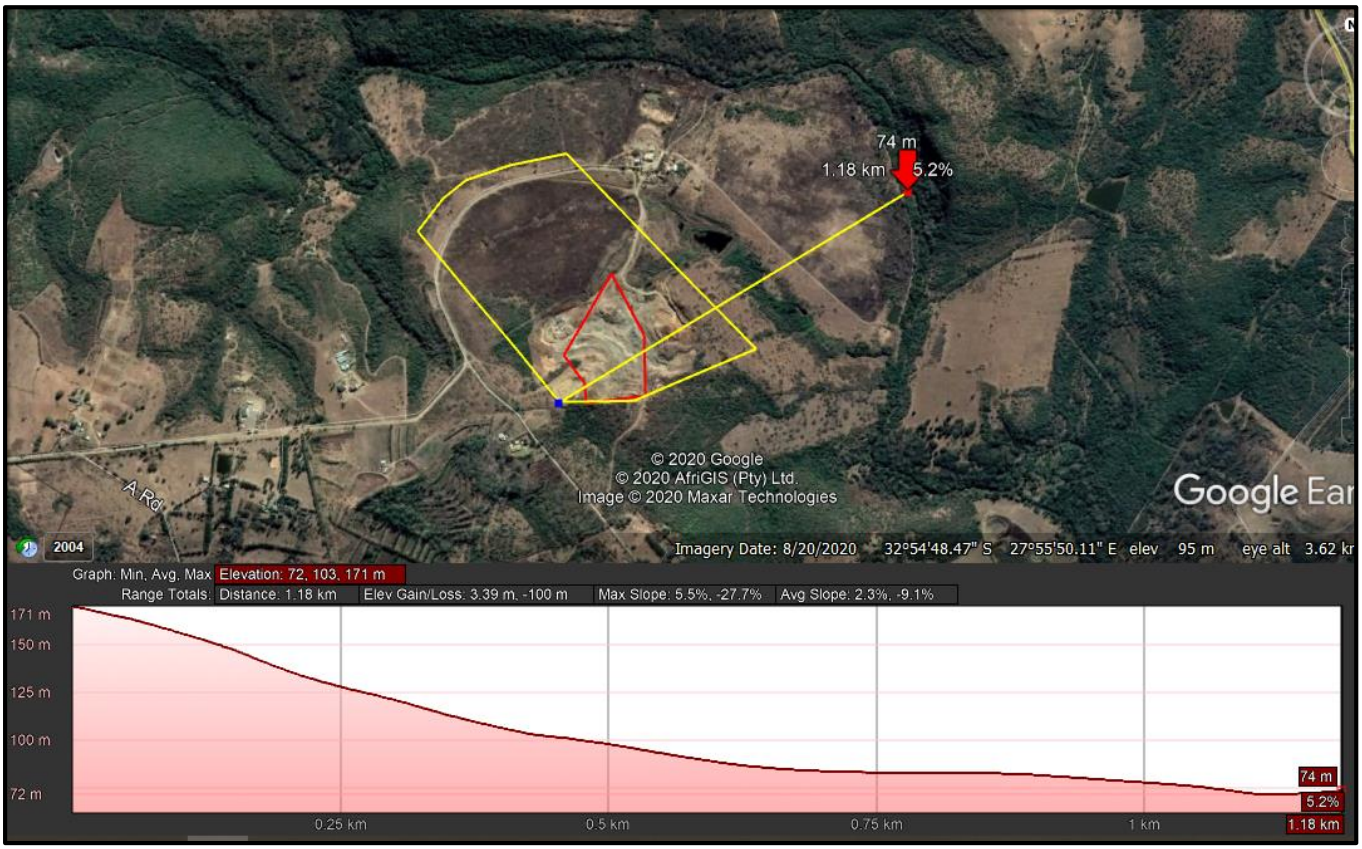


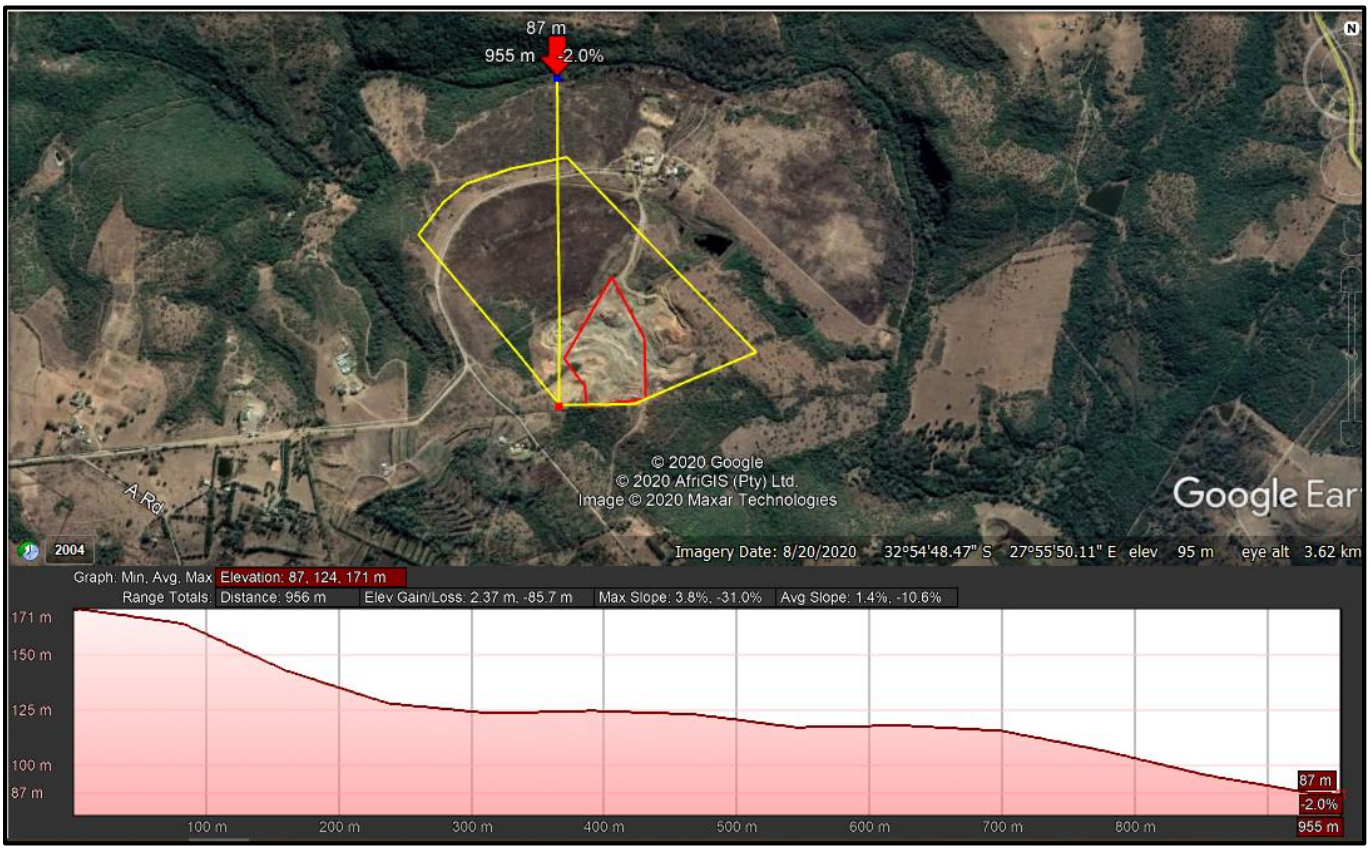
Figure 20: Average wind speeds of the East London area (information obtained from windfinder.com).

TOPOGRAPHY

The topography of the study area is characterized as a highly undulating area with low hills, ridges and moderate to steep slopes. Low lying areas contain short drainage systems which drain into the Qinira River. The altitude of the extension area gradually

slopes from the southern corner (±171 masl) of the proposed mining area down the hill towards the lower laying river valley. The eastern corner of the proposed mining area is the lowest point with an altitude of 87 masl.





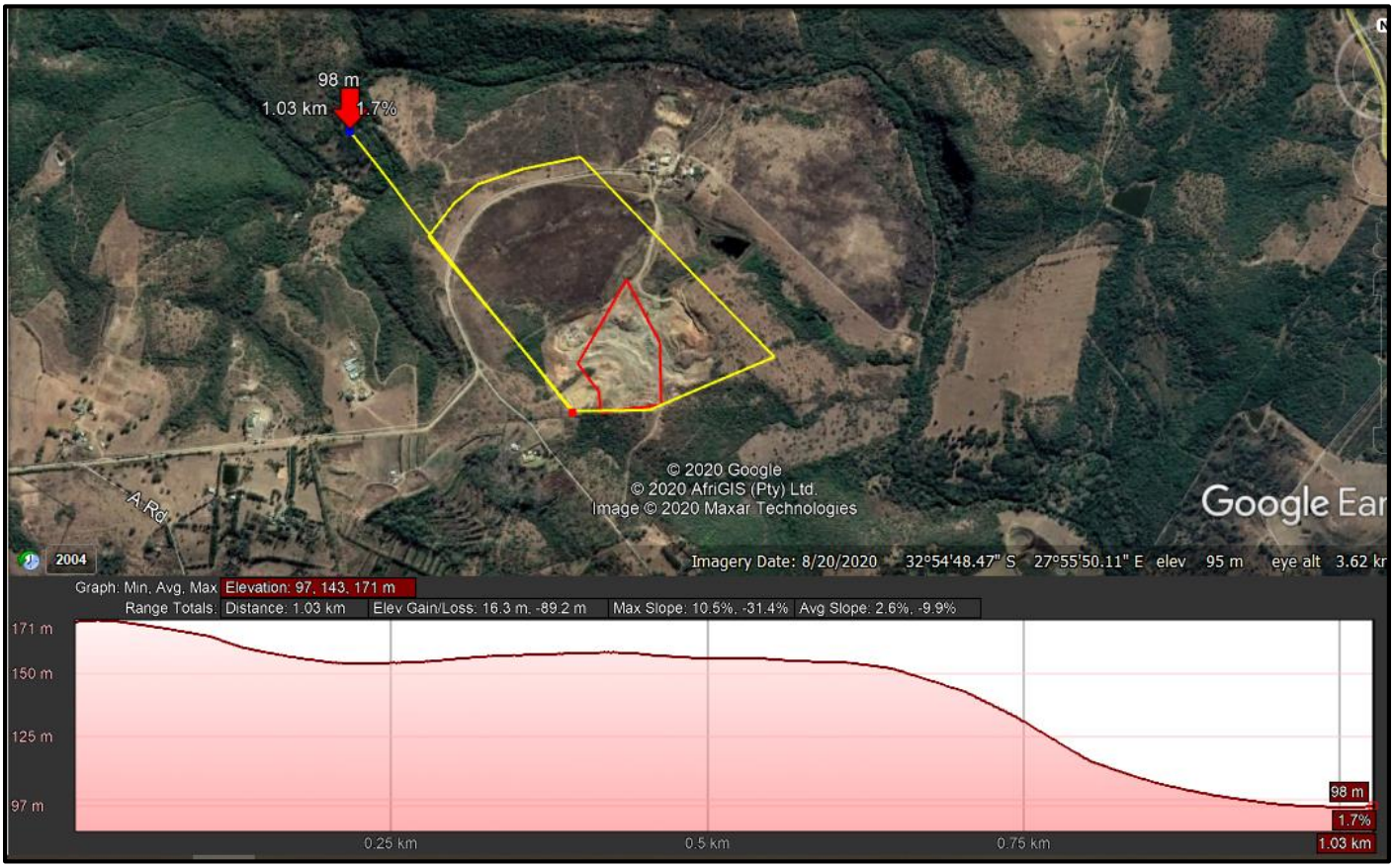


Figure 21: Elevation profile of the study area (image obtained from Google Earth).

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

VISUAL CHARACTERISTICS

The aesthetic value of the study area is deemed to be of medium to high value. Portion 1 of Farm No 652 is zoned for agricultural use with a well-established vegetation cover over most of the property (excluding the existing mining area). The riparian fringe of the Qinira River has a high aesthetic value, but as one moves towards the operational part of the farm, in particular the mining area, the aesthetic value decreases substantially. Owing to the elevation of the site, most of the farm is visible from the north-east, east, and south-east. In light of this the proposed extension area is expected to be highly visible from the river facing areas, but will be screened to the west/south-west.

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

AIR QUALITY AND NOISE AMBIANCE

The air and noise ambiance of the study area was historically representative of an exclusively agricultural environment in which farming equipment operated with occasional dust emissions from denuded areas. The surrounding area has since been transformed by the introduction of gravel mining and the use of the area for leisure residential purposes. Various roads intersect the area that connects the residents with the N6 national road to the west and/or the R102 provincial road to the south. Although the above mentioned developmental changes affect the air and noise quality of the study area, the current area is still deemed representative of a rural area.

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

GEOLOGY AND SOIL

(Information extracted from the Mining Plan, August 2020 compiled by MLB Consulting)

The regional geology is mainly characterised by dark-grey gabbronorite that forms irregular vein-like intrusions as well as plutons, and a network of dolerite sills, sheets and dykes which is mainly intrusive into the Karoo Supergroup (ArcGIS, 2020).

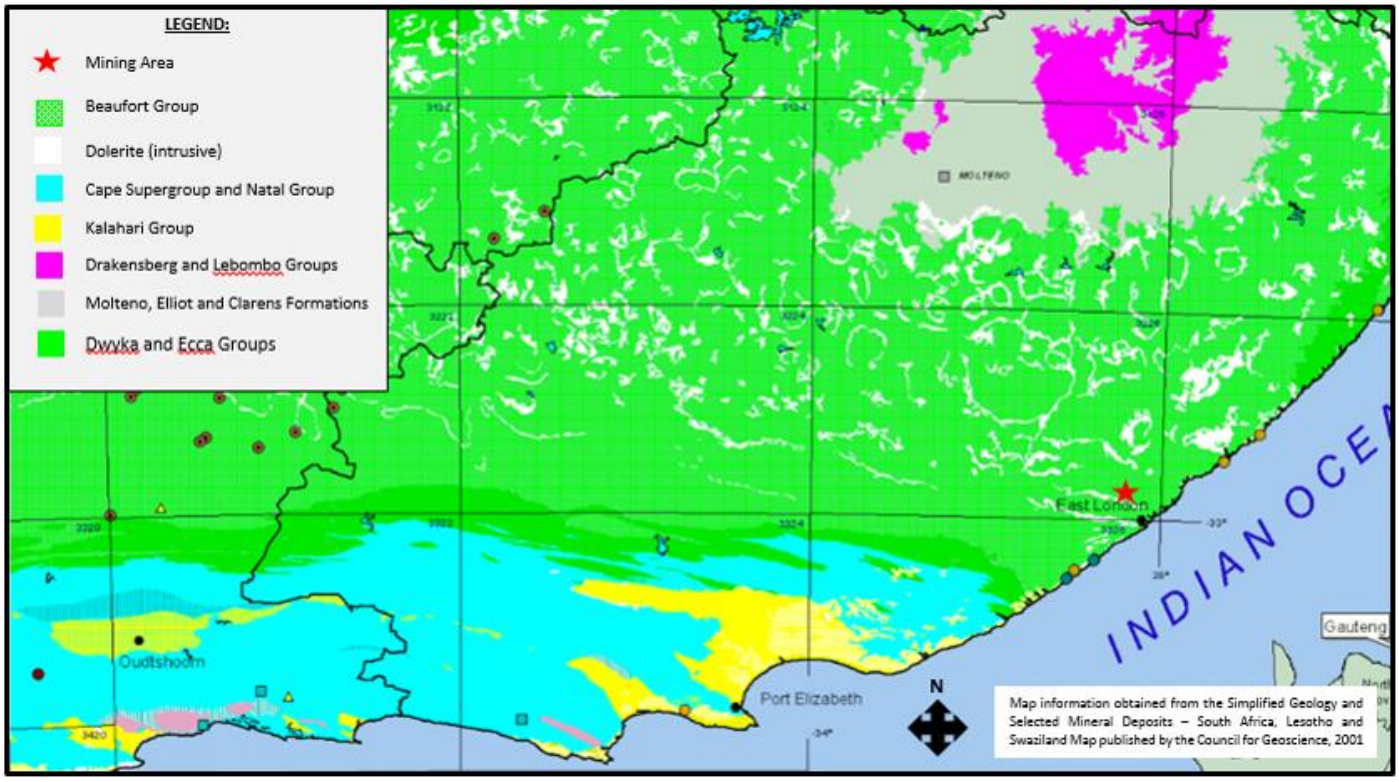


Figure 22: Indication of the simplified geology of the study area, where the checked green represents the Beaufort Group with intrusive dolerite (white) deposits within which the proposed extension area (red star) is situated. (Image obtained from the Council for Geoscience).

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

HYDROLOGY AND GEOHYDROLOGY

(Information extracted from the Wansley Siyakhula (Pty) Ltd Mining Rights Areas Storm Water Management Plan)

The study area is located within the Amatola Sub-Water Management Area which is managed as part of the Mzimvubu to Kies Kamma Water Management Area by the Department of Water and Sanitation (DWS). Portion 1 of Farm No 652 falls within the R30F quaternary catchment.

The following table provides a summary of the surface hydrology of the study area as presented in the EFRSA (Appendix H2):

Table 14: Summary of the surface hydrology of the study area as presented in the EFRSA.

Biophysical Aspect	Desktop Biophysical Details			Source
Surface Hydrology				
DWA Ecoregions	Level 1	Level 2		DWA, 2005
	Eastern Coastal Belt	31.02		
Wetland vegetation group	Albany Thicket Valley			CSIR, 2011
Water management area	Mzimvubu to Keiskamma (12)			DWA
Sub water management area	Amatole			DWA
Quaternary catchment	Name (Symbol)	Extent (ha)		DWA
	R30F	20864		
Sub Quaternary Catchment	Name (Symbol)	Extent (ha)		DWA
	8056	8703		
Main collecting river(s) in the catchment	Quaternary catchment	Sub quaternary catchment		CSIR, 2011
	Qinira, Nahoon	Qinira		
Closest river to project site	Qinira			Google Earth
Geomorphic Class	Symbol	Description	Slope (%)	CSIR, 2011
	D	Upper Foothill	0.01	
Length of river	±26.6 km			CSIR, 2011
Distance (nearest point from development site)	±200m			Google Earth

According to the National Wetlands and NFEPA map of SANBI the study area does not fall within a River FEPA (Freshwater Priority Area). The non-perennial Qinira River has been categorised as a category D (largely modified) river according to its Present Ecological Status (PES), with a moderate (C) Ecological Importance and Sensitivity.

The Lexicon of Biodiversity Planning in South Africa defines a river FEPA as: *"A river reach or wetland that is required to meet biodiversity targets for freshwater ecosystem types."* The Lexicon notes that each river FEPA falls within a sub-quaternary catchment. The FEPA refers to the river reach, not the whole sub-quaternary catchment. As shown in the figure no river FEPA (light green area) or fish support

area (dark green area) is associated with the Qinira River (blue shaded area) that passes through the greater study area.

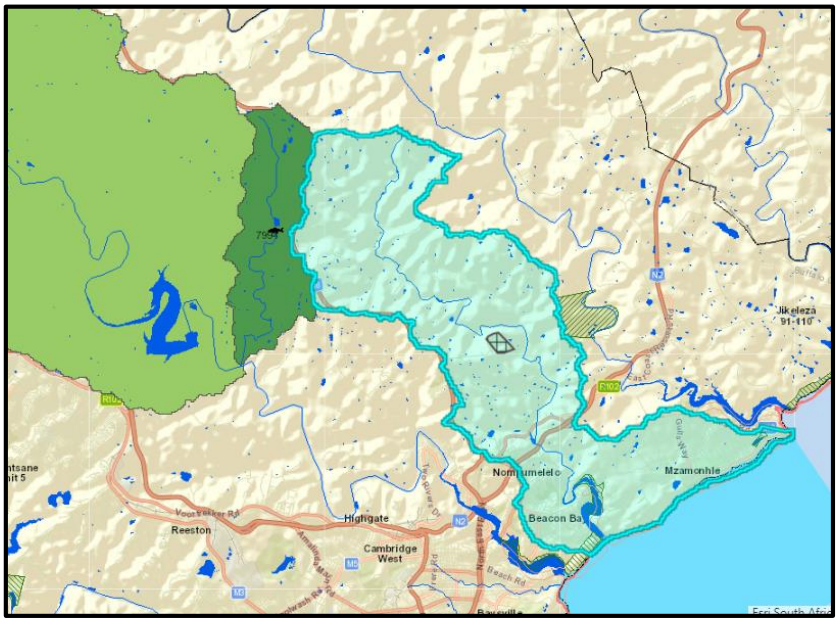


Figure 23: Map showing the position of the nearest river FEPA (light green) and fish support area (dark green) in relation to the proposed extension area (crossed polygon) and the Qinira River (blue shaded area). (Image obtained from the BGIS Map Viewer – National Wetlands and NFEPA).

Broad scale wetland mapping conducted by the National Wetlands and National Freshwater Ecosystem Priority Areas (NFEPA) initiative does not show any water feature within the earmarked extension boundaries (figure below).

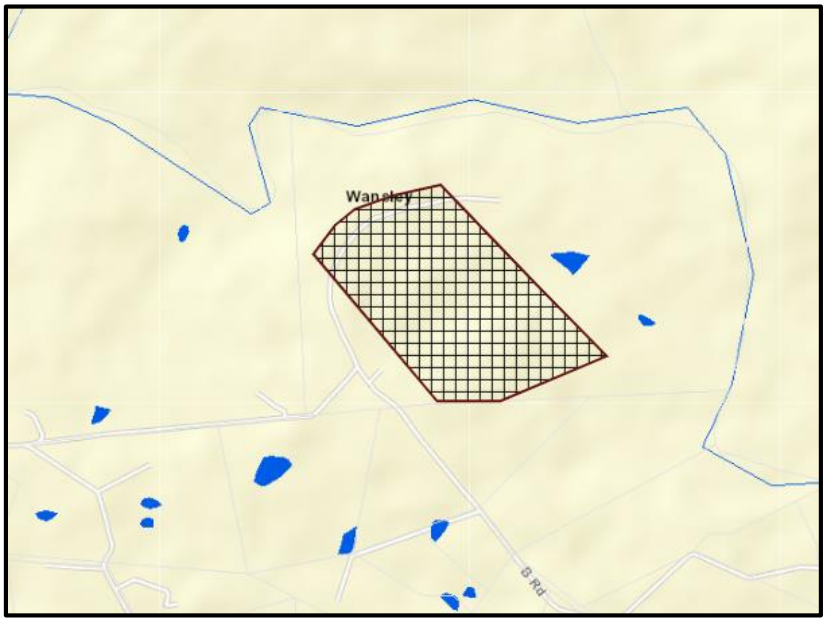


Figure 24: Map on a smaller scale showing the position of known wetlands (blue polygons) in close proximity to the proposed extension area (crossed polygon). (Image obtained from the BGIS Map Viewer – National Wetlands and NFEPA).

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

BIOLOGICAL ENVIRONMENT

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 study area is layered over the Mining and Biodiversity Map, as shown in the figure below, the entire mining footprint falls within an area of high biodiversity importance with a corresponding rating of high risk for mining. The Mining and Biodiversity Guideline's describes areas of high biodiversity importance as: "*these areas are important for conserving biodiversity, for supporting or buffering other biodiversity priority areas, and for maintaining important ecosystem services for particular communities or the country as a whole".* The guideline notes 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.

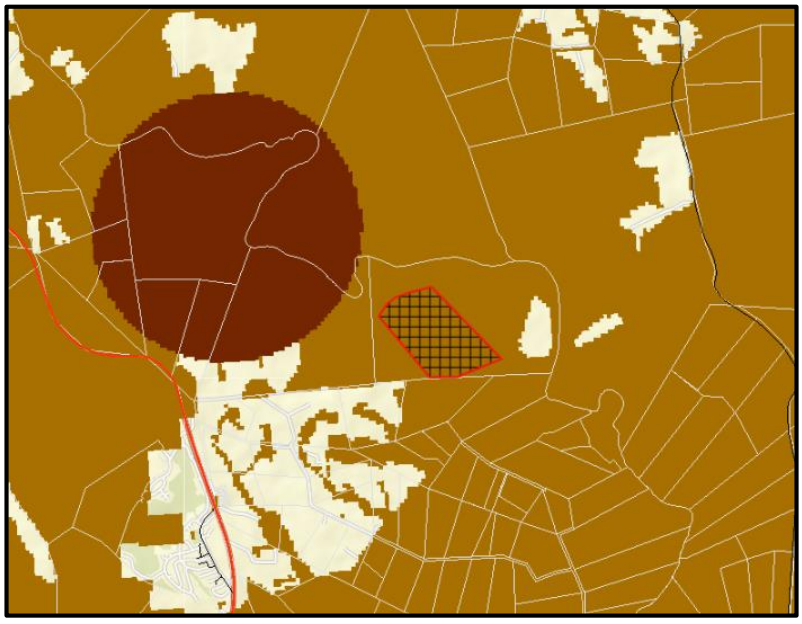


Figure 25: The Mining and Biodiversity importance map overlain by the proposed extension area (red crossed polygon). Brown – high biodiversity importance and high risk for mining, Dark

brown – highest biodiversity importance, highest risk for mining. (Image obtained from the BGIS Map Viewer: Mining Guidelines).

Also refer to Part A(1)(g)(iv)(1)(c) *Description of specific environmental features and infrastructure on site – Site Specific Mining and Biodiversity Conservation Areas.*

BIODIVERSITY CONSERVATION AREAS

(Refer to the Ecological and Freshwater Resource Study and Assessment, November 2020 attached as Appendix H2)

National Protected Areas Expansion Strategy (NPAES):

According to the NPAES spatial data (Holness, 2010), the study area is located well outside of any Focus Area with the closest focus area (Bisho Kei Focus Area) located approximately 14.34 km to the north-west. The nearest Informal Protected Area (Lombardy Private Nature Reserve) is located approximately 1.96 km to the east. Subsequently, no NPAES Focus Areas will be impacted by Wansley Quarry. The closest Formal Protected Area is the Nahoon Point to Gonubie Point Marine Protected Area (MPA) which is located 7.85 km south-east of the proposed Wansley footprint.

National Level of Conservation Priorities (Threatened Ecosystems):

According to Mucina and Rutherford (2006), this vegetation type is classified as Least Threatened and is furthermore not listed within the Threatened Ecosystem List (NEMA:BA). It is highly unlikely that this development will have an impact on the status of the Ecosystem as well as Vegetation Type Status due to the extent of the development as well as the presence of already disturbed areas within the footprint (almost the entire proposed footprint is located on secondary vegetation that have established on old cultivated lands).

Critical Biodiversity Areas and Broad Scale Ecological Processes:

The Eastern Cape Biodiversity Conservation Plan (2007) (ECBCP) was compiled to address the urgent need to identify and map critical biodiversity areas and priority areas for conservation in the Province. It also provides land use planning guidelines and recommendations. Although several landscape-scale conservation planning projects had been undertaken in the Eastern Cape (including STEP) before the development of the ECBCP, there were large areas of the Province that were excluded.

The ECBCP developed two maps, one showing terrestrial (land-based) CBAs, and the other showing aquatic (freshwater) CBAs. The map of terrestrial CBAs was compiled

by undertaking a systematic biodiversity planning analysis and adding all biodiversity priority areas identified by other systematic biodiversity planning projects (including STEP) in the Province. Due to the fact that the ECBCP has incorporated updated spatial data obtained from various biodiversity and land use planning projects, including spatial data from the Subtropical Thicket Ecosystem Planning project (STEP), and provides more updated land use and management objectives for these features, these older planning projects are not specifically referred to anymore, as the ECBCP is now regarded as the single principal planning project. Furthermore, the various planning units within STEP have been reorganized/integrated within the planning units of the ECBCP, with each planning unit, contained within the ECBCP, having its own set of management/conservation objectives and land-use guidelines.

The entire project site is located within a CBA2 since this area forms part of an extensive ecological corridor as identified by the ECBCP (also previously included as a STEP corridor). Furthermore, this CBA 2 area is regarded as a near-natural landscape that falls within the BLMC 2.

The Lexicon of Biodiversity Planning in South Africa provides the following definition for a CBA:

- Critical Biodiversity Area (CBA): *"an area that must be maintained in a good ecological condition in order to meet biodiversity targets. CBA's collectively meet biodiversity targets for all ecosystem types as well as for species and ecological processes that depend on natural or near-natural habitat, that have not already been met in the protected area network."*

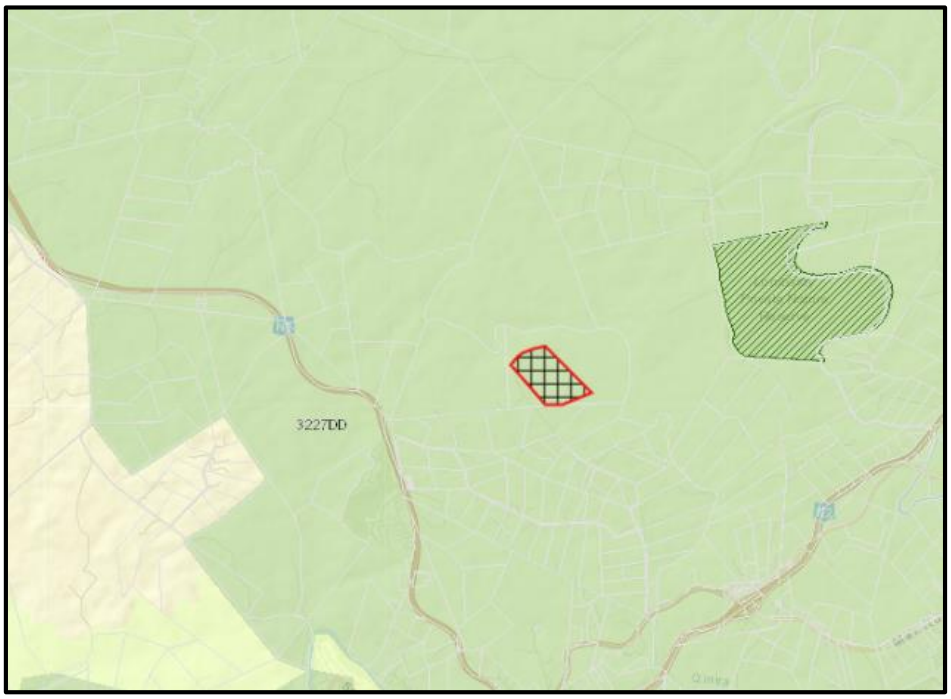


Figure 26: Eastern Cape Biodiversity Conservation Plan showing the footprint of the earmarked extension area (red crossed polygon), in relation to the ECBCP – Terrestrial CBA (green shading). The Lombardy Private Nature Reserve (green striped polygon) can be seen to the east. (Image obtained from the BGIS Map Viewer: Eastern Cape Biodiversity Conservation Plan).

Furthermore, the entire project site is located within an Aquatic CBA3_A3b due to the fact that this area falls within a hydrological primary catchment management area for an Aquatic CBA2_E2 Estuary.

As seen in the figure above, the Lombardy Private Nature Reserve lays ±2 km east of the study area, on the opposite side of the Qinira River. The reserve borders the western bank of the Gqunube River.

Also refer to Part A(1)(g)(iv)(1)(c) *Description of specific environmental features and infrastructure on site – Site Specific Mining and Biodiversity Conservation Areas.*

VEGETATION

(Refer to the Ecological and Freshwater Resource Study and Assessment, November 2020 attached as Appendix H2)

According to Mucina and Rutherford (2012) the vegetation type of the study area is known as the Albany Coastal Belt (AT9). The Albany Coastal Belt vegetation type is dominated by short grasslands punctuated by scattered bush clumps or solitary *Vachellia natalitia* trees (Mucina & Rutherford, 2012). Important taxa includes amongst others: *Erythrina caffra, Euphorbia triangularis, Vachellia natalitia (d), Brachylaena elliptica, Canthium spinosum, Cussonia spicata, Ficus sur, Ochna arborea, Sideroxylon inerme, Zanthoxylum capense, Clausena anisata, Clerodendrum*

glabrum, Coddia rudis, Croton rivularis, Diospyros villosa var. parvifolia, Grewia occidentalis, Gymnosporia heterophylla, Rhynchosia ciliata (d), Carissa bispinosa subsp. bispinosa, Chaetacanthus setiger, Helichrysum asperum var. albidulum, Pelargonium alchemilloides, Asparagus aethiopicus, A. racemosus, Capparis sepiaria var. citrifolia, Clematis brachiata, Brachiaria serrata (d), Cynodon dactylon (d), Dactyloctenium australe (d), Digitaria natalensis (d), Ehrharta calycina (d), Eragrostis capensis (d), E. curvula (d), E. plana (d), Heteropogon contortus (d), Panicum deustum (d), P. maximum (d), Setaria sphacelata (d), Sporobolus africanus (d), Themeda triandra (d), Tristachya leucothrix (d), Cymbopogon marginatus, Ehrharta erecta, Elionurus muticus, Melica racemosa.

The endemic taxa include: *Bergeranthus concavus*, *Brachystelma franksiae* var. *grandiflorum, Bulbine frutescens* var. nov. *('chalumnensis'* Baijnath ined.), *Faucaria subintegra*, *Haworthia coarctata* var. *tenuis*, *H. cooperi* var. *venusta*, *H. reinwardtii* var. *reinwardtii f. chalumnensis*, *Stapelia praetermissa* var. *luteola*, *S. praetermissa* var. *praetermissa, Bobartiagracilis, Apodolirion amyanum*, *Aspidoglossum flanaganii*, *Drimia chalumnensis, Acmadenia kiwanensis, Monsonia galpinii.*

The conservation status of the vegetation type is Least Threatened with the conservation target set at 19%, with 1% of the unit conserved in local-authority-, provincial- and private conservation areas as well as the Greater Addo Elephant National Park. Mucina and Rutherford reported that ±12% of the vegetation type has been transformed for cultivation, 1% by plantation forestry, and 4% by urbanisation.

The following table provides a summary of the vegetation overview of the study area as presented in the EFRSA (Appendix H2):

Table 15: Summary of the vegetation overview of the study area as presented in the EFRSA.

Biophysical Aspect	Desktop Biophysical Details		Source
Vegetation Overview			
Biome	Albany Thicket Biome		Mucina & Rutherford, 2011
Vegetation Type	Albany Coastal Belt (Figure 8).		Mucina & Rutherford, 2011
Vegetation & Landscape Feature	Gentle to moderately undulating landscapes and dissected hilltop slopes close to the coast and are dominated by short grasslands punctuated by scattered bush clumps or solitary *Vachellia natalitia* trees		Mucina & Rutherford, 2006
BODATSA Data	Regional: Total Species Observed	Immediate area: Total Species Observed	2020-03-22_083018915-BRAHMSOnlineData
	2 481	251	
	Indigenous Flora	Endemic Flora	
	2 309	87	
	Non-indigenous Flora	Red Data (IUCN) Flora	
	172	27	

Biophysical Aspect	Desktop Biophysical Details		Source
Vegetation Overview			
	Provincially Protected Flora (Schedule 4 and 5)	TOPS	
	313	1	
	National Protected Trees	CITES I & 2	
	5	80	

Figure 27: National vegetation cover map showing the distribution of AT9 Albany Coastal Belt (green shading) in relation to the proposed extension area (red crossed polygon). (Image obtained from the BGIS Map Viewer – National Vegetation Map)

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

FAUNA

Fauna that may be present on, or visit the study area, comprises of birds such as doves, starlings, and sparrows as well as commonly found insects and reptiles. The area is also frequented by bushbuck (*Trachelaphus scriptus*), common duiker (*Sylvicapra grimmia*), blue duiker (*Philantomba monticola*) and blesbok (*Damaliscus dorcas phillipsi*). To date no protected or red data faunal species were identified to be resident within the approved mining area or proposed extension footprint.

HUMAN ENVIRONMENT

CULTURAL AND HERITAGE ENVIRONMENT

(Refer to the Heritage Impact Assessment, October 2020 attached as Appendix L)

The earmarked area is situated on a farm ±7 km north-west of Bonza Bay, ±6 km north of Beaconhurst, ±2 km east of Ducats, and ±30 km north-east of East London city centre. In 1836, John Bailie surveyed the Buffalo River mouth and founded the town of East London. The city formed around the only river port in South Africa and was elevated to city status in 1914 (http/Wikipedia.org/wiki/East_London_Cape). Beaconhurst developed to the east of East London; the areas name was derived from a dairy farm in the Beacon Bay area known as Beaconhurst Dairy. The Ducats residential area is the nearest formal settlement to the mining area. Portion 1 of Farm No 652 was historically used for pineapple cultivation.

The South African Heritage Resources Agency (SAHRA) compiled the Palaeontological (fossil) Sensitivity Map (PSM) to guide developers, heritage officers and practitioners in screening palaeontologically sensitive areas at the onset of a project. When the footprint of the proposed extension area is placed on the PSM, it shows the study area to extend over areas of high (orange) concern as presented in the figure below. In light of this, a palaeontological desktop study is required and based on the outcome of the desktop study, a field assessment is likely.

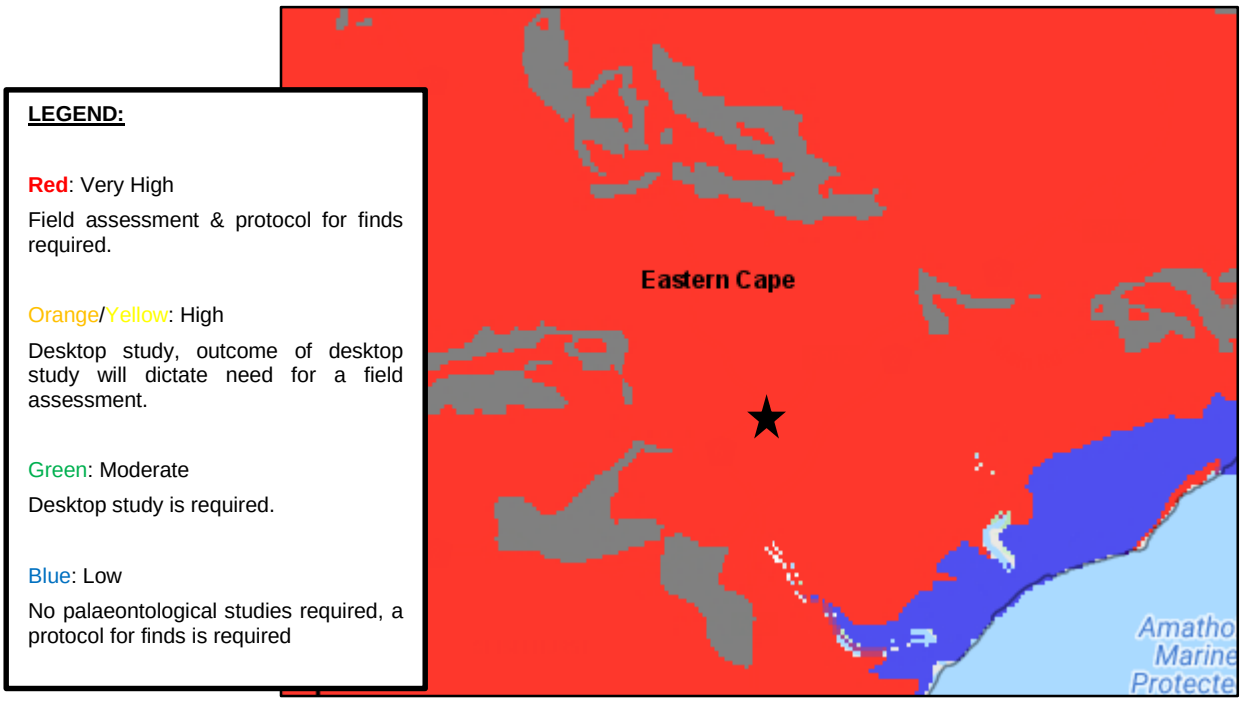


Figure 28: The SAHRA palaeontological sensitivity map shows that the proposed extension footprint (black star) falls in an area of very high concern (red) (image obtained from the PalaeoSensitivity Map on SAHRIS).

SAHRA was informed of the proposed S102 amendment application on 11 September 2020, but to date no feedback was received. HCAC (Heritage Contracts and Archaeological Consulting) was appointed to investigate the cultural/heritage sensitivity of the study area. Refer to Part A(1)(g)(iv)(1)(c) *Description of specific environmental features and infrastructure on site – Site Specific Cultural and Heritage Environment*.

SOCIO-ECONOMIC ENVIRONMENT

(Information extracted from the Social and Labour Plan of Wansley Siyakhula (Pty) Ltd attached as Appendix N)

Portion 1 of Farm No 652 is situated approximately 30 km north-east of the city centre of East London within the Buffalo City Metropolitan Municipality in ward 15. Buffalo City Metropolitan Municipality (BCMM) is situated relatively centrally in the Eastern Cape Province, and is surrounded by the Great Kei Local Municipality, Amahlati Local Municipality, Nkonkobe Local Municipality and Ngqushwa Local Municipality. It is bounded to the south-east by the long coastline along the Indian Ocean.

The Buffalo City Metropolitan is made up of a significant portion of two Magisterial Districts, as follows:

- East London, including the previous Ciskei Magisterial District(s) of Mdantsane.
- King Williams Town, including the previous Ciskei Magisterial District of Zwelitsha

In line with the local government dispensation in South Africa, the BCMM is categorized as a Category “A” Municipality.

The census 2011 conducted by Stats SA estimates the total population of Buffalo City Metro to be 755 200. In 2013 there were an estimated 785 330 people in the Buffalo City metro. This is a little more than a tenth (11.4%) of the Eastern Cape’s population and represents 1.5% of South Africa’s population. The sex ration in the BCMM during 2016 was 93.8 males for each 100 females. During 2011 45.9% of all households was female headed, whereas during 2016 the female headed households decreased slightly to 45.3%.

The racial composition of the Buffalo City metro is as follows:

- Asian 0.2%
- Black 92.9%
- Coloured 2.4%
- White 4.5%

The annual rate of population growth since 2005 has been about 0.8%. This is lower than the 1.2% growth rate for South Africa, but higher than the Eastern Cape whose population has grown at 0.5% pa since 2005. The illiteracy rate in Buffalo City is high with over 11% of the population being functionally illiterate.

The area specific number of total persons employed has been increasing marginally since 2002 and jobs have been growing at the rate of 2.15% pa since 2009. In 2001, 246 251 people were employed but this increased to 277 154 in 2013. As a result of the recession, jobs decreased from 293 960 in 2008 to 277 154 in 2013. The percentage of employed people with formal jobs is declining slowly as more people find informal positions. In South Africa formal employment has fallen from 79.57% in 1995 to 70% in 2013. The same trend is evident in the Eastern Cape where 78.29 % formal employment was recorded in 1995 and only 65% in 2013. Buffalo City follows this trend with 77% formally employed in 1995 and only 65% in 2013. It is evident that there are fewer highly skilled and skilled people working in Buffalo City than in South Africa but more than in the Eastern Cape as a whole. In addition, 34% of employed people have found work in the informal sector compared to 34.69% in the Eastern Cape and 29.74% in South Africa. In 2013, total household income for Buffalo City was estimated at R18 421 million, of which 102% was used as household expenditure. Of total income, remuneration (salaries, wages, business proceeds etc.) accounted for 66.3% and whole unearned income accounted for 33.7% of total income, which suggests that more than a third of households in the district are surviving on pensions, government grants and remittances. The percentage of total disposable income that is derived from remuneration is declining; remuneration represented 84.1% of total disposable income in 1995.

The table below shows the key economic activities of the area:

Table 16: Key economic activities of the area.

ACTIVITY	PERCENTAGE OF EMPLOYMENT
Community Services	25%
Finance	24%
Manufacturing	24%
Trade	12%
Transport	12%

Although Buffalo City's economy is relatively small, it is the second largest metropolitan municipality in the Eastern Cape, contributing 1.6% to the South African economy and 20.9% to the Eastern Cape's economy. The economic performance of the Buffalo City area has been relatively stable over the past decade or so, albeit below the national average. The annual average growth rate from 2003 to 2013 was 2.8% and the economy shrank by -1.5% during the 2008–09 recession. This was the same as the national average (-1.5%) but worse than the provincial average (-1%). However, post-recession growth has been slower. In 2013 the growth rate was only 1.3% compared with South Africa's growth rate of 1.9%, although it was the same as that of the Eastern Cape (1.6%).

The tertiary sector is the municipality's largest contributor to its economy with a contribution of 81.7%. This is followed by the secondary sector (17.0%) and the primary sector (1.3%). Mining and quarrying is insignificant (0.19%) in the metro's economy; agriculture therefore contributes the largest share (1.3%) to the primary sector. The municipality contributes 1.2% to South Africa's agricultural output, and 18.1% to the Eastern Cape's agricultural output. The sector has exhibited an average annual growth rate of over 4.0% since 2005. It did, however, slowdown in 2010 (1.10%).

Manufacturing contributes 13.5% to the metro's gross value added. The transport equipment sector is the most important manufacturing sector, contributing 3.0% to the metro's gross value added. The transport equipment sector contributes 4.2% to South Africa's transport sector and has been growing at an annual average rate of 1.5% since 1995. Although the sector shrank by -13.0% during the 2008-09 recession, it increased by a moderate 3.6% in 2013. The second largest contributor to manufacturing is the petroleum products, chemicals, rubber and plastic sector, which contributes 2.7% to the region's GVA. This sector supplies components to the automotive sector. In addition, the food, beverages and tobacco sector contributes 2.1% of the region's GVA.

The tertiary sector is dominated by general government which contributes 25.2% to the local economy. This is followed by business services (13.9%), finance and insurance (8.4%) and wholesale and retail trade (13.3%).

(b) Description of the current land uses

(Information extracted from the draft Ecological and Freshwater Resources Study and Assessment, November 2020 Version 1.0)

Portion 1 of Farm No 652 is situated in a rural setting surrounded by other farming properties. The earmarked property is zoned for agricultural use. The farm portion has

been extensively transformed in the past for cultivation purposes (commercial pineapple crop production) however these activities have been abandoned in the mid 1980's. Mining (quarrying) activities were initiated 20 years ago and is now the primary land use activity within this farm portion.

The surrounding land use is predominantly divided in medium to medium-large sized properties, mostly small holdings and small farms used for agricultural (subsistence and commercial) purposes with livestock farming being the primary activity. Some properties are also utilized for crop production (mostly perishable crops and some grains) as well as for agri-industrial purposes. Woodlots and plantations are also a relative common feature within the greater area. Game species have been introduced to some of the properties, but is likely more for esthetical purposes, however game and wild animals form a more prominent feature of the agricultural landscape further to the east with numerous small game farms and reserves, of which Lombardy Private Nature Reserve is the most prominent within the area. The closest built-up area is the township of Ducats situated a little be more than 2 km to the west of the study site.

Various public gravel roads (e.g. Mn10118 St / W-Road, A-Road, B-Road and C-Road) intersect the area that connects the residents with the N6 national road to the west and/or the R102 provincial road to the south. The following table provides a description of the land uses and/or prominent features that currently occur within a 500 m radius of the study area:

Table 17: Land uses and/or prominent features that occur within 500 m radius of the study area.

LAND USE CHARACTER	YES	NO	DESCRIPTION
Natural area	**YES**	-	The proposed extension footprint is surrounded by natural areas used for agricultural purposes.
Low density residential	**YES**	-	The properties south-west of Wansley Quarry is used for low density residential purposes.
Medium density residential	-	**NO**	-
High density residential	-	**NO**	The Ducats residential area is ±2 km west of the quarry.
Informal residential	-	**NO**	-
Retail commercial & warehousing	-	**NO**	-
Light industrial	-	**NO**	-
Medium industrial	-	**NO**	-
Heavy industrial	-	**NO**	-
Power station	-	**NO**	-

LAND USE CHARACTER	YES	NO	DESCRIPTION
High voltage power line	-	**NO**	A low voltage power line, supplying electricity to the Wansley farm house, traverses the property and the proposed extension area.
Office/consulting room	**YES**	-	The office of Wansley Quarry is on the property.
Military or police base / station / compound	-	**NO**	-
Spoil heap or slimes dam	-	**NO**	-
Quarry, sand or borrow pit	**YES**	-	This application entails the extension of the current mining footprint on the property.
Dam or reservoir	**YES**	-	Various dams of the earmarked property lays within 500 m of the study area.
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**	-
Sport facilities	-	**NO**	-
Golf course	-	**NO**	-
Polo fields	-	**NO**	-
Filling station	-	**NO**	-
Landfill or waste treatment site	-	**NO**	-
Plantation	-	**NO**	-
Agriculture	**YES**	-	The proposed footprint falls over an agricultural active area.
River, stream or wetland	**YES**	-	The Qinira River borders the proposed extension area to the north, and north-east. Drainage lines extends into the extension area.
Nature conservation area	-	**NO**	The Lombardy Private Nature Reserve lays ±5 km east of the study area, on the opposite side of the Qinira River.
Mountain, hill or ridge	**YES**	-	The study area is undulating and has various hills and ridges.
Museum	-	**NO**	-
Historical building	-	**NO**	-
Protected Area	-	**NO**	-
Graveyard	**-**	**NO**	-
Archaeological site	-	**NO**	-

LAND USE CHARACTER	YES	NO	DESCRIPTION
Other land uses (describe)	-	**NO**	-

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

SITE SPECIFIC TOPOGRAPHY

(Information extracted from the Ecological and Freshwater Resources Study and Assessment, November 2020 attached as Appendix H2)

As mentioned earlier, the natural topography of application area is undulating with a prominent rise in elevation inside the Qinira River bend as shown in the image below.

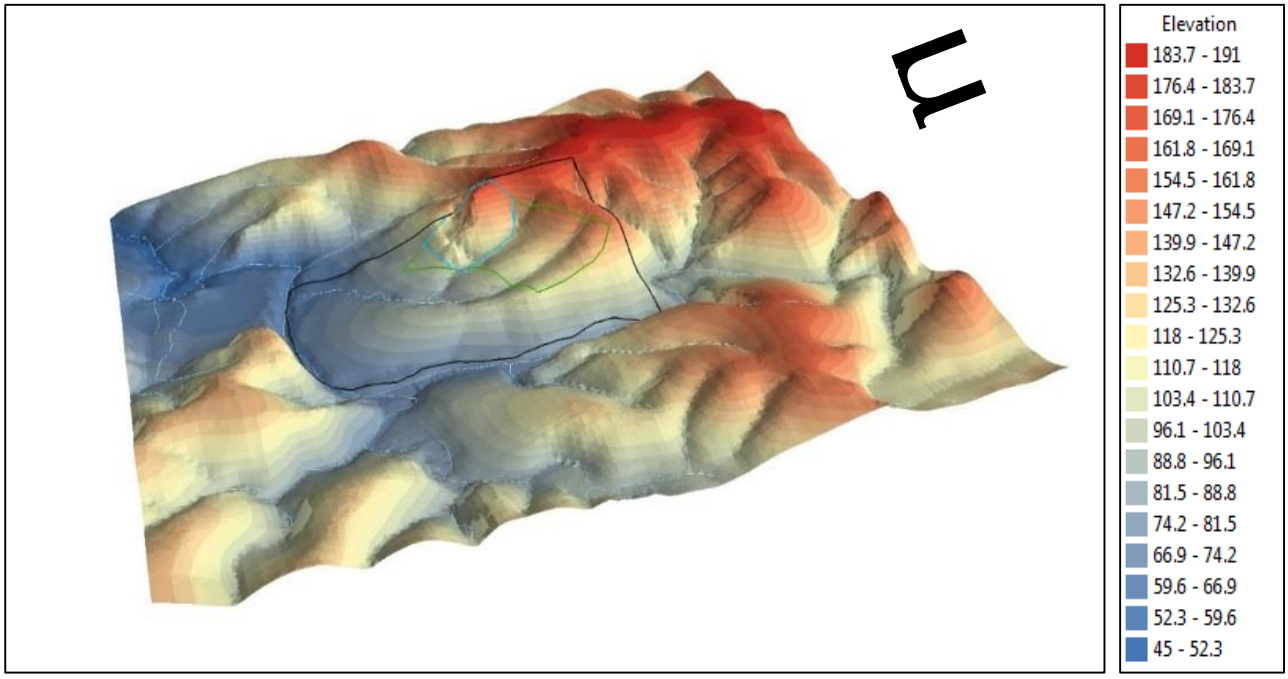


Figure 29: 3D Topographical image of the affected property (black polygon). The green polygon indicates the proposed extension area while the blue polygon indicates the current mining footprint. (Image obtained from the EFRSA)

The rise/fall in elevation is illustrated in the figure. The earmarked extension area has an average slope of 9.9%; -11.8% with a maximum slope of 27.9%; -23.0% over a distance of 1.3 km along the path as indicated below.

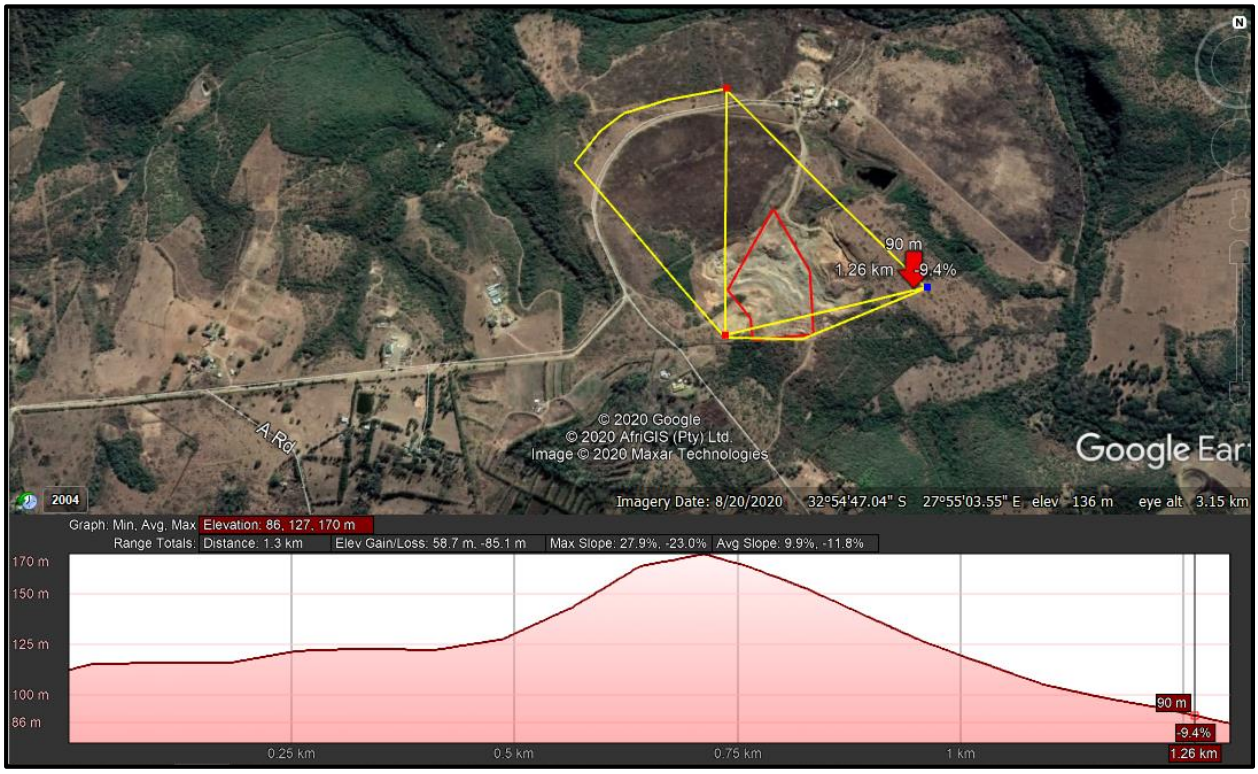


Figure 30: Elevation profile of the proposed extension area (image obtained from Google Earth).

The proposed activity will impact the topography of the earmarked footprint in that the quarry pit will create a crater like features with benched side walls in accordance with the proposed mine plan (Part A(1)(d)(ii) *Description of the activities to be undertaken – 2.3.1. Mining Plan*).

Also refer to Part B(1)(d)(i) *Determination of closure objectives* as well as the Closure Plan attached as Appendix Q.

SITE SPECIFIC VISUAL CHARACTERISTICS

The footprint of the proposed extension area will mainly be visible from the higher laying areas between the north and south-east within an approximate distance of 3 km from the mining area as shown in the image below. Within close proximity (1 km) the mining area is/will mainly be visible within the property boundaries and the far bank of the Qinira River.

The figure below shows the viewshed analysis for the S1 footprint within a ±10 km radius. The green shaded areas show the positions from where the mining extension area will be visible. From this analysis it is shown that the visual impact of the proposed extension will be of medium-high significance without mitigation. The topography of the landscape, as well as the fact that only the processing plant operates within the

mining footprint assist in mitigating the visual impact of the proposed development on the surrounding environment.

Figure 31: Viewshed analysis of the proposed extension area where the green shading shows the positions from where the mine is/will be visible (image obtained from Google Earth).

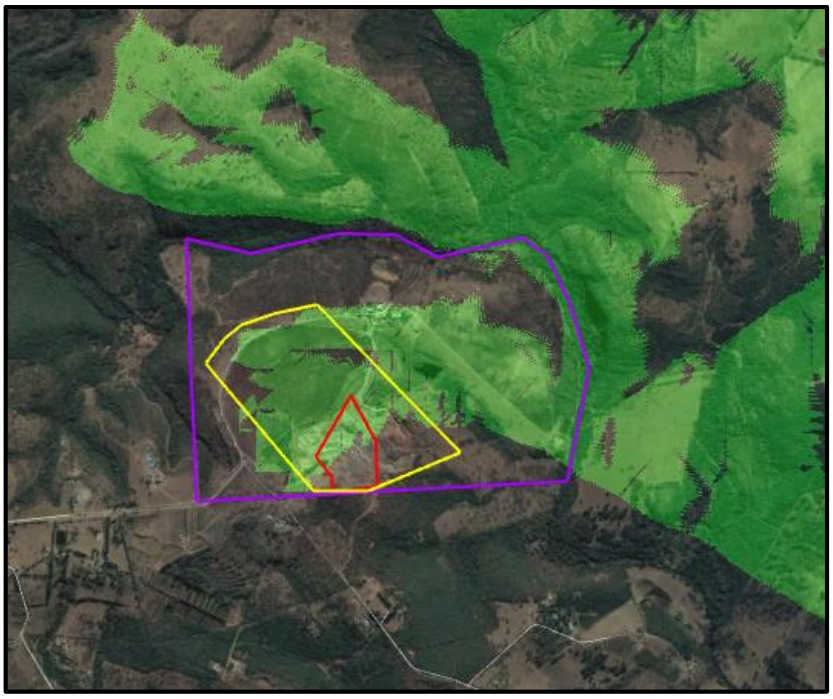


Figure 32: Viewshed analysis of the proposed extension area where the green shading shows the positions from where the mine is/will be visible (image obtained from Google Earth).

From the above analysis (Figures 31 & 32), it is deduced that the proposed mining extension will be screened from the western and southern neighbours of the earmarked property. No permanent residences, within close (<1 km) proximity to the development area, were identified on the northern and/or eastern neighbouring properties that could be negatively affected by the potential visual impact associated with the proposed activity and therefore the potential visual impact is deemed to be of medium significance.

SITE SPECIFIC AIR QUALITY AND NOISE AMBIANCE

Emission into the atmosphere is controlled by the National Environmental Management: Air Quality Act, 2004. Wansley Quarry does not trigger an application in terms of the said act, nor will the proposed extension activity. Emissions generated/to be generated at the mine mainly consist of dust due to the displacement of soil (blasting & excavation), crushing and screening, and transport of the material on and from the mining area.

The figure below shows the position of the nearest residences to the proposed extension area:

1. Farm yard of the landowner ±150 m
2. Portion 44 of Farm No 821 ±150 m
3. Portion 42 of Farm No 821 ±470 m
4. Portion 14 of Farm No 652 ±350 m
5. Portion 15 of Farm No 652 ±320 m
6. Portion 15 of Farm No 652 ±300 m

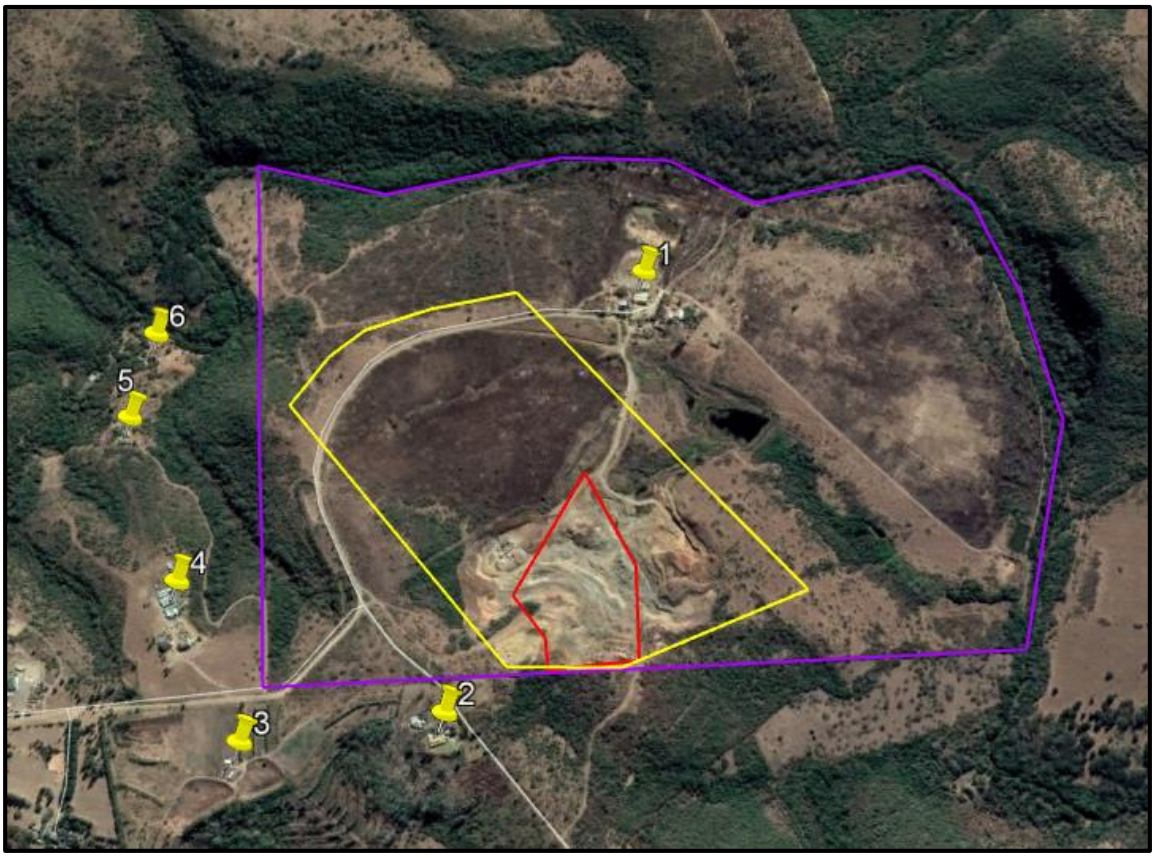


Figure 33: Satellite view showing the position of the nearest residences to the proposed extension area (yellow polygon) where the purple polygon indicates the farm boundary. (Image obtained from Google Earth)

Dust generated by blasting:

Based on the prevalent wind direction of the study area (south-eastern in summer; south-western in winter) the following figure illustrates the potential path that a dust plume (due to blasting) is expected to move. Although the illustrated paths should not be taken as absolute as the direction may be influenced by numerous factors such as wind speed, humidity, blast size, depth of quarry pit etc. it does give an indication of a probable scenario. In light of this, it is possible that dust could be a hindrance to the occupants of properties number 5 and 6 (figure below) between December – February, where after the seasonal change in wind direction will most likely move any dust (as a result of blasting) away from the neighbouring properties. It is proposed that prior to blasting at the quarry, fallout dust monitoring must be implemented at the quarry operation that will monthly report on the direction and level of dust generated as a direct result of the mining activities. Based on the results of the fallout dust monitoring the blasting plan could be adjusted should the dust levels exceed the allowable standard.

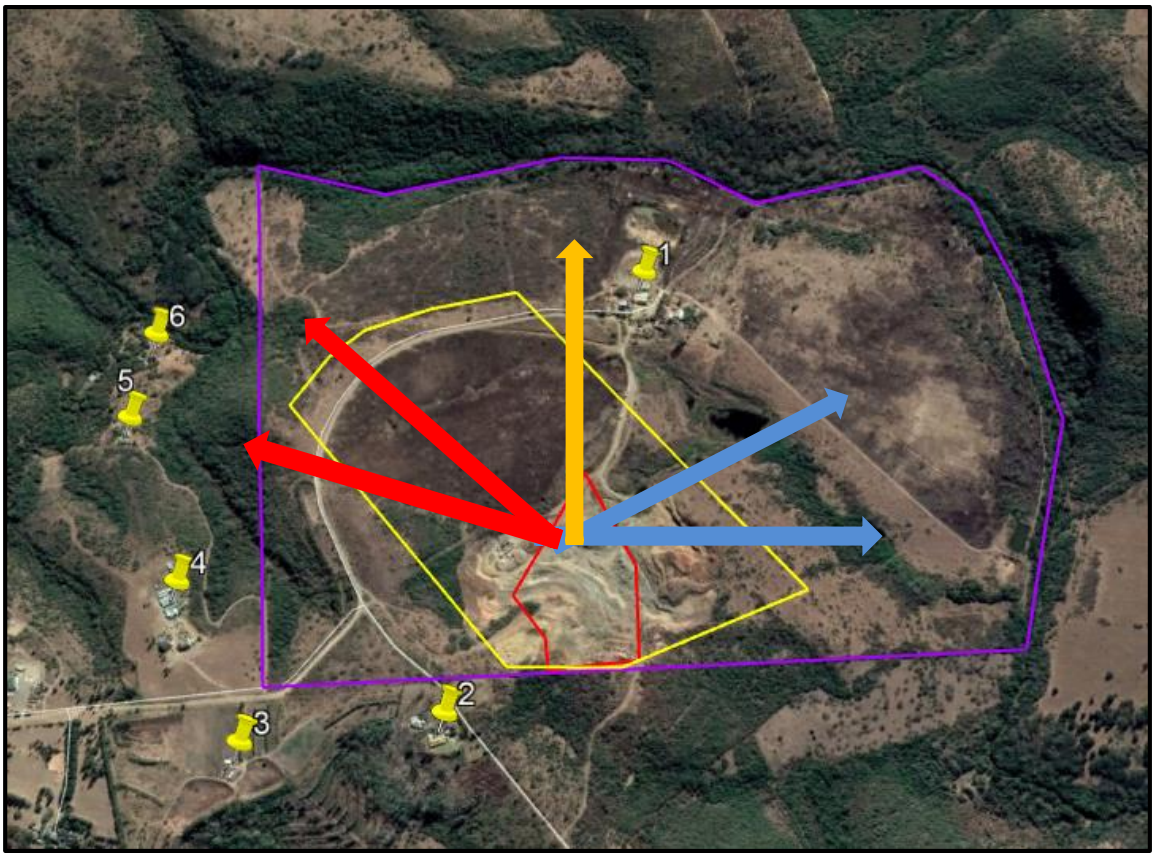


Figure 34: Schematic representation of the potential direction that a dust plume may travel following a blast, where the red arrows represents a south-eastern wind, the orange arrow representing a southern wind and the blue arrows indicating the prevalent direction of a south-western wind. (Image obtained from Google Earth)

Dust generated as a result of crushing and screening:

The processing of the material at the crushing and screening plant will most likely contribute to the dust levels of the study area. This impact will be mitigated through the installation of water sprayers at the crushing and screening plant to alleviate dust generated from the conveyor belts. As with the dust generated during a blast, it is proposed that the actual dust levels be monitored through the implementation of a monthly fallout dust monitoring programme that will identify problem areas in need of additional mitigation. The potential dust impact to be created as a direct result of the crushing and screening of the dolerite can be reduced through the implementation of the mitigation measures proposed in this document and should be monitored for the duration of the activity.

Dust generated from stockpile areas, handling of material and transport to clients:

Large stockpile areas act as dust generating sources especially during windy conditions. Site management intends to keep the stockpile areas to the smallest possible footprint to reduce this impact, and further propose that the material will as far as possible be stockpiled inside the excavation shielding it from winds across higher laying areas. Site management will further implement the use of a permanent water truck/s to moisten the denuded areas during dry periods/windy spells. The moistening of denuded areas will also include the gravel roads to be used by the trucks transporting material either within the mining footprint, or along the W-Road for as long as it remains unsurfaced.

Also refer to Part A(1)(g)(viii) *The possible mitigation measures that could be applied and the level of risk – Air Quality and Noise Ambiance*.

Noise Quality:

As with air quality, the current activities on the property and surrounding environment already impact the noise ambiance of the study area. Should the S102 amendment application be approved, the mining operation will contribute noise generated as a result of blasting, crushing and screening, as well as the loading, and transporting of material.

Blasting Noise:

As mentioned earlier, site management presently proposes a blasting frequency of two blasts per month (maximum). Cambrian CC simulated the potential impact that blasting similar to that required at Wansley Quarry could have on the receiving environment, as discussed in more detail below.

Building response to ground vibration:

Although there are no formalized limits to vibration, the United States Bureau of Mines (USBM) limits are commonly applied in South Africa. The limiting curve (developed from empirical studies (Siskind *et.al.* 1980)) is shown in the following figure.

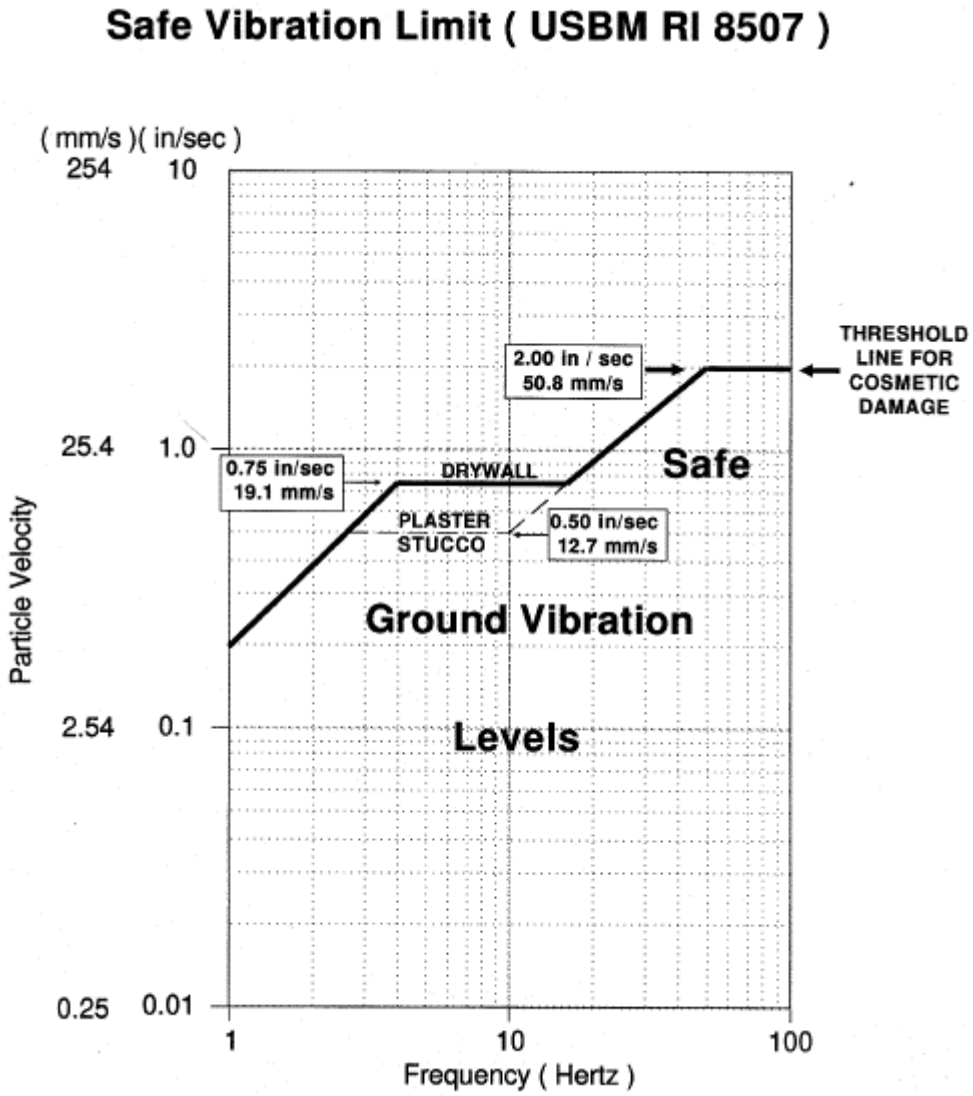


Figure 35: USBM curve that is generally used in South Africa (Image obtained from the Cambrian Report).

The limiting curve (above figure) represents the limit for cosmetic damage to a house. The maximum ground vibration amplitudes are frequency dependent with higher frequencies allowing higher peak amplitudes. In general, at lower frequencies (less than 10 Hz), the ground vibration should not exceed 12.7 mm/sec, but at higher frequencies, the limit can increase to 50 mm/sec.

Human response to ground vibration:

Although buildings can withstand ground vibration amplitudes of 12.7 mm/sec or more, depending on the frequency, human beings are easily disturbed at lower levels. The typical human response to ground vibration is illustrated in the figure below. Ground vibration levels of 0.76 to 2.54 mm/sec received at a structure are perceptible, but the probability of damage is almost non-existent. Levels in the 2.54 to 7.6 mm/sec range

can be disturbing, and levels above 7.6 mm/sec can be very unpleasant, although permanent damage is unlikely.

Effect on Humans	Ground Vibration Level in mm/sec
Imperceptible	0.025 – 0.076
Barely perceptible	0.076 – 0.254
Distinctly perceptible	0.254 – 0.762
Strongly perceptible	0.762 – 2.540
Disturbing	2.540 – 7.620
Very disturbing	7.620 – 25.400

Figure 36: Table showing the general human response to ground vibrations (Image obtained from the Cambrian Report).

Human perception is also affected by frequency. The approximate human response curves are combined with the USBM limiting curve for damage the following figure. These curves slope in the opposite direction, in other words, humans are more tolerant to low frequency vibrations.

To avoid damaging buildings, the USBM limiting curve should be applied. However, to avoid constant complaints and possible litigation from neighbours, the vibration should preferably be kept beneath the unpleasant curve and definitely be kept beneath the intolerable curve.

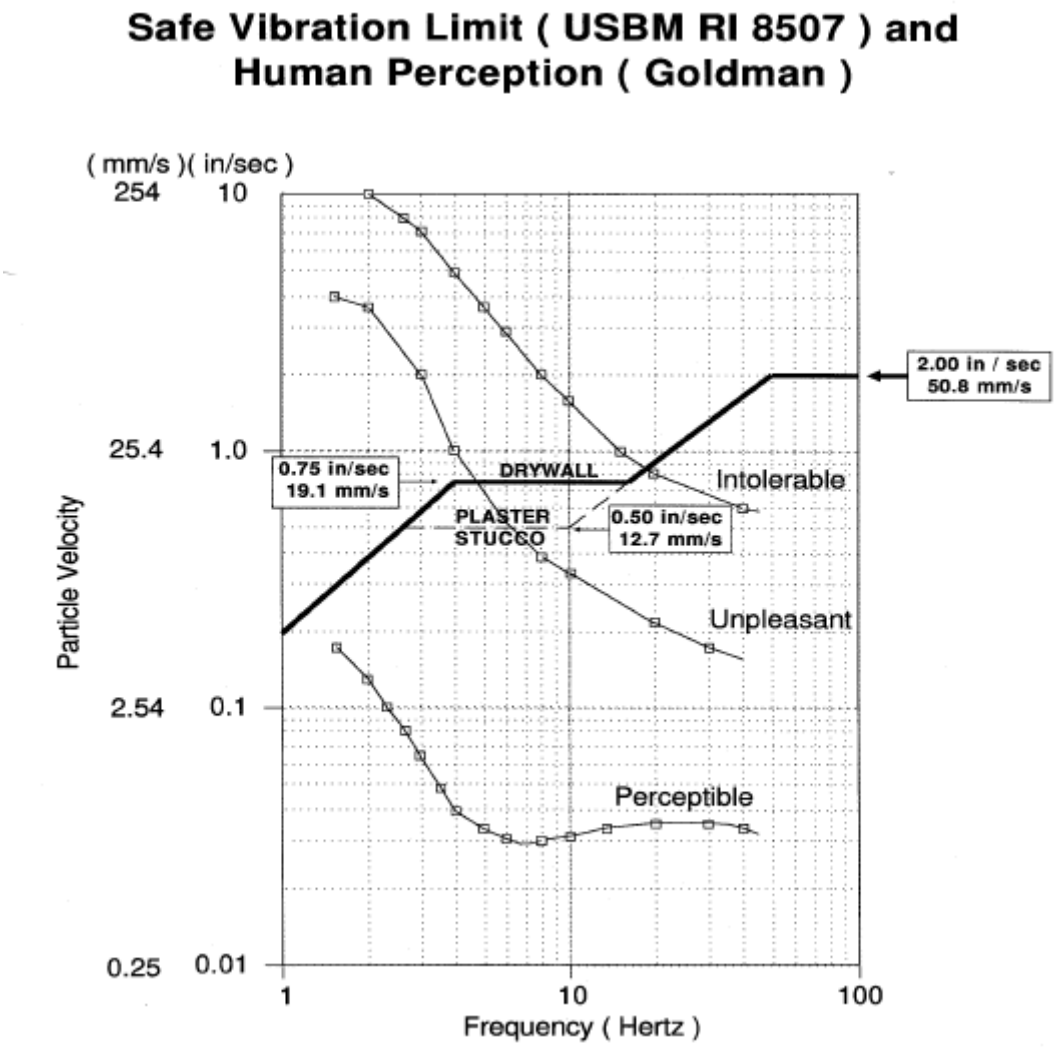


Figure 37: Human response curves compared with potential damaging limits. (Image obtained from the Cambrian Report).

Air Blast:

Based on work carried out by Siskind *et.al.* (1980), air blast amplitudes up to 135 dB are safe, provided the monitoring instrument is sensitive to low frequencies (down to 1 Hz). Persson *et.al.* (1994) have published the following estimates of damage thresholds based on empirical data. The regulatory limit defined by USBM is 133 dB-L.

Damage thresholds for air blast.

120 dB	Threshold of pain for continuous sound
>130 dB	Resonant response of large surfaces (roofs, ceilings). Complaints start.
150 dB	Some windows break
170 dB	Most windows break
180 dB	Structural Damage

Human response to airblast.

Average human response	Airblast (dB)
Barely to distinctly perceptible	50 to 70
Distinctly to strongly perceptible	70 to 90
Strongly perceptible to mildly unpleasant	90 to 120
Mildly to distinctly unpleasant	120 to 140
Distinctly unpleasant to intolerable	140 to 170

Figure 38: Tables showing the accepted damage threshold for air blast (first table) as well as the human response to air blast (second table) (Cambrian Report).

AEL in one of their 'Blasting News' publications make the points that there are no legislated limits for air blast in South Africa and that human response to blasting is difficult to quantify as airblast can be felt at levels well below those required to produce damage to structures. They published guides for airblast criteria and human response as presented in the following figure.

AEL guide for airblast criteria (Based on USBM RI 8485)	
Level	**Description**
100 dB (2.0 Pa)	Barely noticeable.
110 dB (6.3 Pa)	Readily acceptable.
128 dB (50.2 Pa)	Currently accepted by South African authorities as being a reasonable level for public concern. (No more than 10% of measurements should exceed this value).
134 dB (100.2 Pa)	Currently accepted by South African authorities that damage will not occur below this level. (No measurements should exceed this value outside the mining boundaries).

Figure 39: Guidelines for airblast criteria and human response as published by AEL (Cambrian Report).

Wansley Quarry Scenario:

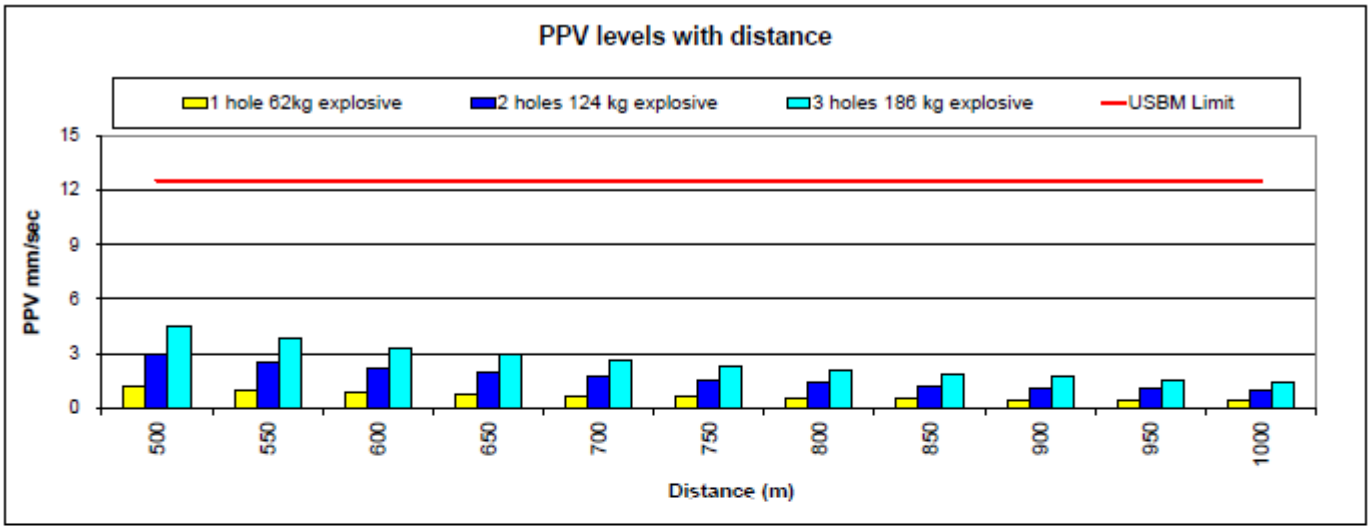
As mentioned earlier, Cambrian CC were contracted to model the potential ground vibration and airblast levels that may be associated with the proposed activity at various distances around the quarry. For the modelling exercise a charge mass of 62 kg of bulk explosive per hole was used, with the assumption that electronic detonators will be used to initiate the blast to insure individual hole firing. The specialist, despite assuming individual hole firing, modelled the possible impact of one, two and three holes firing individually and together. The following figure shows the predicted disturbance levels at distances ranging from 500 m to 1 km from the area of the blast. The first table shows the predicted ground vibration levels (peak particle velocity (PPV)) in millimetres per second and the second table shows the airblast levels in decibels. The data was then graphed to simplify the identification of trends.

VIBRATION			
Holes Detonated Per Delay	1	2	3
Combined charge mass firing	62	124	186
Distance increment in metres			
50	Tharisa	Tharisa	Tharisa
Distance (m)	**PPV (mm/s)**	**PPV (mm/s)**	**PPV (mm/s)**
500	1,21	2,15	3,00
550	1,04	1,84	2,56
600	0,90	1,59	2,22
650	0,79	1,39	1,95
700	0,70	1,23	1,72
750	0,62	1,10	1,54
800	0,56	0,99	1,38
850	0,51	0,89	1,25
900	0,46	0,81	1,14
950	0,42	0,74	1,04
1000	0,39	0,68	0,96

Figure 40: Predicted ground vibration levels in millimetres per second. (Image obtained from the Cambrian Report)

AIRBLAST			
Holes Detonated Per Delay	1	2	3
Combined charge mass firing	62	124	186
Distance increment in metres			
50	Tharisa	Tharisa	Tharisa
Distance (m)	dB	dB	dB
500	114	117	118
550	113	116	117
600	113	115	116
650	112	114	115
700	111	113	115
750	110	113	114
800	110	112	113
850	109	111	113
900	108	111	112
950	108	110	112
1000	107	110	111

Figure 41: Predicted airblast levels in decibels. (Image obtained from the Cambrian Report).



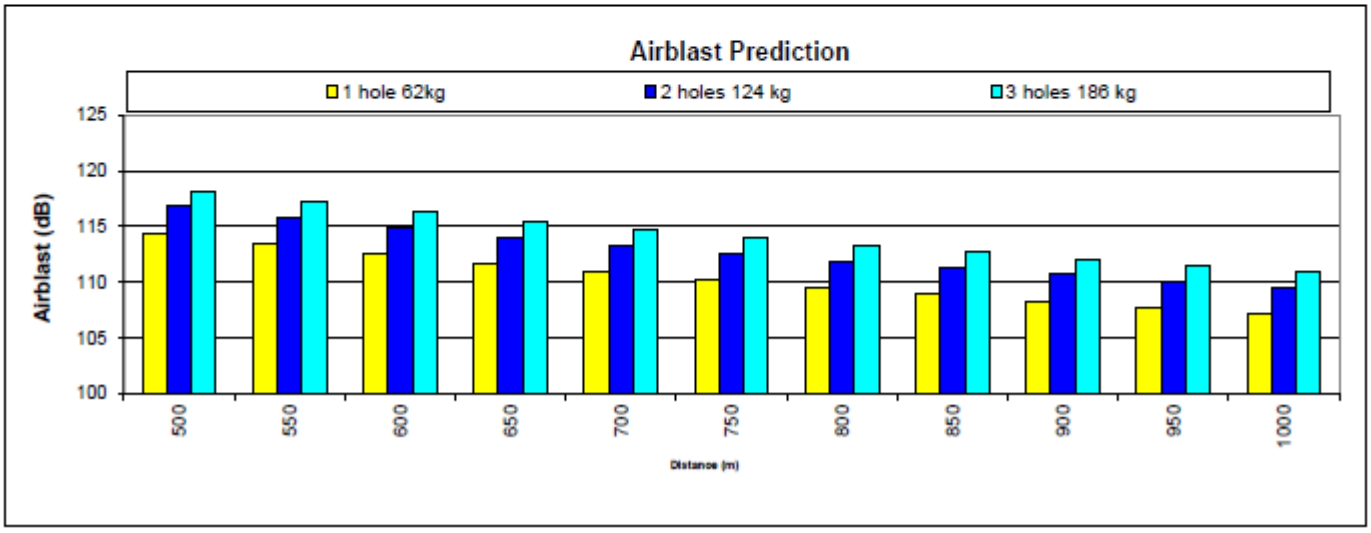


Figure 42: Trends of the predicted PPV and airblast levels presented in graph format. (Image obtained from the Cambrian Report).

Even though the predictions cannot be regarded as absolute, the modelling results show that the predicted disturbance levels are within acceptable limits at 500 meters from the quarry workings. As the distance increases the disturbance levels decrease. It is important to remember that the local geological conditions around the quarry will affect the ground vibration levels. Airblast will be affected by prevailing weather conditions such as cloud base and -cover, strong and prevailing winds, rainstorms and other factors such as temperature inversions. These factors will all affect the outcome.

As mentioned earlier, a seismograph will be placed at strategic points to measure the ground vibrations that extents from the quarry. Should the vibration tests indicate excessive high readings the blasting at the quarry will be amended to lower the impact.

Also refer to Part A(1)(g)(viii) *The possible mitigation measures that could be applied and the level of risk – Air Quality and Noise Ambiance*.

SITE SPECIFIC GEOLOGY

(Information extracted from the Mining Plan, August 2020 compiled by MLB Consulting)

MLB Consulting notes that the study area is a weatherised dolerite and gravel quarry. The site is underlain predominantly by an elongated north-south trending, near vertical dolerite dyke. A vertical borehole drilled to a depth of ~150 m below surface, intersected the water table at ~120 m below surface. For this reason, the final mining depth will be limited to a depth of 120 m until further data becomes available.

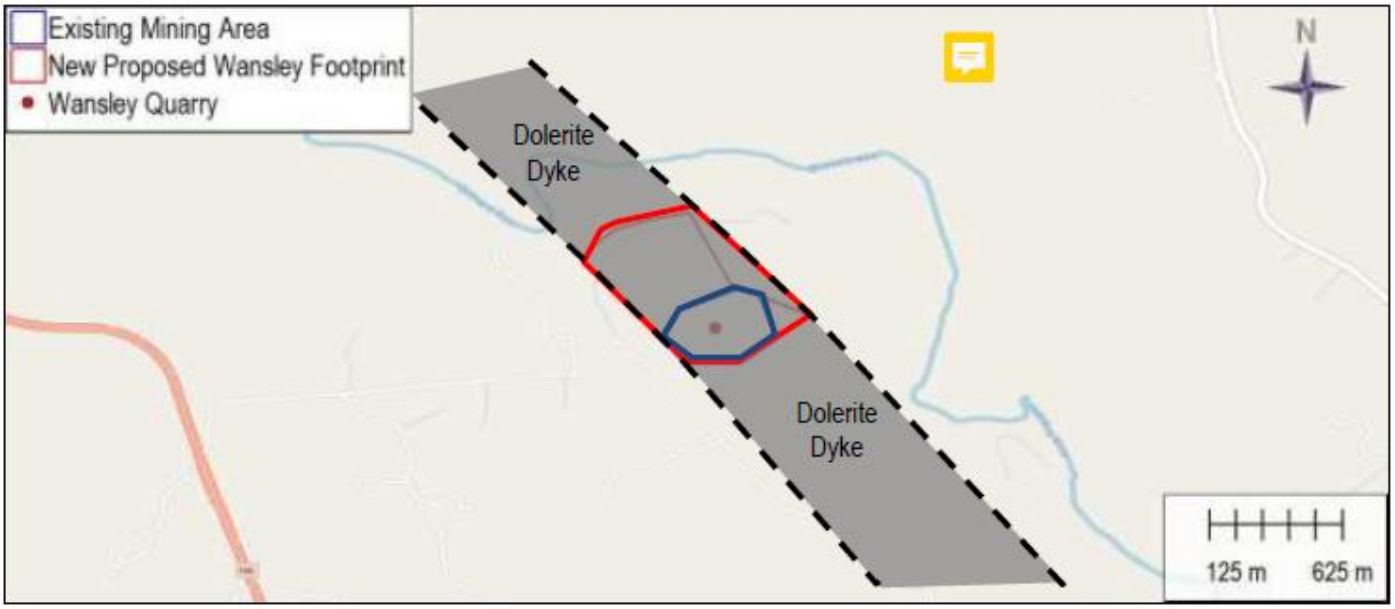


Figure 43: Map showing the estimate dolerite dyke location across the farm. (Image obtained from the Mining Plan).

The exposed rock mass of the quarry shows two distinct steeply dipping joint sets, referred to as J1 and J2. In addition to these two main joint sets, a third shallow dipping joint set was also identified.

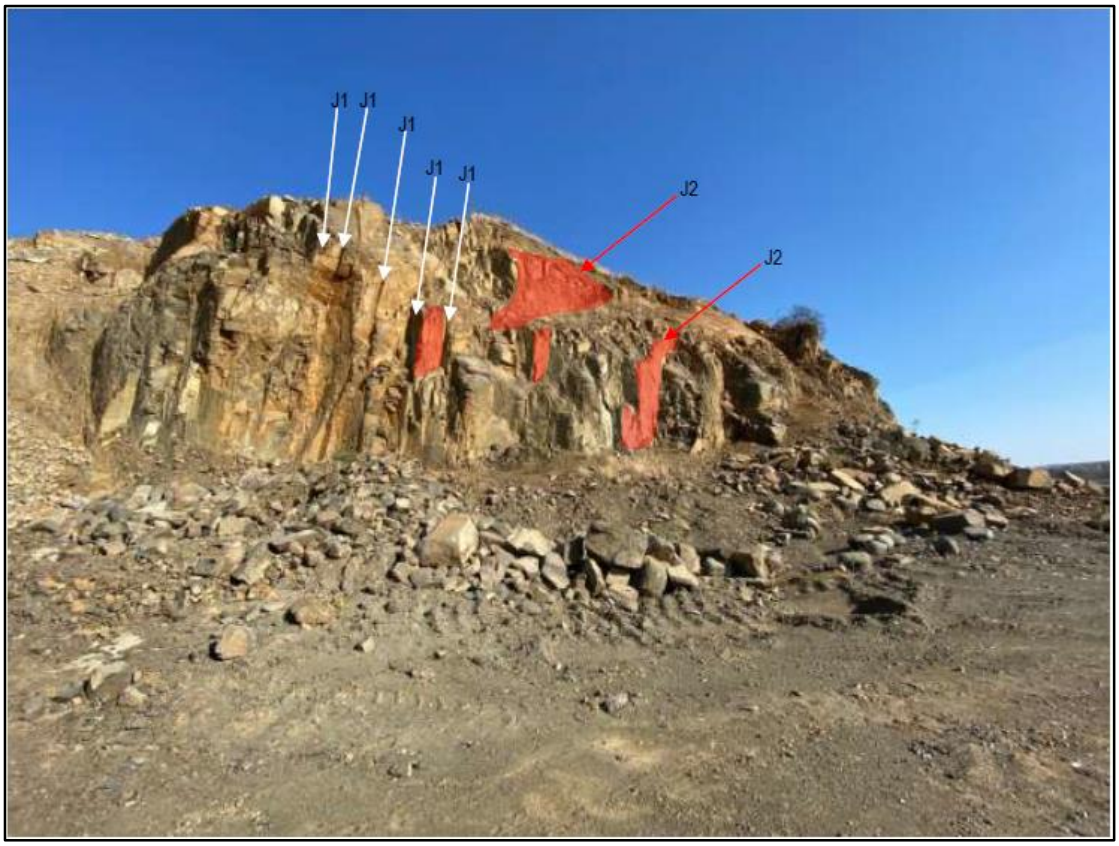


Figure 44: Image showing the joint sets exposed at the southern outcrop at Wansley Quarry (image obtained from the Mining Plan).

The mine planner identified three separate ground control districts namely:

1. Topsoil – soil material with low cohesion when dry;
2. Weathered Zone – visibly blocky rock mass conditions up to 40 m in depth; and
3. Fresh Rock Mass – massive rock mass with prominent joints.

The seismically active areas in South Africa are broadly divided into two groups in SABS 0160 (1989), namely those where seismic activity is due to natural seismic events (Zone 1 areas), and those where it is predominantly due to mining activity (Zone 2 areas). Wansley Quarry is located outside any area known to be seismically active, which is also suggested in the plan of earthquakes occurring to the past 100 years produced by Singh *et al.*, 2009.

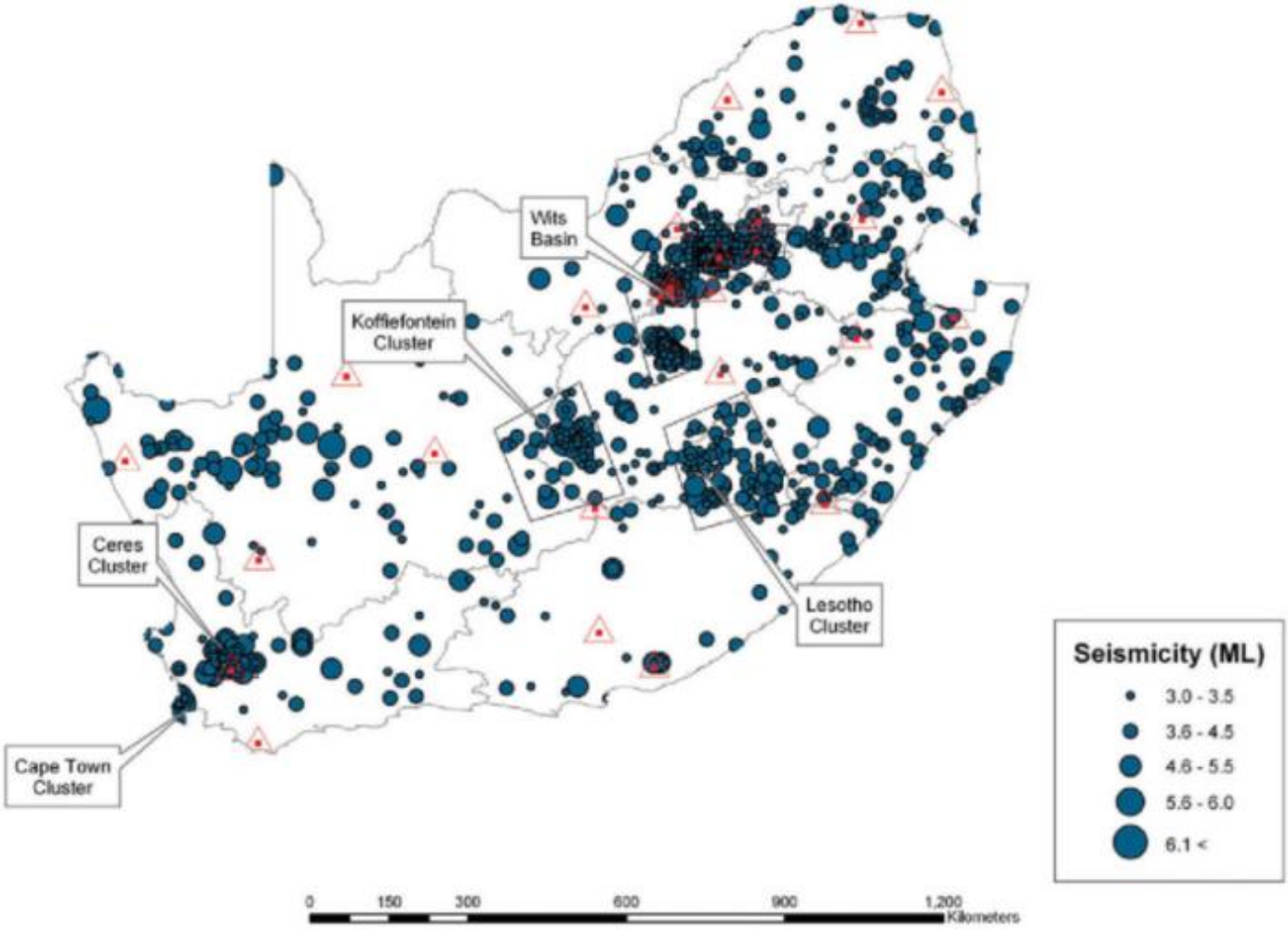


Figure 45: Earthquakes in South Africa for the period 1809 until 2008. The seismic stations are represented by red triangles (Singh et al., 2009) (image obtained from the Mining Plan).

Also refer to Part A(1)(d)(ii) *Description of the activities to be undertaken – Mining Plan.*

SITE SPECIFIC HYDROLOGY AND GEOHYDROLOGY

(Information extracted from the Wansley Siyakhula (Pty) Ltd Mining Rights Areas Storm Water Management Plan and the to the Ecological and Freshwater Resources Study and Assessment, November 2020 attached as Appendix J and Appendix H2 respectively)

Aquatic Critical Biodiversity Areas:

The entire project site is located within an Aquatic CBA3_A3b due to the fact that this area falls within hydrological primary catchment management area for an Aquatic CBA2_E2 Estuary.

The proposed extension area is located outside of the primary hydrological features of this catchment area, namely the Qinira River. As mentioned previously, the Qinira River as well as its riparian fringe and the abutting natural thicket will be classified as

a No-Go Area (High Sensitive) and a 100 m Buffer Area will be set around these features in order to preserve the integrity and functionality of this aquatic resource.

The development area is located predominantly within two micro-catchments (Refer to Figure 48). Surface drainage within these micro-catchments as well as other micro-catchments within the Wansley property have been largely modified with numerous gravel dams located within the catchment areas as well directly within drainage systems. Furthermore, these micro-catchments have been largely transformed by the current mining activities, roads, building infrastructure and historical cultivation practices. Even though, two drainage lines will be impacted by the proposed extension of the mining footprint, the specialist reported that it is highly unlikely that the extension will significantly impact the hydrological nature of the important downstream aquatic resources maintaining the Qinira Estuary. Furthermore, with the implementation of mitigation measures, impacts such as pollution and sedimentation will be avoided within this downstream aquatic resource.

As such, the specialist concluded that the proposed development will not impact the functioning of the CBA_A3b primary catchment area and subsequently not the Qinira Estuary (CBA2_E2).

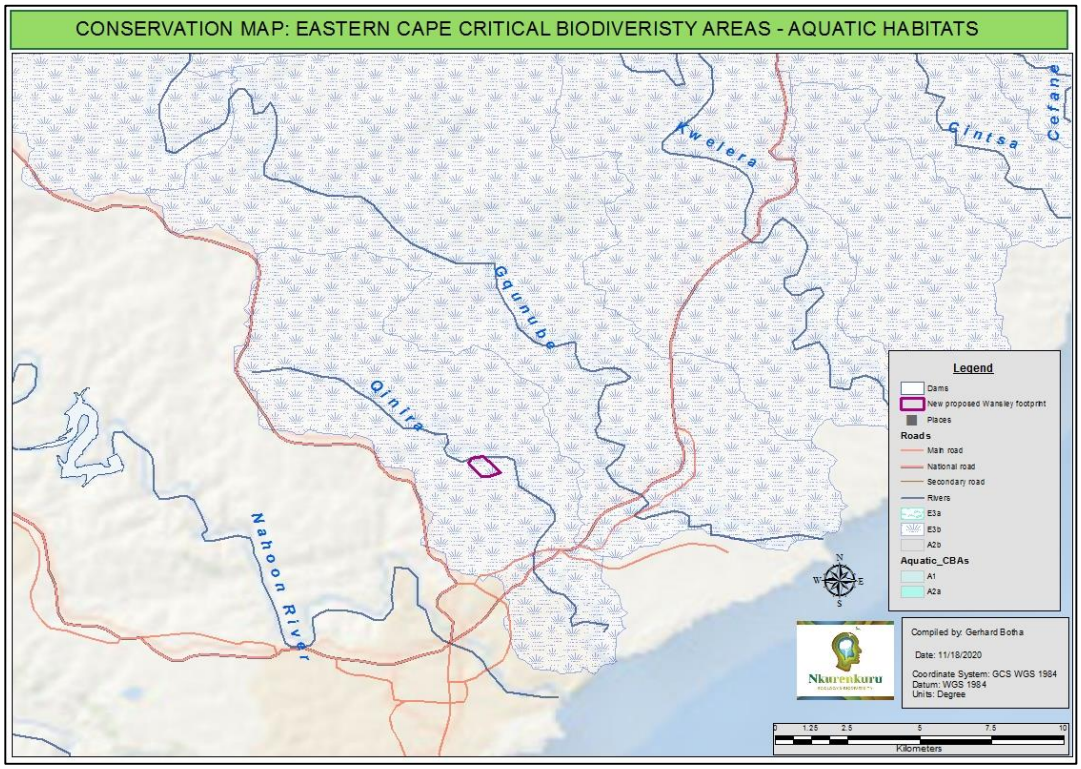


Figure 46: Map showing the location and extent of Aquatic CBAs in relationship to the proposed extension area identified according to the Eastern Cape Biodiversity Conservation Plan. (Image obtained from the EFRSA).

Delineation and Classification of Watercourses:

The study area can be described as highly undulating comprising of low hills with moderate to gentle slopes vegetated with secondary wooded grassland to dense thicket vegetation. This rolling hilly landscape of the study area is dissected by lower gradient drainage lines as well as relative steep valleys and ravines hosting dense, moderate to tall riverine forests and thickets which are drained by seasonal streams/rivers and ephemeral drainage lines. The topography does not lend itself to the formation of the persistence of wetland features, which are notably absent from the study site. Watercourses are therefore channelled bedrock streams characterised by mostly straight channel patterns to slightly wandering in some isolated sections. The study site generally slopes in an eastern to south-eastern direction and is drained by two ephemeral drainage lines which join up to the east of the proposed new mining footprint to form a small intermittent watercourse, flowing in a south-eastern direction over a short distance to finally terminate into the seasonal Qinira River.

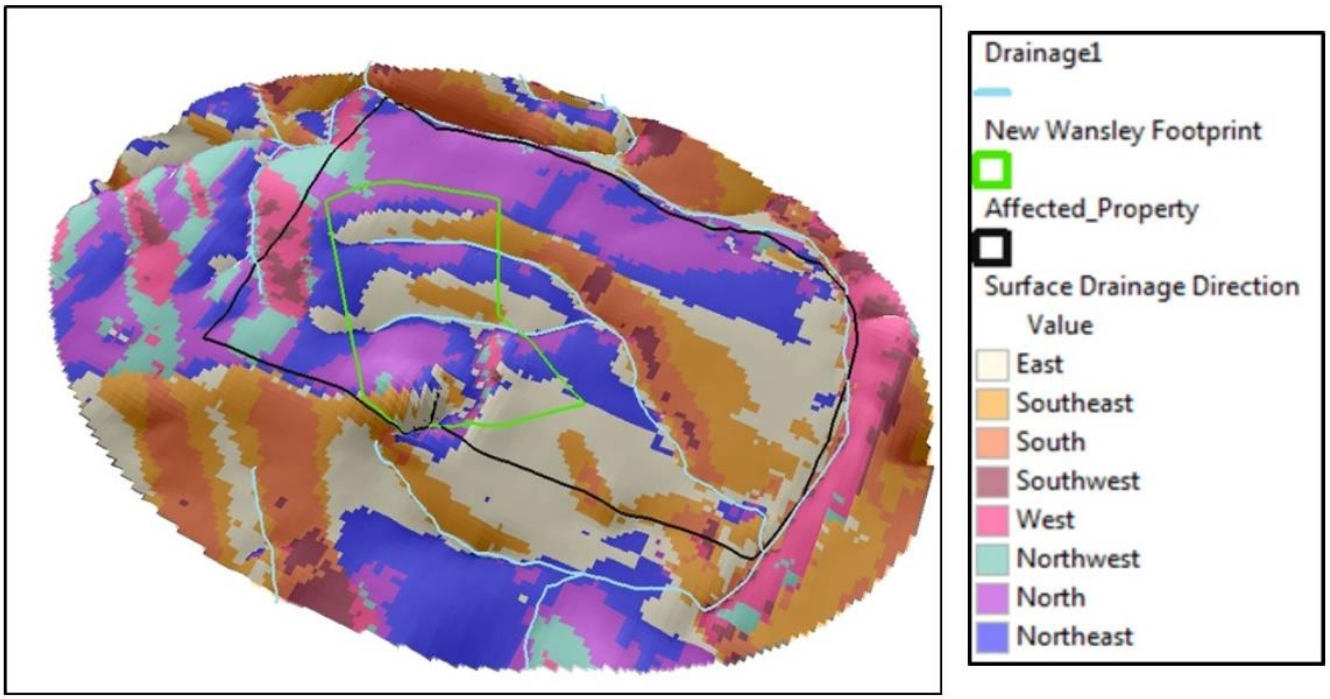


Figure 47: Surface drainage directions within the Wansley property (Image obtained from the EFRSA).

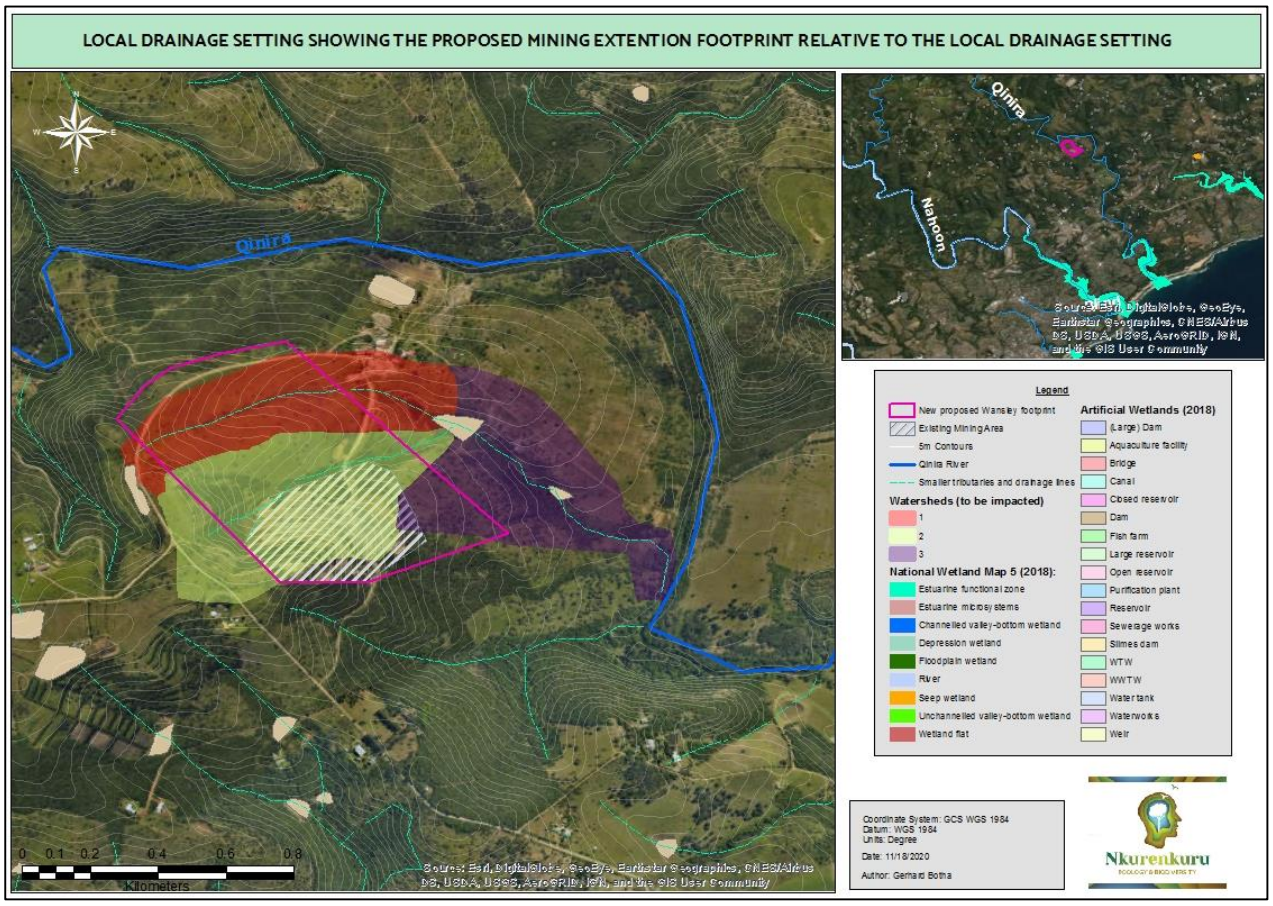


Figure 48: Map showing the key hydrological features of the study area as well as immediate surroundings. (Image obtained from the EFRSA).

The Qinira River is the main collecting non-perennial river system of the region and flows in a south-easterly direction along the northern and eastern boundary of the Wansley Property. Riparian vegetation within the area is typically an expression of the hydrological nature of watercourse with the stronger seasonal systems such as the Qinira River fringed by a well-developed, tall woody riparian fringe whilst the smaller intermittent stream comprising of narrower woody riparian fringe. The ephemeral drainage lines mostly lack riparian vegetation cover apart from the lower points where some riparian vegetation is present and have extended from the intermittent stream into these portions of the drainage lines. Another prominent feature of this property as well as the surrounding landscape are the numerous small gravel dams. Most of which have been constructed within drainage lines, in an attempt to store water runoff for longer periods. The proposed extension area can be divided into five drainage regions or micro-catchments. The proposed new Wansley mining footprint will mostly impact two of these micro-catchments, which are drained by the two ephemeral drainage lines.

The extent of 'riparian habitat' (defined as 'the physical structure and associated vegetation within a zone or area adjacent to and affected by surface and subsurface

hydrologic features such as rivers, streams, lakes or drainage ways and are commonly associated with alluvial soils') was delineated according to the methods contained in the Department of Water Affairs delineation guideline document for wetlands and riparian areas (DWAF, 2005) and are shown in "tourmaline green" in the following figure. Riparian habitat was delineated using a combination of topographic/morphological features such as the edge of channel bank and according to the apparent transition from riparian to terrestrial vegetation along transects from the channel centre line laterally outwards, which can be observed through changes in the structure and composition of the vegetation from taller, more robust vegetation and species typical of "wet" environments to more sparse, low vegetation dominated by terrestrial or dryland species that are typically intolerant of saturated soil or waterlogged conditions.

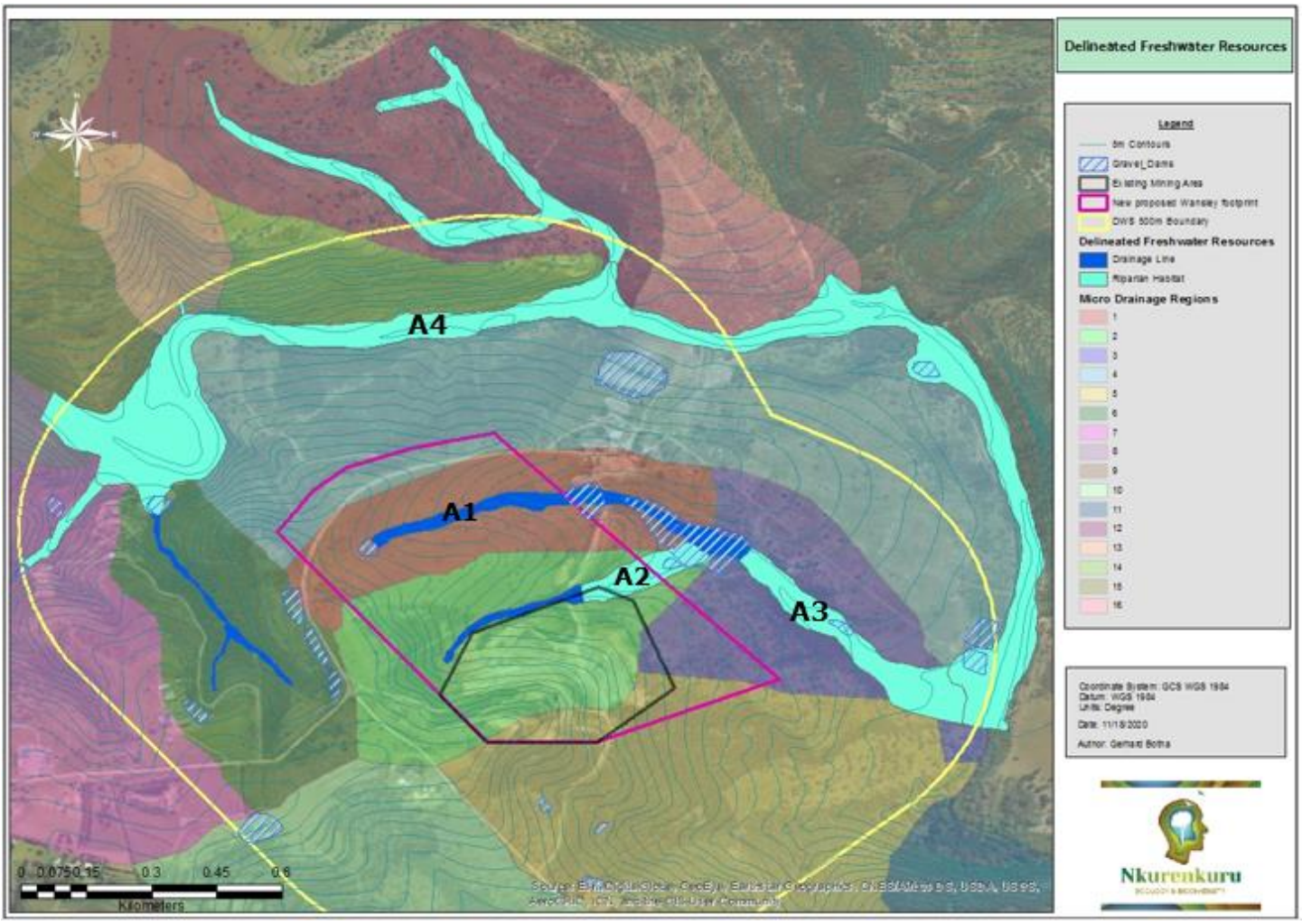


Figure 49: Map showing the classified watercourses (streams, rivers and drainage lines) within a radius of 500 m around the proposed new mining footprint. (Image obtained from the EFRSA).

As depicted on the above figure, the EFRSA number the freshwater resources applicable to this project, and summarised below (refer to Appendix H2 for a full description) as:

- A1 – drainage line;
- A2 – drainage line;
- A3 – watercourse with riparian vegetation; and
- A4 – impacted reach of Qinira River and associated riparian vegetation.

Freshwater Resource Descriptions:

A1 – Drainage Line:

This is a fairly short ephemeral drainage line and will only contain flowing water for a very short period after precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water and permanent pools do not occur. Surface run-off from the hillslopes is the primary source of water for streamflow. This drainage line does not contain a riparian fringe and is characterised by a moderately dense, low growing shrubland. The present vegetation composition is indicative of a highly disturbed environment dominated by invasive alien shrubs and forbs/herbs.

This drainage line has a shallow V-shape confinement. In an attempt to store this surface runoff small gravel dam/reservoirs have been constructed within this channel and have significantly impacted longitudinal connectivity. One such dam has been constructed at the point of origin (headwater) of this drainage channel whilst two dam structures have been constructed are present within the lower half of this channel. These farm dams/reservoirs have impacted the nature of flooding downstream (magnitude and frequency), especially into the semi-ephemeral watercourse.

A2 – Drainage Line:

This is a fairly short ephemeral drainage line and will only contain flowing water for a very short period after precipitation events in a typical year. Surface run-off from the hillslopes is the primary source of water for streamflow. This drainage line has a shallow V-shape confinement and comprises of an upper half dominated by a woody, moderately dense thicket, whilst the lower portion comprise of a moderately tall woody riparian fringe. This drainage line terminates into a moderately sized gravel dam dominated by *Typha capensis*. More than half of this drainage line has been

completely transformed by mining activities and has lost most of its functionality. The riparian section of this drainage system is located between the access road to the quarry and the moderately sized gravel dam. Mining activities, vegetation clearance, alien invasive plants, access roads and small farm dams have significantly impacted all aspects of this drainage line.

A3 – Watercourse with Riparian Vegetation:

This watercourse is regarded as semi-ephemeral and will experience water flow only during, and for a short duration after precipitation events in a typical year. Semi-ephemeral stream beds are located above the water table year-round along with the majority of the stream length. Groundwater is, therefore, a source of surface water to a very limited extent and results in the presence of permanent but isolated static pools. Run-off from rainfall is the primary source of water for streamflow. The contribution of the drainage lines to surface flow has been significantly impacted by the farm dams located within their channels.

The channel bed has experienced some geomorphological modification due to anthropogenic activities within the catchment as well as within the upstream drainage lines. Typically, the channel type can be described as predominantly bedrock channels however some areas within the channel exist where alluvium is collected. However, some of these alluvium sections have been exposed to channel erosion, mainly as a result of an increase in surface flow from the historically cultivated slopes. The channel is furthermore typographically largely uniform (plan-bed) and devoid of vegetation whilst the channel bank comprises of a dense woody riparian fringe. This reach is not associated with a floodplain or any other wetland.

Longitudinal connectivity has been influenced mainly by gravel roads and farm dams, especially within the upstream tributary junction. This has resulted in a reduction in the magnitude and frequency of floods, thus reducing the energy for geomorphic work, and secondly to trap sediment and reduce the supply of sediment to downstream reaches. Especially the smaller, most frequent floods are affected by this impact. Hillslope connectivity has somewhat returned to its original near-natural state due to the establishment of secondary vegetation within the historically cultivated slopes. However, the historical impacts of cultivation along these slopes have left its mark in the form of local incised channels. Due to historical channel erosion, lateral connectivity has been slightly influenced. This impact along with the upstream farm dams have resulted in a reduction in elevated floods and subsequently a reduction in the flooding of the different riparian zones.

A4 – Impacted reach of Qinira River and Associated Riparian Vegetation:

This watercourse is regarded as semi-seasonal and has flowing water during certain times of the year (>25% of the time) when groundwater provides for streamflow. It ceases to flow regularly and seasonally because bed seepage and evapotranspiration exceed the available water supply. During dry periods, this river is unlikely to have flowing water. However, permanent but isolated and static pools may be present in sections of this river reach. Runoff from rainfall is a supplemental source of water for streamflow.

The channel bed has experienced some geomorphological modification due to anthropogenic activities within the catchment, upstream reaches as well as within its tributaries. Typically, the channel type can be described as a bedrock channel comprising of runs, pools and bedrock pavements as well as a few small rapids.

Longitudinal connectivity within the assessed section of this river is largely unmodified and continuous however longitudinal connectivity within the entire system has been influenced by anthropogenic activities and include instream dams, causeways and bridges. These dams are mostly relatively small in terms of capacity and will likely have a moderate influence on flood intensity and frequency within this assessed portion of the river. Due to the distant location of causeways and bridges, these infrastructures do not have a significant impact on local flooding and sediment characteristics. Hillslope connectivity within this portion of the river plays a more important role in water input and flooding characteristics of this section of the river. Low order tributaries within this section are regarded as important hydrological features. Most of these low order tributaries are low to moderately impacted with minimal barriers (dams and roads) within their reaches as well as within the junction points between these tributaries and the Qinira river. However, the hillslopes fringing these low order tributaries (including the tributary within the Wansley property have been significantly impacted by agricultural activities (historical cultivation and livestock grazing) and have resulted in a reduction in roughage (vegetation cover). Subsequently, most of these lower-order tributaries have experienced an increase in flooding magnitude and frequency, contributing to a very slight increase in flooding magnitude and frequency within this portion of the Qinira River. The low order tributary, as well as the associated drainage lines within the Wansley footprint, are however an exception to this, due to the presence of several instream farm dams as well as farm dams within the catchment area. These reservoirs have resulted in a reduction in the contribution this tributary makes to the Qinira River. Furthermore, the

more frequent and smaller flooding events have been altered within this region (reduction in magnitude and frequency). Most of these farm dams have been constructed a long time ago when the area was predominantly under pineapple cultivation. The mining activities that followed also contributed to a change in water inputs and flooding characteristics within this area. However, due to the relatively small extent of this impacted micro-catchment, these modifications have a moderately small impact on the local hydrological character of this section of the Qinira River.

The channel bed is mostly devoid of vegetation. The marginal zone is also known as the active feature or wet bank (the area from the water level at low flow to those features that are hydrologically activated for the greater part of the year) comprise mostly of moisture-loving graminoids and herbs. The lower (seasonal) and upper (ephemeral) zones are characterised by a tall dense woody forest, with a near closed canopy. The lower zone consists of geomorphic features that area hydrologically activated on a seasonal basis (yearly during high flow, or every 2 to 3 years). The upper zone is also known as the dry bank and extends from the end of the lower zone to the end of the riparian corridor. The upper zone consists of geomorphic features that are hydrologically activated on an ephemeral base (less than every 3 years). Furthermore, this zone is characterised by steeper slopes and the presence of both riparian and terrestrial species. Almost the entire outer fringe of this zone has been invaded with *Lantana camara* with the exception where natural thicket has persisted.

Rivers/Drainage Lines: PES and EIS Assessment

Present Ecological State of Freshwater Resources (PES):

The PES refers to the health or integrity of an ecosystem defined as a measure of deviation from the reference state. The 'habitat integrity' of a river refers to the "maintenance of a balanced composition of physic-chemical and habitat characteristics on a temporal and spatial scale that are comparable to the characteristics of natural habitats of the region" (Kleynhans, 1996). The Index of habitat Integrity (IHI) is a measure of the PES which infers the health or integrity of a river system, and includes both in-stream habitat as well as riparian habitat adjacent to the main channel.

The results of the IHI assessment, summarised in Table 8 and Figures 14-17 of the EFRSA (Appendix H2), generally reveal the following:

- The drainage channel A2 have seen the highest level of habitat transformation and disturbance with more than half of the drainage system being lost due to current mining activities. Furthermore, the vegetation composition and structure of

especially the upper portion have been significantly modified with *Lantana camara* having extensively invaded this system. The herbaceous layer also comprises a number of weedy and alien plants. The lower portion of this drainage line is in a less transformed and degraded condition and comprise of a well-developed, tall, woody riparian fringe. *Cestrum laevigatum* have invade portions of this zone with the out edges comprising of a fairly dense barrier of *Lantana camara*. All of the mentioned IAPs are listed Category 1b Invasives. Furthermore, longitudinal and hillslope connectivity have been significantly influenced through the small farm dams, access roads and the mine itself resulting in an alteration in water inputs, outputs as well as the magnitude and extent of flooding.

- Similarly, drainage line A2 have also be subjected to significant modified, especially the vegetation cover which is severely invaded with *Lantana camara, Solanum mauritianum, S. chrysotrichum, Argemone ochroleuca* and *Xanthium spinosum*. Longitudinal connectivity has also been significantly influenced through the construction of various farm dams, altering the nature of flooding downstream (magnitude and frequency), especially into the semi-ephemeral watercourse.

- The semi-ephemeral watercourse A3 has also been subjected to habitat modification and alteration, and especially the channel bed has experienced significant geomorphological modification due to historical anthropogenic activities (within catchment as well as tributaries). This in turn has had an influence water input, output, flood magnitude and extent. Upstream dams within the drainage lines have resulted in a reduction in the magnitude and frequency of floods, thus reducing the energy for geomorphic work, and secondly to trap sediment and reduce the supply of sediment to downstream reaches. Especially the smaller, most frequent floods are affected by this impact. Hillslope connectivity has somewhat returned to its original near-natural state due to the establishment of secondary vegetation within the historical cultivated slopes. However, the historical impacts of cultivation along these slopes have left its mark in the form of local incised channels. Due to historical channel erosion lateral connectivity have been slightly influenced. This impact along with the upstream farm dams have resulted in a reduction in elevated floods and subsequently a reduction in the flooding of the different riparian zones. Significant impacts within the riparian zone include, as mentioned a reduction in flooding extent and magnitude, but also the invasion of IAPs such as *Cestrum laevigatum* within the lower riparian zone and *Lantana camara* within the outer boundary of the upper zone.

- Habitats within this reach of the Qinira River has been moderately modified. Most of the upstream impacts such as dams, causeways and bridges, do not have a significant bearing on the local habitats within this portion of the Qinira River due to the distance of these impacts. Local impacts from the catchment such as a reduction in vegetation cover, an increase in water input from some tributaries and the reduction of water inputs from others have somewhat modified the flow character within this section. Reservoirs/dams within the tributary and its associated drainage lines, located within the project area, have resulted in a slight alteration in the hydrological contribution this tributary provides towards the total water input, and flooding nature of the Qinira River.

Ecological Importance and Sensitivity of the Freshwater Resources (EIS):

The EIS of river and riparian areas is an expression of the importance of the aquatic resource for the maintenance of biological diversity and ecological functioning on local and wider scales; whilst Ecological Sensitivity (or fragility) refers to a system's ability to resist disturbance and its capability to recover from disturbance once it has occurred (Kleynhans & Louw, 2007).

The outcomes of a rapid instream and riparian habitat ecological importance and sensitivity assessment (using the DWAF EIS tool for rivers) is summarised in the table below with an ecological sensitivity map for aquatic and terrestrial habitats of the project site included as Figure 55.

Table 18: Summary of the EIS assessment results as presented in the EFRSA.

UNIT	RATING FOR BIOTIC DETERMINANTS OF EIS	RATING FOR PHYSICAL HABITAT DETERMINANTS OF EIS	OVERALL EIS RATING	RATIONALE / OBSERVATIONS
A1	Low (0.5)	Moderate (1.5)	Low (1)	♦ High level of habitat modification due to alien plants, farm dams and dumping of earthen rubble ♦ Lacks riparian habitat ♦ Low habitat diversity ♦ Low species diversity ♦ No flora/fauna species of conservation concern noted and unlikely to be present. ♦ Non-functional wildlife corridor. ♦ Low sensitivity due to existing level of flow and water quality. ♦ Located within A_CBA2 (E3b)
A2	Low (1)	Moderate (2)	Low (1)	♦ High level of habitat modification due to mining activities, access roads, alien plants and farm dams ♦ Lacks riparian habitat within upper portion ♦ Low habitat diversity ♦ Low species diversity ♦ Three provincially protected tree species observed. ♦ Non-functional wildlife corridor.

UNIT	RATING FOR BIOTIC DETERMINANTS OF EIS	RATING FOR PHYSICAL HABITAT DETERMINANTS OF EIS	OVERALL EIS RATING	RATIONALE / OBSERVATIONS
				♦ Low sensitivity due to existing level of flow and water quality. ♦ Located within A_CBA2 (E3b)
A3	High (2.5)	Moderate (2)	Moderate (2)	♦ Moderate level of habitat modification due to farm dams, alien plants channel modification ♦ Relative intact riparian fringe ♦ Low habitat diversity ♦ Moderate species diversity ♦ Three provincially protected tree species observed. ♦ Non-functional wildlife corridor. ♦ Low sensitivity due to existing level of flow and water quality. ♦ Located within A_CBA2 (E3b).
A4	High (2.5)	High (3)	High (3)	♦ Moderate to low level of habitat modification due to alien plants and limited alteration in flooding extent and regime. ♦ Well developed, dense riparian zone ♦ High habitat diversity ♦ Moderate species diversity ♦ Four provincially protected tree species observed. ♦ Important wildlife corridor. ♦ Experience seasonal flow with relatively high aquatic diversity. ♦ Located within A_CBA2 (E3b). ♦ Feeds into the CBA2 (E2) Qinira Estuary.

Mean Annual Runoff (MAR)

The runoff data for the quaternary catchment R3A was extracted from the WR2012 database. The calculated MAR (for rivers in the region) is shown in the figure below. The data indicates a MAR equivalent to 113.4 mm of runoff over a wide area. It was however considered that on a more local scale, higher values of runoff could be expected.

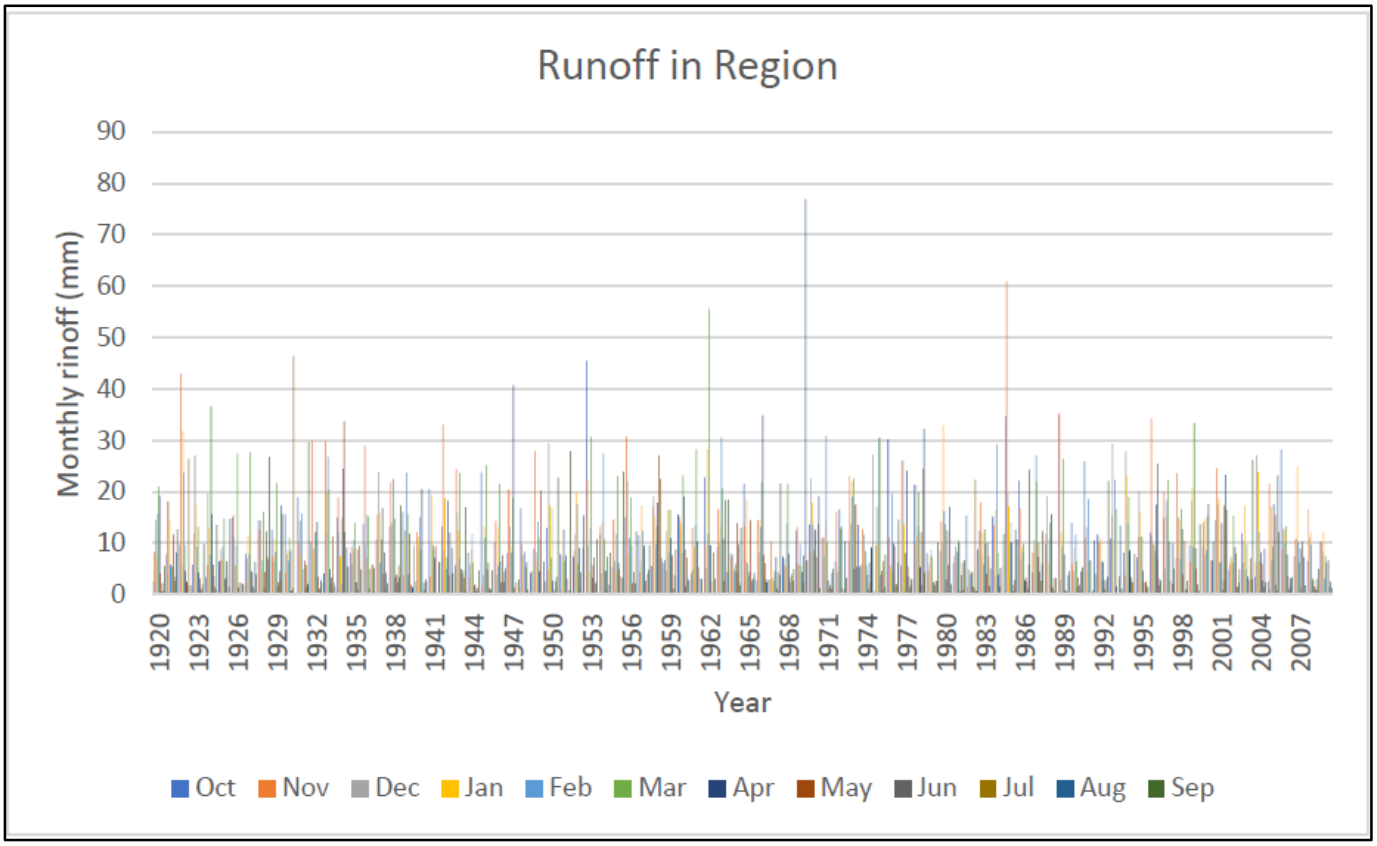


Figure 50: Runoff in regional rivers (image obtained from the SWMP).

Downstream Water Users

There are significant surface water users downstream of Wansley Quarry that includes farming practices as well as towns. Due to the small catchment areas associated with Wansley Quarry operation the stormwater specialist concluded that there will be no significant effect on downstream water users if dirty water is contained within the mining area. The catchment area for the two drainage lines running through the mining area are 0.141 km^2 and 0.236 km^2 respectively as seen in the following figure. There are also no significant water users on the non-perennial river before joining the Qinira River.

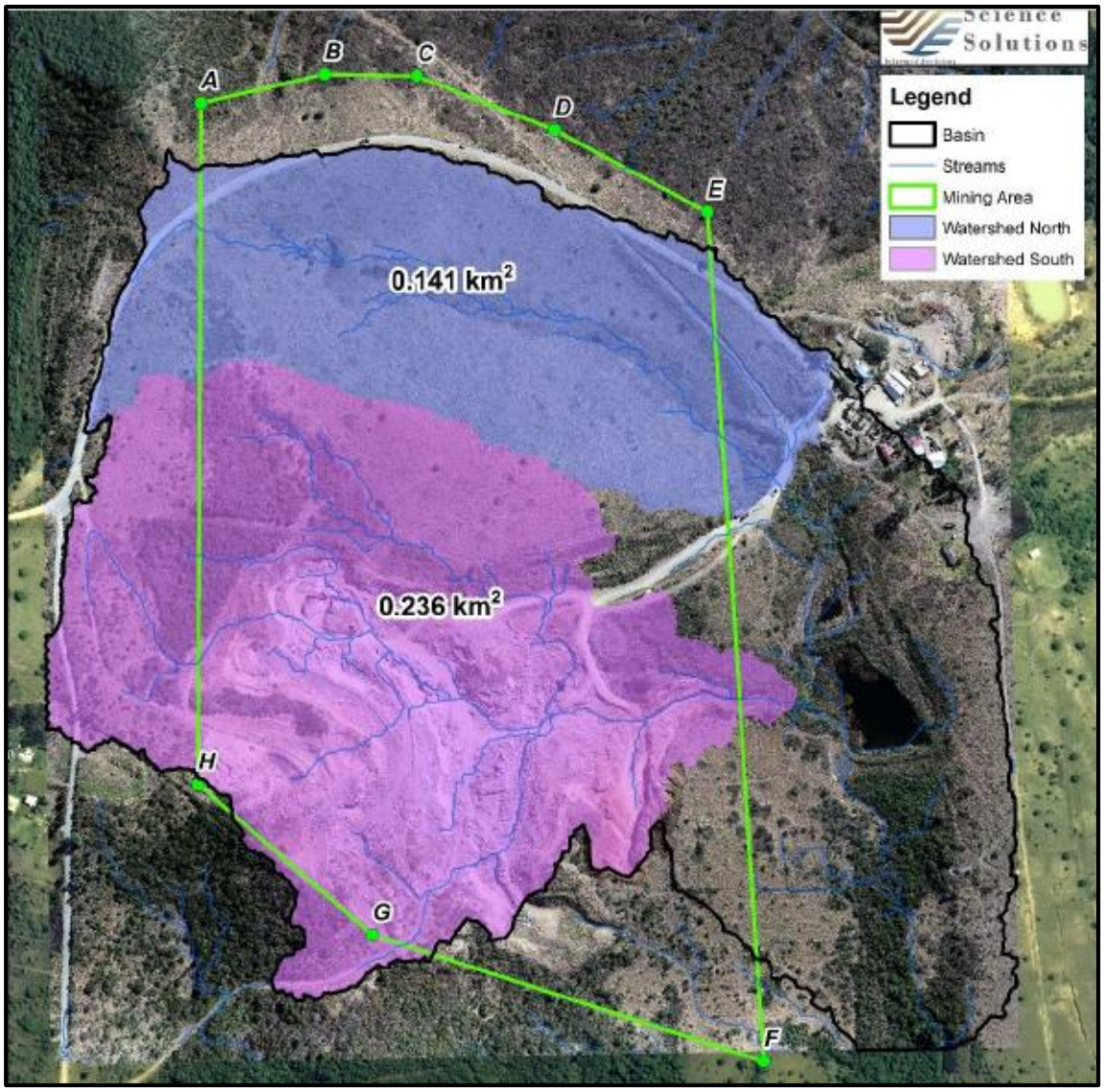


Figure 51: Map showing the two different watersheds (north and south) with associated drainage lines (blue lines) in the proposed extension area (green polygon). (Image obtained from the SWMP)

Flood Analysis:

A flood line delineation study was undertaken by Spatial Science Solutions to determine the 1:50 and 1:100 year flood lines for the two minor tributaries located within the proposed extension footprint. The outcome of the study is presented on the map included below (also refer to the full report attached as Appendix J).

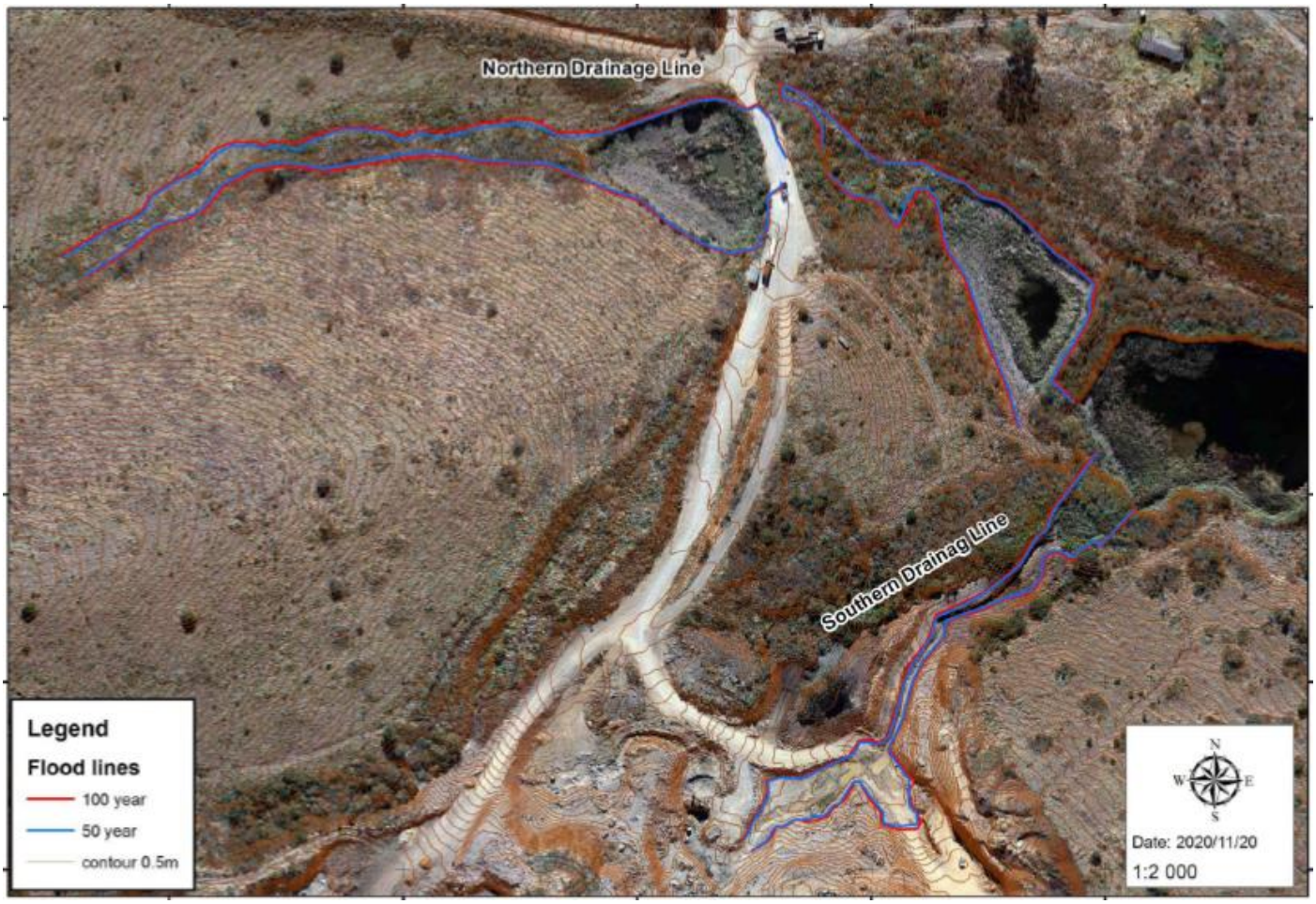


Figure 52: Topographic map indicating the flood lines of the two minor tributaries within the proposed extension area as presented in the Flood Line Determination.

Conclusion of EFRSA:

The EFRSA concludes that the drainage lines are in a severely degraded and transformed condition and of low ecological importance and sensitivity. The downstream watercourses and their associated riparian zones have however been found to be in better condition, especially this section of the Qinira River. The proposed development footprint is not located within these habitats and with good environmental management and adequate mitigation the proposed development will not have a significant impact on the ecological condition and functioning of these habitats.

Due to a lack of space within the property any change or consideration of an alternative layout will likely result in a more severe impact on these habitats and may even reduce the current PES and EIS. As such it was deemed unnecessary to consider any other alternatives. The loss of the two drainage lines is regarded as acceptable as these drainage lines are already in severe degraded and transformed conditions with very limited functionality maintained. Water input from these drainage lines has been obstructed and prevented for a very long period due to the presence of instream dams.

Subsequently the loss of these drainage lines will not have a significant impact on water inputs within the lower-lying aquatic environments.

From an ecological perspective, no objective or motives (identification of impacts of high ecological significance, etc.) were identified which would hinder the establishment of this development. Activities and Impacts are regarded as acceptable from an ecological perspective and will not cause detrimental impacts to the ecological features located within the affected area and surrounding properties. Therefore, it is the opinion of the specialist that the development may be authorised, subject to the implementation of the recommended mitigation measures.

SITE SPECIFIC MINING AND BIODIVERSITY CONSERVATION AREAS

(Refer to the to the Ecological and Freshwater Resource Study and Assessment, November 2020 attached as Appendix H2)

Following the earlier discussion in this regard; when the footprint of S1 is layered over the Mining and Biodiversity Guideline Map it falls over an area of high biodiversity importance with a corresponding rating of high risk for mining. The Mining and Biodiversity Guideline notes that EIA's and specialists should focus on confirming the presence and significance of these biodiversity features, identifying features not included in the existing datasets, and on providing site-specific information to guide the application of the mitigation hierarchy.

The specialist confirmed that the entire project site is located within a CBA 2 due to the fact that this area forms part of an extensive ecological corridor as identified by the ECBCP. Furthermore, this CBA 2 area is regarded as a near-natural landscape which falls within the BLMC 2 (Biodiversity Land Management Classes). However, during the sit visit it was found that a large portion of the Wansley property as well as some of the surrounding landscape do not meet the criteria that justify the area as a CBA2. A portion of the property have already been severely transformed due to current mining activities and meets the criteria for Transformed Land Classification. Furthermore, the bulk of the property is covered by a secondary (degraded) vegetation cover which have established on old cultivated area (old ploughing contours are still visible). These areas should rather be regarded as Other Natural Areas.

The Qinira River and its riparian fringe however was found to be in a near-natural state and do indeed function as an important corridor for species movement. The functionality of a corridor is however, largely dependent on the connectivity of the landscape. This section of the Qinira River has a mostly unbroken longitudinal connectivity and will allow for species movement up and down this section of the Qinira

River. However, lateral connectivity along the Qinira River (including the Wansley property) have been largely impacted. Numerous fences, roads, infrastructure and cultivation have fractured the area influencing lateral connectivity. Within the Wansley property the disturbed nature of the bulk of the vegetation cover, fencing around the property, as well as current anthropogenic activities (including current mining activities) have significantly reduced the area outside of the riparian fringe's capability of functioning as an important corridor.

Subsequently, it can be concluded that the Qinira River and its associated riparian fringe as well as the abutting natural thicket meet the criteria set out for a CBA2 Corridor. However, the remainder of the property do not meet the criteria and from field observations should rather be regarded as an Other Natural Areas with some Transformed Land (as described above).

The maintenance of the riparian fringes is critically important for the sustainable functioning of this river as an ecological corridor. As such the Qinira River as well as the delineated riparian fringe and adjacent remaining natural thicket have been classified as High Sensitive Areas and must be regarded as No-Go Areas for the proposed development. Furthermore, to ensure that this area's functionality (as an ecological corridor) is preserved, and to allow some lateral movement to and from the Qinira River, a Buffer Area of 100 m is recommended and must also be regarded as a No-Go Area for the proposed development. The current layout of the proposed extension area is situated outside of the High Sensitive (No-Go) areas and will not contribute to a further reduction in landscape connectivity.

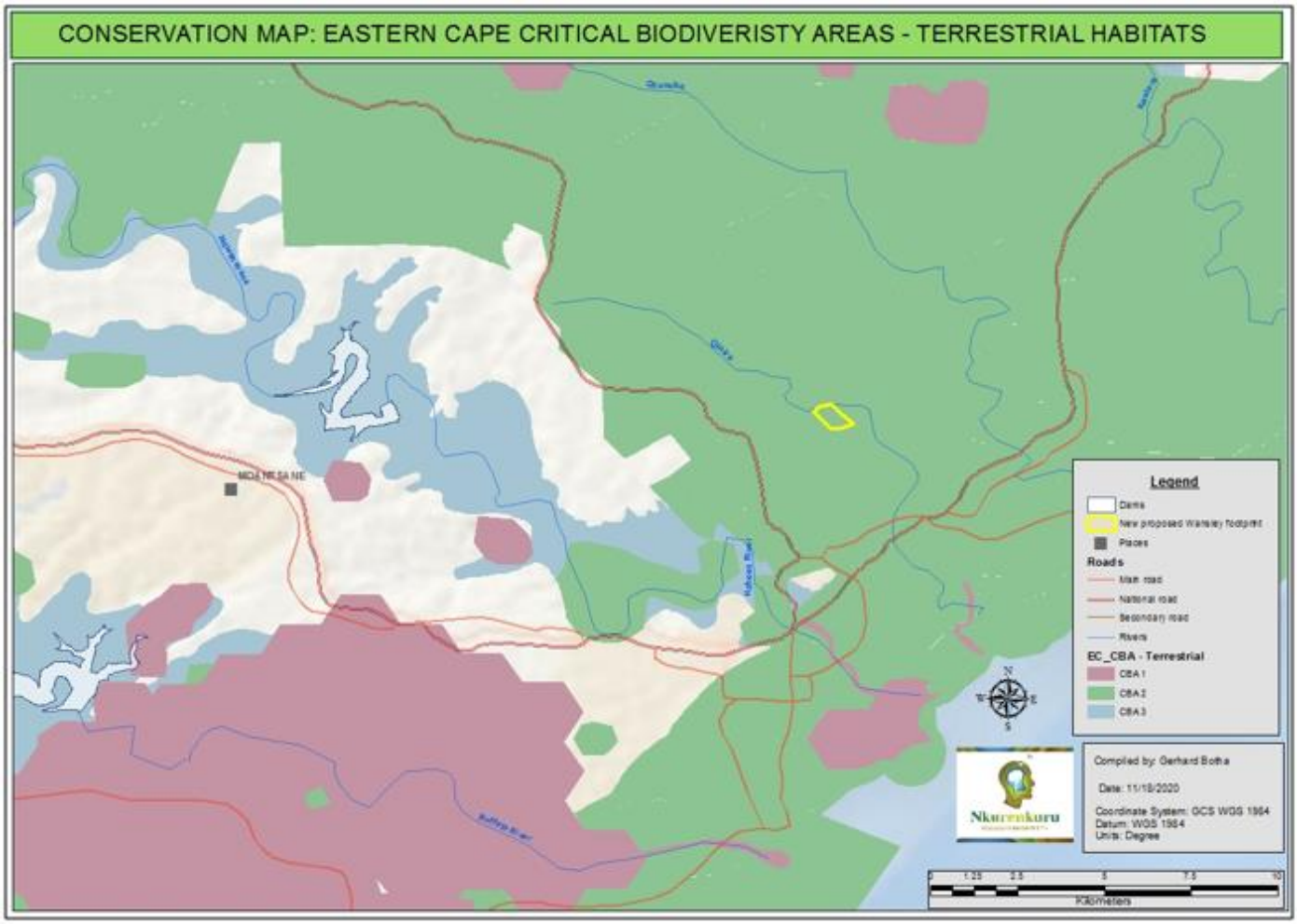


Figure 53: Map showing the location and extent of Terrestrial CBAs in relationship to the proposed extension area identified according to the Eastern Cape Biodiversity Conservation Plan. (Image obtained from the EFRSA).

SITE SPECIFIC VEGETATION

(Refer to the Ecological and Freshwater Resource Study and Assessment, November 2020 attached as Appendix H2)

The EFRSA reports that the bulk of the vegetation within of the study site resembles a severely modified and transformed form of Albany Coastal Thicket. These areas have been subjected to historical cultivation (pineapple cultivation) and can be described as secondary vegetation that have established within these areas. The more natural areas are associated with the riparian zones and small pockets of near-natural to natural pockets of thickets. Other disturbances within the property includes severe invasion of IAPs (especially *Lantana camara, Solanum mauritianum, Solanum chrysotrichum* and *Cestrum laevigatum* within the riparian areas), mining activities, building infrastructure, gravel roads, bush clearing and farm dams.

The secondary vegetation can be divided into two distinguishable thicket types according to their dominant structure and species composition. The more gradual

plateaus and slopes of the rolling hills comprise of a more open wooded grassland whist the steeper north facing slope is characterized by a much denser woodland thicket with a less prominent grass and herb/forb cover. Furthermore, this denser thicket contains a lower diversity of plants in comparison with the open wooded grassland.

Key species found within the open wooded grassland include:

Searsia pallens, Arctotis arctotoides, Brachylaena elliptica, Cineraria lobate, Gerbera pilosellides, Osteospermum grandidentatum, Diospyros dichrophylla, Eragrostis chloromelas, Melinis repens, Koeleria capensis, Solanum mauritianum, Lantana camara and Vachellia natalitia.

Key species of the dense wooded thicket (encroaching thicket) include:

Brachylaena elliptica, Diospyros dichrophylla, Olea exasperata, Cymbopogon excavates, Hyparrhenia hirta, Melinis repens, Solanum mauritianum and *Lantana camara*

Pockets and remnants of the original thicket vegetation have survived within less arable lands as well as narrow strips along portions of the riparian zone. Unfortunately, these patches have been subjected to the invasion of *Lantana camara*. Fortunately, the dense natural stands of woody species have prohibited the “penetration” of these invasives and they mostly persist as a dense, almost impenetrable band around these patches and only establish where natural tree species have been removed.

Key species of the dense wooded thicket (encroaching thicket) include;

Mystroxylon aethiopicum, Diospyros dichrophylla, Vachellia natalitia, Olea exasperata, Pittosporum viridiflorum and *Hyppobromus pauciflorus*

Probably the most significant ecological features within the Wansley property are the riparian zones associated with the short tributary and the Qinira River. These riparian zones comprise of a tall, dense tree layer and a relative well-developed shrub layer. In some areas the tree canopy may become closed, almost forest like. Even though, some disturbances have occurred within these zones, these riparian fringes have largely maintained their functionality and are regarded as important biological features within the property as well as within the larger area. Of some concern is the establishment of the highly invasive IAP, *Cestrum laevigatum* along the channels of especially the short tributary. The potential of this species, spreading and invading downstream habitats are extremely high.

Key species of the drainage lines include;

Justicia protracta, Cineraria lobate, Cirsium vulgare, Helichrysum rosum, Senecio serratuloides, Plantago major, Paspalum urvillei, Sporobolus africanus, Lantana camara, Solanum chrysotrichum and Solanum mauritianum

Key species of the riparian fringes include;

Harpephyllum caffrum, Buxus macowanii, Elaeodendron croceum, Dracaena aletriformis, Acalypha glabrata, Schotia brachypetala, Erythrina lysistemon, Pittosporum viridiflorum, Olinia emerginata, Podocarpus latifolius, Vepris lanceolata Zanthoxylon capense, Sideroxylon inerme and Cestrum laevigatum.

The proposed extension area will avoid all streams, rivers as well as the riparian zones. Furthermore, only a portion of the natural thicket will be impacted by the proposed development. The specialist notes that it is highly unlikely that this development will have any impact on the status of the Albany Coastal Thicket. Furthermore, no sensitive and important biodiversity features will be impacted by the proposed development.

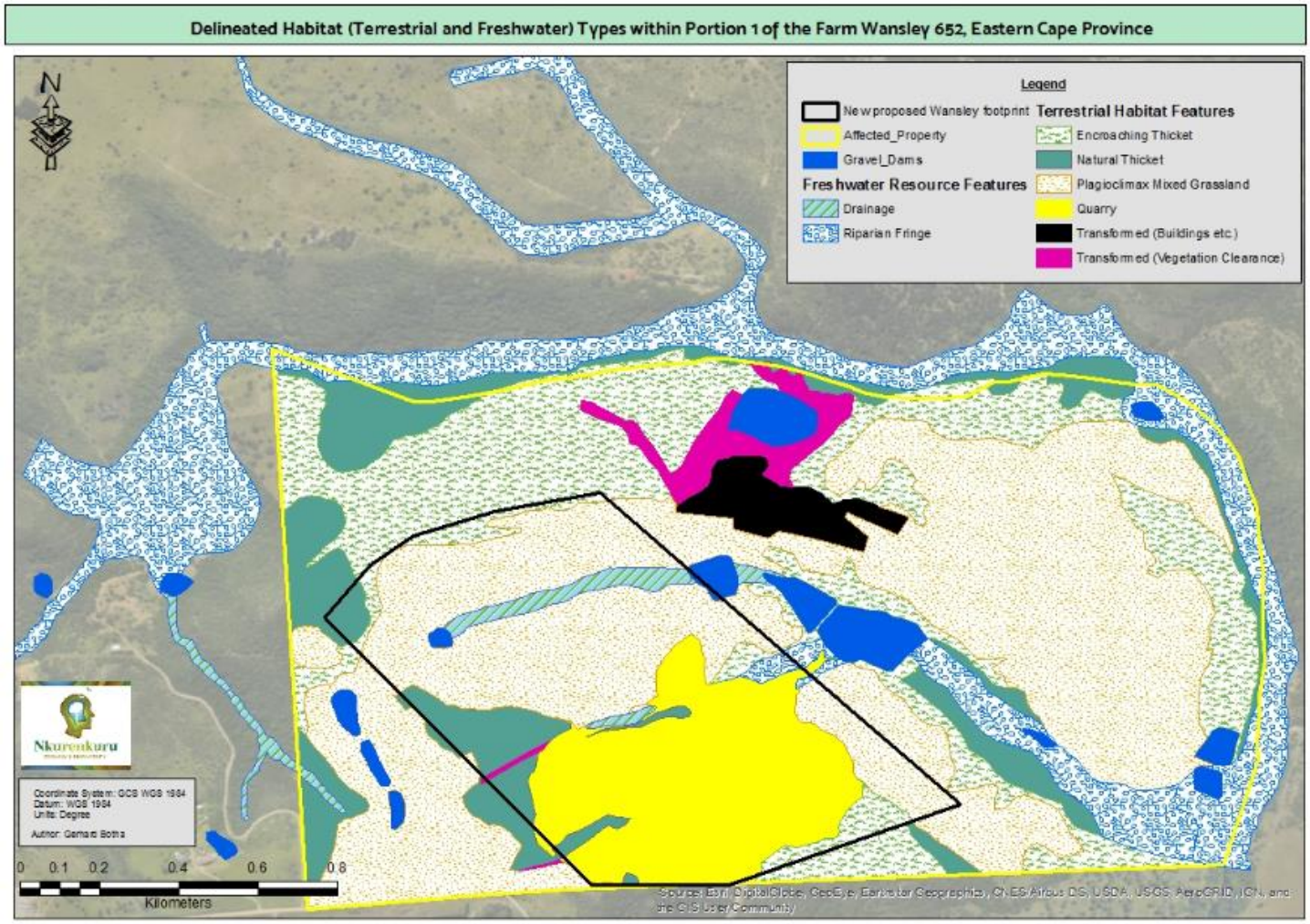


Figure 54: Map showing the classified habitat features identified within the affected property. (Image obtained from the EFRSA).

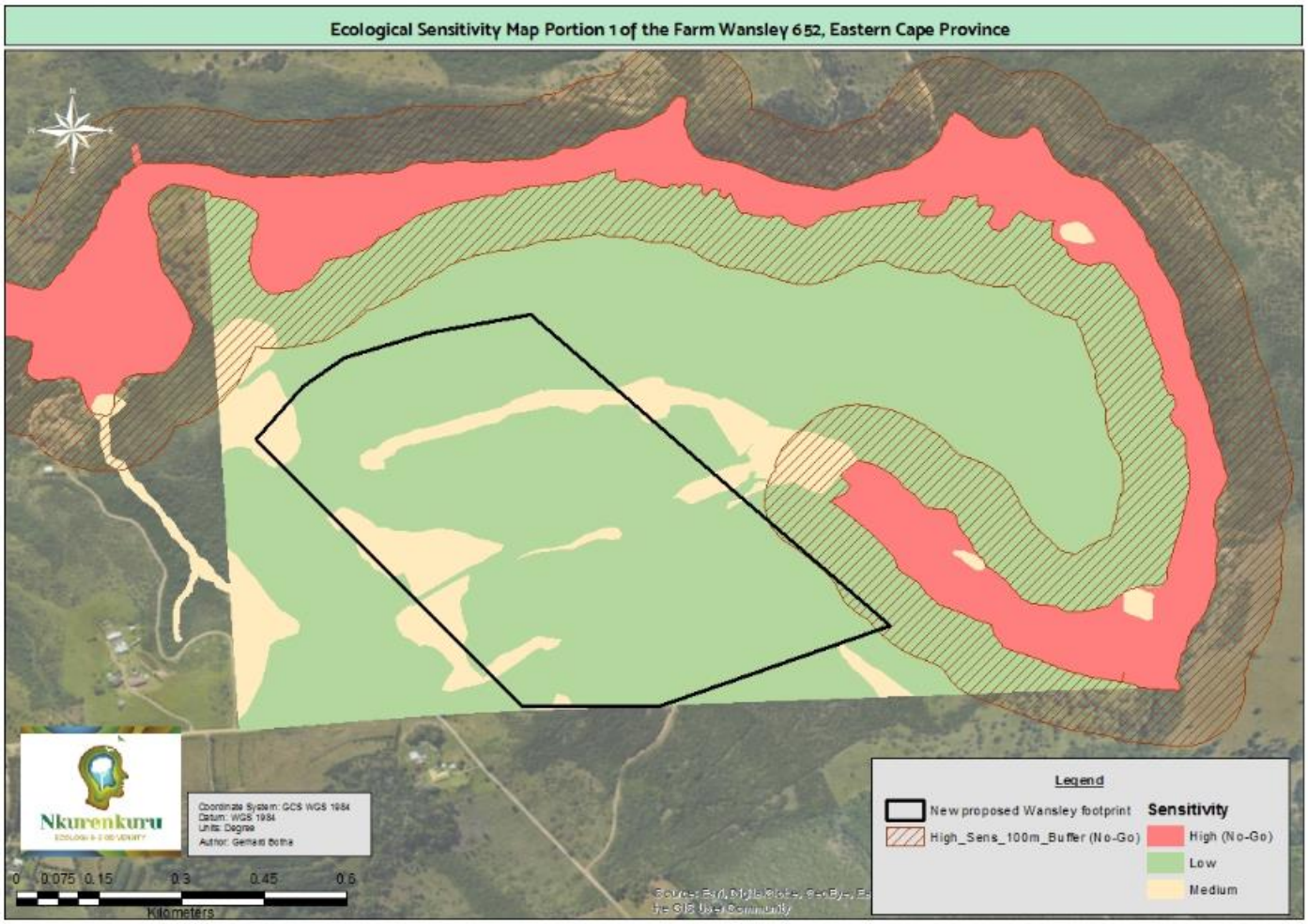


Figure 55: Map illustrating the ecological (aquatic and terrestrial) sensitivity of the project site. (Image obtained from the EFRSA).

Species of Conservation Importance:

Regarding conservation important species, no Red Data Species were recorded within the development footprint, whilst four plant species were identified that are listed as protected within the Eastern Cape Nature Conservation Ordination namely *Aristia abyssinica, Moraea* spp., *Zanthoxylon capense and Pittosporum viridiflorum. Pittosporum viridiflorum* is furthermore also protected within the National Forest Act. These species do not occur in high densities within the project footprint and it is not expected that this development will have a significant impact on the status or population structure of these species within the region.

Conclusion of the EFRSA:

The EFRSA concludes that the vegetation within the study site resembles a severely modified and transformed form of Albany Coastal Thicket. The bulk of the proposed

development will occur within the open wooded grassland with a small portion of natural thicket that will be impacted. This portion of natural thicket is however, limited in size and isolated from other natural areas and thus only provides limited functions and services. As such, the current layout is regarded as acceptable from an ecological point.

A pre-construction walk-through of the final mining footprint, by a suitably qualified botanist, for species of conservation concern that would be affected is recommended and accompany all plant permit applications (in compliance with the Eastern Cape Nature and Environmental Conservation Ordinance and DEDEAT/DAFF permit conditions).

With adequate mitigation and management measures in place for the construction and operational phases, continued habitat functioning is likely to remain largely unchanged for this project.

From an ecological perspective, no objective or motives (identification of impacts of high ecological significance, etc.) were identified which would hinder the establishment of this development. Activities and impacts are regarded as acceptable from an ecological perspective and will not cause detrimental impacts to the ecological features located within the affected area and surrounding properties. Therefore, it is the opinion of the specialist that the development may be authorised, subject to the implementation of the recommended mitigation measures.

The EFRSA further notes that due to the extent of the proposed mining footprint as well as the location within an already largely transformed and disturbed area mining activities will have a very limited contribution to the cumulative impacts of the area and will not:

- compromise the ecological functioning of the larger “natural” environment;
- disrupt the connectivity of the landscape for fauna and flora and impair their ability to respond to environmental fluctuations;
- compromise the status and ecological functioning of the Ecological Support Areas (fracturing and disruption of the connectivity of these ESAs), and subsequently will not be impacting the Province’s ability to meet its conservation targets.

SITE SPECIFIC FAUNA

The current mining activities, highly altered nature of the natural footprint, and weeds/alien plant invasion all contribute to the limited ability of the study area to sustain faunal populations, as demonstrated by the species-poor status of the area. As

mentioned earlier, no faunal species of conservation concern were identified within the approved mining area or proposed extension footprint.

Further to this it was proposed that the current faunal component of the farm has, to a certain degree, became desensitized and accordingly adapted to the operational activities at the property. Sensitive and shy fauna is known to move away from the work areas as a result of the increased noise and human presence, while in numerous cases animals such as the rock hyrax (*Procavia capensis*) take advantage of the exposed rocky surfaces at quarries, that in turn could have a positive impact on the small predator count of the greater area.

Although the proposed extension of the mining footprint will gradually result in the loss of faunal habitat, the earmarked area is not deemed to be of high significance in terms of sustaining an important faunal component.

As mentioned earlier, the riparian fringes associated with the Qinira River falls outside the earmarked mining extension. The riparian areas are deemed to be of higher importance as it presents the natural fauna that may visit the property with a more intact habitat. Therefore, the conservation of the riparian fringes remains an important aspect and should the recommendations and mitigation measures proposed by the ecologist be implemented it was noted that the impacts on the current faunal population of the property will be insignificant.

Potential effect of blasting on caged exotic birds:

(Information abstracted from the literature review by Dr DJ van Niekerk attached as Appendix K)

Following receipt of the concerns voiced by Mr and Mrs Boniface regarding the potential impact that blasting at the quarry may have on their caged birds and aviaries Dr DJ van Niekerk (ornithologist) was approached to investigate this matter through an overview of the relevant scientific literature.

Van Niekerk mentions that one of the earliest studies on the effect of anthropogenic noise on birds was concerned with the potential effects of the, then expanding, civilian and military air bases on poultry production. This study found that daily exposure of chicken eggs in incubators to sound intensities up to 96 dB and 131 dB had no measurable effect on the hatchability or quality of the chicks produced. That was eggs in incubators, however 11 out of 12 hens exposed to sound intensities of about 115 dB discontinued brooding within 2 hours (Stadelman 1958).

There are three classes of noise (Larkin 2005): 1) Continuous (chronic) noise lasts a long time without interruption (e.g. urban noise); 2) Impulse noise lasts for a short duration (e.g. noise from an explosion); 3) Intermediate or hybrid noise consists of trains of impulses (e.g. helicopter rotor noise). Continuous noise and impulse noise differ both in their potential physical effects (i.e. hearing damage), and in their sensory-mediated physiological and behavioural effects (Francis & Barber 2013; Larkin 2005).

Francis & Barber (2013) proposed a useful framework for understanding noise impacts on wildlife. According to their framework, the potential severity of an impact from a noise stimulus will depend on the frequency, intensity (i.e. loudness or amplitude) and temporal features of the stimulus as presented in the following figure.

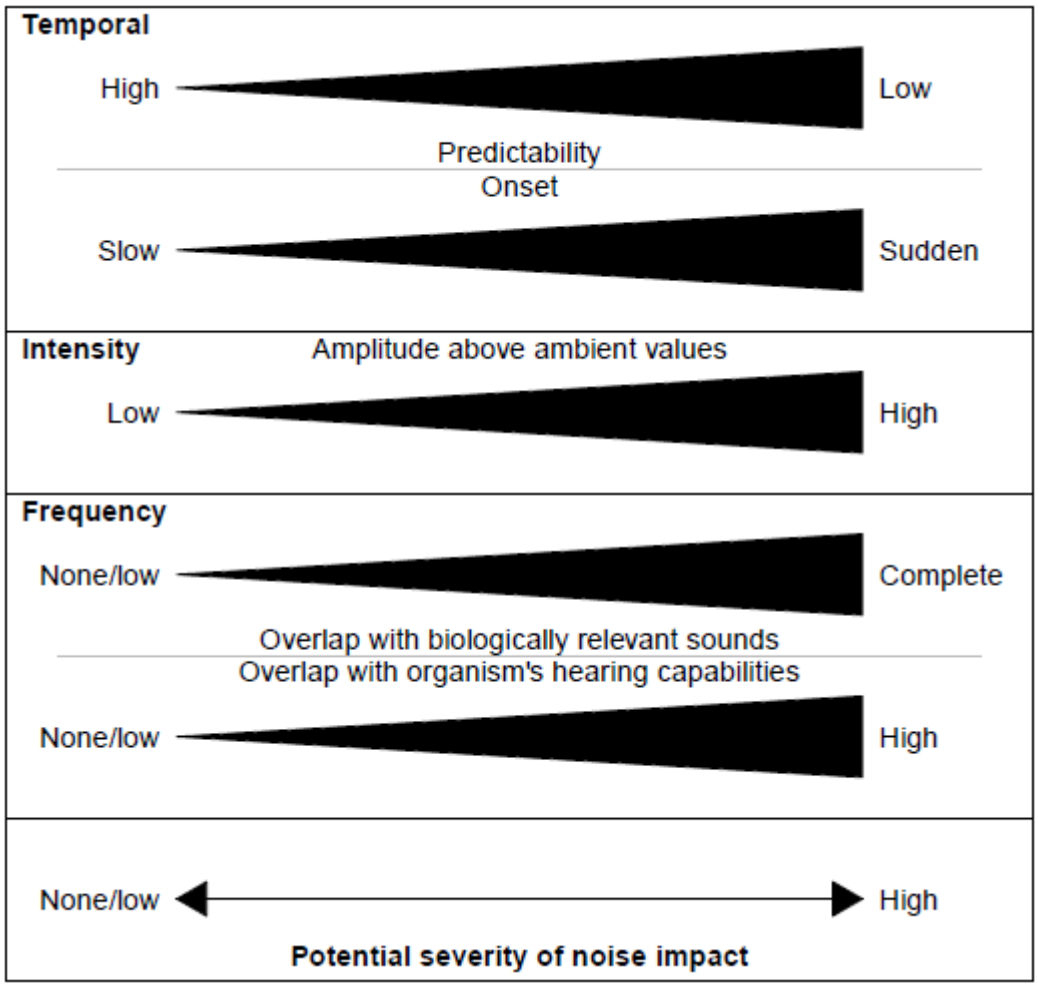


Figure 56: The potential severity of a noise impact from a noise stimulus will depend on the temporal, intensity and frequency features of the stimulus. (Image obtained from the Van Niekerk literature review)

For this project the focus was placed on aspects relevant to the effects of blasting on caged birds. For a bird to be impacted by blasting ±800 m away, it must at least be able to hear/feel it. Modelling of ground vibration and airblast at various distances around the Wansley quarry (refer to Part A(1)(g)(iv)(c) *Description of the activities to*

be undertaken – Site Specific Air Quality and Noise Ambiance) indicates that at 800 m vibration would be at least 0.56 mm/s, and the airblast will be ±110 dB SPL (Sound Pressure Level). Local geological conditions will affect ground vibration levels, and airblast will be affected by prevailing weather conditions (Kohler 2020).

The hearing capabilities of birds varies from one species to the next, but at 110 dB SPL the frequency range of airblast falls well within the hearing range of birds (Dooling 2002). This increases the potential severity of the noise impact (Fig. 56, Frequency). The louder the airblast is relative to ambient noise, the greater the potential severity of the noise impact (Fig. 56, Intensity). It is not known what the ambient noise at the site in question is, but it is likely to be substantially lower than the estimated 110 dB SPL of an airblast. This will increase the potential severity of the noise impact. In addition, the ground vibration at ±800 m, which will at least be “Distinctly perceptible" to humans (Kohler 2020), will most certainly be felt by birds on the ground as well. This may be particularly important for a bird on a nest.

The proposed blasting activity represent an infrequent (once or twice monthly), sudden (impulse) and unpredictable noise stimuli, attributes which increases the potential severity of the noise impact (Fig. 56, Temporal). Being at the one extreme of a “disturbance-interference continuum", it could be perceived by the birds as a threat, in which case it may trigger a startle/hide responses similar to responses to real predation risk or non-lethal human disturbance.

Dr Van Niekerk notes that collectively, the frequency, intensity and temporal features of the noise stimulus caused by blasting ±800 m away indicates that it could potentially have a significant negative impact on the caged birds. However, it is difficult to provide specifics about the nature of this impact, partly because the study of the effect of anthropogenic noise on birds is a relatively new research field, and partly because most studies investigate chronic anthropogenic noise such as road and urban noise - not to mention the fact that no specific studies on the impact of impulse noise on caged birds was found. As a consequence, statements made about noise is often in reference to chronic noise, and when no clear distinction is made between it and impulse noise - both differ in their potential physical effects (i.e. hearing damage), and in their sensory-mediated physiological and behavioural effects that can be confusing.

It is unlikely that the blasting will cause permanent or temporary hearing loss in the caged birds as this might only occur when a bird is extremely close to the source of the noise (Dooling & Popper 2007). In addition, it is unlikely that it would have a negative impact on fertile eggs and the embryos therein because not even sonic

booms can break bird eggs or reduce the hatchability of the embryos (Bowles et al. 1991; Bowles et al. 1994; Ting et al. 2002; See also Stadelman 1958). Instead, the airblast may have its greatest influence on the behaviour of the birds, which then translates into fitness costs (Francis & Barber 2013). Van Niekerk found only a few studies on impulse noise involving blasting:

- Holthuijzen et al. (1990) investigated the response of Prairie Falcons (*Falco mexicanus*) to ongoing construction blasting and experimental charges placed at fixed distances from nest sites not normally exposed to blasting at such distances. Unfortunately, there are several methodological issues which make it difficult to draw firm conclusions from this study (see Larkin 2005).
- Bednarz (1984) conducted a correlational study of three comparable isolated mountain ranges in New Mexico, one of which has been intensively impacted by mining operations (including blasting) and associated human intrusions for several years. During surveys at each mountain in 1980, he found Prairie Falcon (*Falco mexicanus*) nests at two of the mountains, and none at the one with mining operations.

Van Niekerk concludes that in the apparent absence of studies on the impact of impulse noise on caged exotic birds, potential impact scenarios have to be deduced from relevant literature such as those mentioned above.

The projected features of the impulse noise stimulus from blasting at the Wansley Quarry suggest that there is a real potential for a negative impact on the caged birds. However, the nature of this impact is unclear. One of the worst-case scenarios would be if it somehow interferes with breeding. Van Niekerk proposed that one way to mitigate this would be to limit blasting at the Wansley Quarry as much as possible (especially during the breeding seasons of the birds) and/or deploy noise suppression features around the bird enclosures. A complimentary strategy would be for the bird farmer (Mr Boniface) and quarry management to work together on a research project addressing the current knowledge gap with regards to the impact of impulse noise on caged birds. Further to this it is proposed that vibration and noise monitoring be done at the bird enclosures prior to the first blast (to establish a baseline), and thereafter with each blast to determine the exact ground vibration and noise levels experienced during a blast at the bird enclosures. Following the first readings (after the first blast) guidance could be obtained from an ornithologist regarding the best way forward to minimise the potential impact of blasting on the caged birds in question.

Also refer to Part A(1)(g)(viii) *The possible mitigation measures that could be applied and the level of risk – Fauna*.

SITE SPECIFIC CULTURAL AND HERITAGE ENVIRONMENT

(Refer to the Heritage Impact Assessment, October 2020 attached as Appendix L)

The Heritage Impact Assessment (HIA) notes that the archaeological record for the greater study area consists of the Stone Age and Iron Age.

Stone Age:

South Africa has a long and complex Stone Age sequence of more than 2 million years. The broad sequence includes the Later Stone Age (LSA), the Middle Stone Age (MSA) and the Earlier Stone Age (ESA). Each of these phases contains sub-phases or industrial complexes, and within these we can expect regional variation regarding characteristics and time ranges.

The three main phases can be divided as follows:

- Later Stone Age - associated with Khoi and San societies and their immediate predecessors. Recently to ~30 thousand years ago;
- Middle Stone Age - associated with *Homo sapiens* and archaic modern humans. 30 - 300 thousand years ago;
- Earlier Stone Age - associated with early *Homo* groups such as *Homo habilis* and *Homo erectus*. 400 000 - >2 million years ago.

The Early Stone Age has not been well documented in the area although some isolated ESA material was recorded (Van Ryneveld 2010a) together with MSA artefacts from the Needs Camp / Potsdam area (Van Ryneveld 2014c). At Ikwezi Anderson (2011) documented both MSA and LSA artefact scatters and similar sites can be expected. Two important sites in the larger area is the Nahoon footprints site, where hominin / human footprints dating to 200,000 BP have been discovered (Deacon 1966). The site is situated approximately 10 km east north-east of Gonubie. Another important site is the Klasies River Site (Singer and Wymer, 1982; Deacon, 1989, 1995) where the earliest *Homo sapien*, or modern human remains, dating to 125,000BP was recorded.

The greater area contains numerous sites relating to the LSA. Deflated coastal shell middens was reported on by Binneman & Webley (1996). Anderson (2009) identified seven LSA shell midden sites at the East London IDZ. In addition, an ephemeral shell scatter situated approximately 2.5-3 km inland, on the banks of the Buffalo River, was reported on (Van Ryneveld 2010b). The 5-km strip from the coast inland is considered

a 'sensitive' zone where shell middens may be expected to occur as well as a sensitive environment where the prehistoric presence and use of fresh water resources may be still be evidenced.

Iron Age:

Bantu-speaking people moved into Eastern and Southern Africa about 2,000 years ago (Mitchell, 2002). These people cultivated sorghum and millets, herded cattle and small stock and manufactured iron tools and copper ornaments. Because metalworking represents a new technology, archaeologists call this period the Iron Age. Characteristic ceramic styles help archaeologists to separate the sites into different groups and time periods. The first 1 000 years is called the Early Iron Age.

Several Iron Age sites occur in the greater area and the following Iron Age ceramic *facies* are known to occur:

- Msuluzi Facies AD 650 -750 (Binneman 1996, Huffman 2007);
- Ndondwane AD 750 – 950 (Binneman et al 1992).

Canasta Place, an Iron Age Site, situated approximately 15 - 20km west of East London and outside of the study area constitutes the southernmost known Early Iron Age site in South Africa (Nongwasa 1994). Another Early Iron Age site, the site of Kulubele (Binneman 1996) dating to AD 800 is found along the Great Kei River. From the late 1500's / early 1600's increasing numbers of Late Iron Age Nguni people moved south, into the Eastern Cape, as a result of Zulu tribal warfare and the resultant Mfecane. These people largely displaced resident KhoiSan groups (Mitchell 2002). Another site worth mentioning is the Cove Rock Late Iron Age site, situated south of the Buffalo River (Coetzee 2008, Van Ryneveld 2008a and b). The site is closely tied with the history of Nongqawuse, the young Xhosa prophetess who in 1856 prophesized the 'Cattle Killing' (1856-1857) to ensure expulsion of the white man from Xhosa territory.

Historical Information:

Numerous known Colonial Period Resources dating back to the 1840's occurs in the greater study area mostly in the vicinity of the East London harbour (Van Ryneveld 2007, 2010a, 2014a, 2014b) and Webley & Vernon (2008). The study area is also known for many shipwrecks that are recorded along the East London coastline, roughly from the Kei River mouth in the north to Kaysers' Beach in the south (Van Ryneveld 2015).

Cultural Landscape:

The site under investigation is located in a rural area in the Eastern Cape characterised by agriculture and mining of the existing quarry. Aerial images indicate that the area was mostly cultivated from the 1960's onwards with mining activities commencing by 2009.

HIA Findings:

Previous disturbances relating to mining and agricultural developments are clearly visible in this area. These developments would have impacted on heritage resources if any occurred in the study area and the field survey confirmed that no structures occur in the study area and no archaeological material of significance was noted. A single undecorated ceramic was recorded at S32° 54.787' E27° 55.407' but this is an isolated find without any other cultural material or features and are of no significance. Stone cairns were also noted and these are associated with the agricultural activities in the study area. No burial sites were recorded, however, if any graves are located in future they should ideally be preserved *in-situ* or alternatively relocated according to existing legislation.

HIA Conclusion:

Due to the lack of significant heritage resources in the study area the impact of the proposed project on heritage resources is considered low and impacts can be mitigated to an acceptable level. The specialist therefore recommended that the proposed project can commence on the condition that the recommendations as listed in this report are implemented as part of the EMPR and based on approval from SAHRA.

Palaeontological Context:

(Refer to the Palaeontological Impact Assessment, October 2020 attached as Appendix M)

The palaeontological sensitivity of the area under consideration is presented in the following figure. From the SAHRIS map (below) the area is indicated as very highly sensitive (red) on the margins. The study area for Wansley Quarry is in the dolerite with only the margins occurring in the Middleton Formation. Dolerite is of volcanic origin and does not preserve fossils, and the dykes tend to destroy fossils in their immediate vicinity.

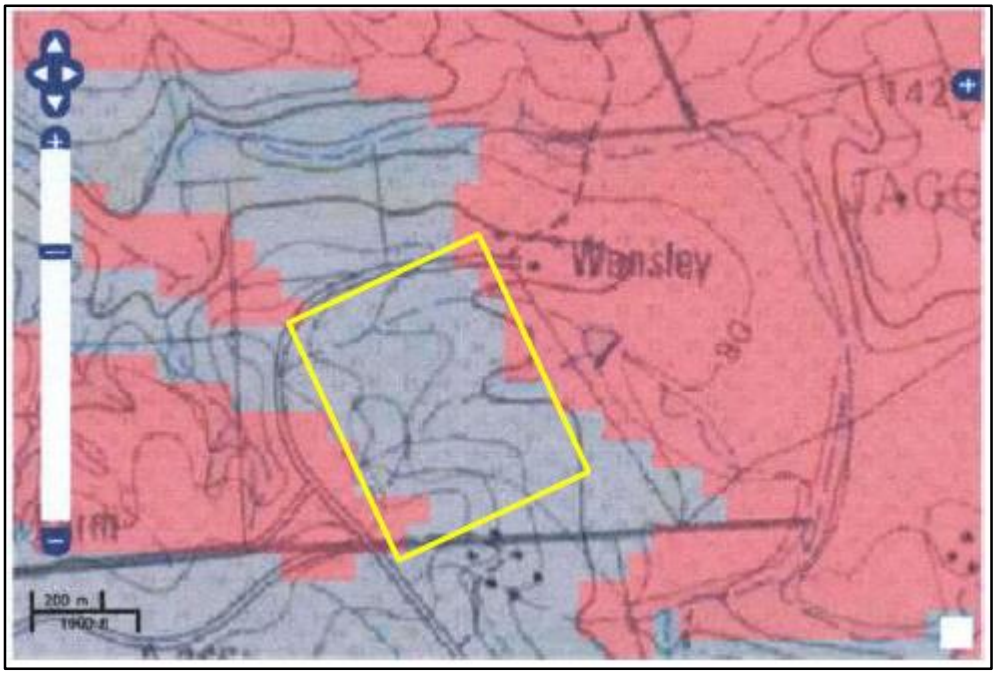


Figure 57: SAHRIS palaeosensitivity map for the site shown within the yellow rectangle. Background colours indicate the following degrees of sensitivity: red = very highly sensitive; blue = low; grey = insignificant/zero.

The area proposed for development is underlain by geological sediments of the Adelaide Subgroup of the Beaufort Group (of very high palaeontological sensitivity) and Jurassic Dolerite, which has zero paleontological sensitivity. According to the currently accepted biostratigraphy, the whole of the Adelaide Subgroup has been divided into eight Assemblage Zones based on the dominant or temporally exclusive vertebrate fossils (Rubidge et al., 1995; Rubidge, 2005). If vertebrate fossils were common in this region and had been well mapped then the specific Assemblage Zone would have been indicated in the literature. Common names for the fossils that could occur here are fish, amphibians, reptiles, therapsids, terrestrial and freshwater tetrapods, as well as freshwater bivalves, trace fossils including tetrapod trackways and burrows. Where the vertebrates do not occur it is possible to find sparse to rich assemblages of vascular plants of the late Glossopteris Flora, including some petrified logs), and insects are also prevalent at some sites.

The lower part of the Middleton Formation is in the Pristerognathus Assemblage Zone, the middle part is in the Tropidostoma Assemblage Zone and the upper part in the Cistecephalus, Daptocephalus and Lystrosaurus Assemblage Zones. The Balfour Formation corresponds to the Dicynodon Assemblage and is overlain by the Lystrosaurus Assemblage Zone. In general, the fauna is composed of anapsids (no temporal openings in the skull) and synapsids (single pair of lateral temporal skull openings; more like mammals). The common genera are *Pristerognathus, Diictodon, Tropidostoma, Cistecephalus, Aucalephalus* and *Oudenodon*. Fossil plants also occur

in the Adelaide Subgroup and they are from the *Glossopteris* flora and include leaf impressions of *Glossopteris*, early gymnosperms, lycopods, sphenophytes, ferns and silicified wood (Plumstead, 1969; Anderson and Anderson, 1985). These would be in the form of impressions on the fine-grained shales or mudstones. Impressions on coarser sandstones preserve very little diagnostic details.

Palaeontological Site Visit Observations:

The Palaeontological Impact Assessment (PIA) notes that based on the site visit and the lack of any previously recorded fossils from the area, it is extremely unlikely that any fossils would be preserved in the shales around the quarry site, and certainly not in the dolerites. Although no fossils were seen during the site visit, there is a very small chance that fossils may occur in the unexposed shales of the Adelaide Subgroup. Therefore, a Fossil Chance Find Protocol should be added to the EMPR: if fossils are found once mining has commenced then they should be rescued and a palaeontologist called to assess and collect a representative sample.

The proposed development is in line with the current land use and will have a low impact on the surrounding cultural landscape. Visual impacts to scenic routes and sense of place are also considered to be low due to the current mining character of the site and other developments in the area.

SITE SPECIFIC SOCIO-ECONOMIC ENVIRONMENT

(Information extracted from the Social and Labour Plan of Wansley Siyakhula (Pty) Ltd attached as Appendix N)

A Social and Labour Plan (SLP) was submitted as part of the S102 amendment application of the MR Holder. The SLP forms the basis for the implementation of programmes and projects as key activity drivers of the development and operation of the mining activity in the East London area. It offers the building blocks for future economic development and growth of the local area. The scope of the document offers the MR holder a platform to engage in the development of the local economy and community through a basis of human resource development, economic delivery, business development and community participation. The nature of the document is therefore aimed at the widest possible comprehension and stimulation for inputs.

The SLP notes that, upon approval, the MR Holder intends to spend at least R 636 418.70 on Human Resource Development, and R 177 325.20 on Local Economic Development (LED) over a 5-year period. The Local Economic Development project identified, and approved by the local authority, for the mine consists of assistance to Guardians of Hope that is a non-profit organisation that takes care of abandoned and

destitute babies. The care facility is situated in East London, which falls within the BCMM. In addition to the LED project, Wansley Quarry will afford two employees, with an education level lower than ABET 4, the opportunity to become functionally literate as the intension of the quarry is for all employees to obtain an education level of at least ABET level 4.

Portable skills training to be offered by the quarry to employees will include at least the following:

- Driver competence;
- Excavator operator training;
- First aid training;
- Introduction to core business training;
- Mobile crusher operator training; and
- Safety representative training.

These skills will be expanded on by the training of employees in:

- Codes of practice;
- Environmental awareness;
- Health and safety in the workplace;
- HIV/AIDS and Tuberculosis awareness;
- Loading and hauling; and
- Personnel protective equipment and emergency preparedness.

Additional contributions to be made by Wansley Quarry includes:

- Internal and external bursaries;
- Internship plan;
- Mentorship plan;
- Post matric programme where children from the community will be assisted in obtaining drivers licences; and
- School support to children of employees.

Wansley Quarry further indirectly supports the employment of procurement partners, through the payment for local services and suppliers.

Also refer to Part A(1)(f) *Need and desirability of the project* for the opinion of the Town and Regional Planner regarding the character of the surrounding area, and the anticipated impact of the proposed project thereon.

SITE SPECIFIC EXISTING INFRASTRUCTURE

A low voltage power line traverses the proposed extension footprint (see figure below).

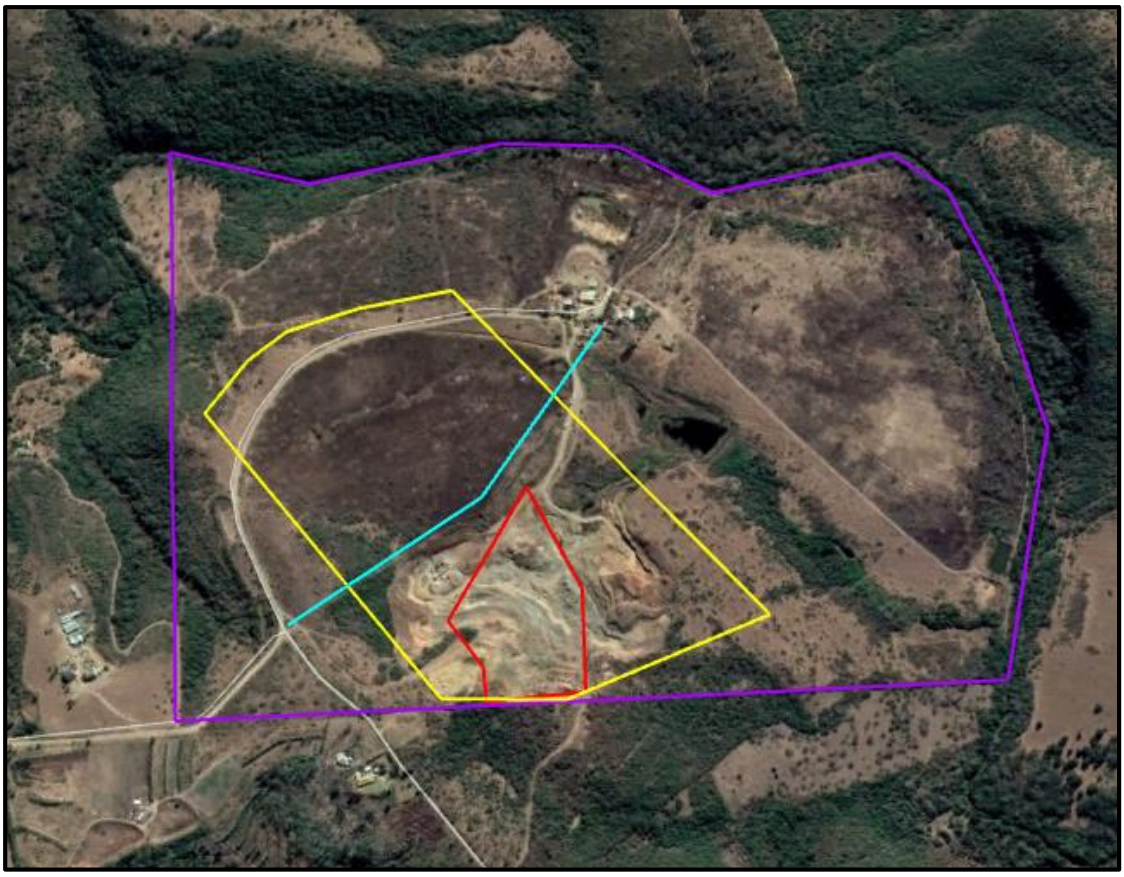


Figure 58: Satellite view showing the position of the power line (blue line) in relation to the proposed extension footprint (yellow polygon). (Image obtained from Google Earth).

As mentioned earlier, the MR Holder will approach Eskom regarding the deviation of the power line from the mining footprint, but until such time as the deviation is finalised a buffer no-go area of 10 m will be maintained around the power line. Eskom will be informed (in writing) at least two weeks prior to each blasting event.

(d) Environmental and current land use map.

(Show all environmental, and current land use features)

The environmental and current land use maps are attached as Appendix D.

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 approved EMPR of Wansley Quarry (2008) did not list or assess the impacts and risks associated with the mining operation. Therefore, the following impacts that were identified for each main activity in each phase are those associated with the S102 Application. 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, therefore the worst-case scenario and should be seen as a preliminary assessment. The degree of mitigation indicates the possibility of partial, full or no mitigation of the identified impact.

SITE ESTABLISHMENT AND INFRASTRUCTURE DEVELOPMENT

Alteration of the surrounding agricultural sense of place due to the proposed development

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: No Mitigation**	
2	5	1	2.6	2	5	3.5	**9**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Technology Alternative 1: Blasting**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Visual intrusion due to site establishment

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Partial**	
1	5	1	2.3	3	1	2	**4.6**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Technology Alternative 1: Blasting**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Potential impact on vegetation and listed and protected plant species

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
4	4	5	4.3	3	2	2.5	**10.7**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Potential impact on the ECBCP-CBA due to site establishment

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
4	4	5	4.3	2	1	1.5	**6.5**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Potential impact on fauna within the footprint area

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
4	4	5	4.3	2	1	1.5	**6.5**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Potential impact on archaeological artefacts or palaeontological finds

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
5	4	5	4.6	3	1	2	**9.2**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

STRIPPING AND STOCKPILING OF TOPSOIL AND/OR OVERBURDEN

Loss of agricultural land for duration of mining

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Partial**	
2	5	1	2.6	5	5	5	**13**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Technology Alternative 1: Blasting**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Potential impact on vegetation and listed and protected plant species

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
4	4	5	4.3	3	2	2.5	**10.7**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
4	4	5	4.3	3	2	2.5	**10.7**
Rating: Medium			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
4	4	5	4.3	3	2	2.5	**10.7**

Potential loss of riparian vegetation

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
4	4	5	4.3	3	2	2.5	**10.7**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
4	4	5	4.3	3	2	2.5	**10.7**
Rating: Medium			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
4	4	5	4.3	3	2	2.5	**10.7**

Dust nuisance as a result of stripping and stockpiling of topsoil/overburden

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	2	2	2	4	2	3	**6**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low-Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
2	2	2	2	4	2	3	**6**
Rating: Low-Medium			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
2	2	2	2	4	2	3	**6**

Noise nuisance due to stripping and stockpiling of topsoil/overburden

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Partial**	
2	2	2	2	3	2	2.5	**5**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low-Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Partial**	
2	2	2	2	3	2	2.5	**5**
Rating: Low-Medium			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Partial**	
2	2	2	2	3	2	2.5	**5**

Potential impact on archaeological artefacts or palaeontological finds

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
5	5	5	5	3	1	1.5	**7.5**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Loss of stockpiled topsoil

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	4	1	2.6	4	2	3	**7.8**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low-Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
3	4	1	2.6	4	2	3	**7.8**
Rating: Low-Medium			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
3	4	1	2.6	4	2	3	**7.8**

Potential infestation of the topsoil heaps and mining area with invader plant species

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
4	5	2	3.6	5	2	3.5	**12.6**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
4	5	2	3.6	5	2	3.5	**12.6**
Rating: Medium			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
4	5	2	3.6	5	2	3.5	**12.6**

Potential erosion of denuded areas

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	5	1	2.6	4	2	3	**7.8**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low-Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
2	5	1	2.6	4	2	3	**7.8**
Rating: Low-Medium			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
2	5	1	2.6	4	2	3	**7.8**

Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
4	5	1	3.3	3	2	2.5	**8.3**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low-Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
4	5	1	3.3	3	2	2.5	**8.3**
Rating: Low-Medium			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
4	5	1	3.3	3	2	2.5	**8.3**

Potential damage to the power line.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
4	4	4	4	3	1	2	**8**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low-Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
4	4	4	4	3	1	2	**8**
Rating: Low-Medium			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
4	4	4	4	3	1	2	**8**

DRILLING AND BLASTING

Disturbance to the surrounding agricultural practices due to the proposed blasting activities.

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Partial**	
3	5	2	3.3	4	4	4	**13.2**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Partial**	
3	5	2	3.3	4	4	4	**13.2**
Rating: N/A			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Health and safety risk posed by blasting activities

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			**Site Alternative 1**			**Degree of Mitigation: Full**	
5	5	3	4.3	4	3	3.5	**15**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Medium-High			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
5	5	3	4.3	4	3	3.5	**15**
Rating: N/A			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Dust nuisance caused by blasting activities.

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Partial**	
3	5	2	3.3	5	3	4	**13.2**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Partial**	
3	5	2	3.3	5	3	4	**13.2**
Rating: N/A			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Noise nuisance as a result of blasting.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Partial**	
3	5	4	4	4	3	3.5	**14**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Partial**	
3	5	4	4	4	3	3.5	**14**
Rating: N/A			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Potential damage to the power line.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
4	4	4	4	3	1	2	**8**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low-Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Low**	
4	4	4	4	3	1	2	**8**
Rating: N/A			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Potential impact of blasting on nearby exotic bird farm

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: To be confirmed**	
3	5	4	4	4	3	3.5	**14**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: To be confirmed**	
3	5	4	4	4	3	3.5	**14**
Rating: N/A			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Potential impact on build infrastructure surrounding the quarry

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
4	5	4	4.3	3	3	3	**12.9**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
4	5	4	4.3	3	3	3	**12.9**
Rating: N/A			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Potential impact of blasting on groundwater availability

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
4	5	4	4.3	3	1	2	**8.6**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low-Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
4	5	4	4.3	3	1	2	**8.6**
Rating: N/A			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

EXCAVATION, LOADING AND HAULING TO PROCESSING AREA

Visual intrusion associated with the excavation activities.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			**Site Alternative 1**			**Degree of Mitigation: Partial**	
3	5	2	3.3	5	5	5	**16.5**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Medium-High			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Partial**	
3	5	2	3.3	5	5	5	**16.5**
Rating: Medium-High			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Partial**	
3	5	2	3.3	5	5	5	**16.5**

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

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	4	2	3	5	5	5	**15**
Rating: Medium-High			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: Full**	
3	4	2	3	5	5	5	**15**
Rating: Medium-High			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: Full**	
4	4	2	3.3	5	5	5	**16.5**
Rating: Medium-High			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
3	4	2	3	5	5	5	**15**
Rating: Medium-High			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
3	4	2	3	5	5	5	**15**

Noise nuisance as a result of the mining activities

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Partial**	
2	4	2	2.6	3	5	4	**10.4**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
2	4	2	2.6	3	5	4	**10.4**
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
3	4	2	3	3	5	4	**12**
Rating: Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Partial**	
2	4	2	2.6	3	5	4	**10.4**
Rating: Medium			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Partial**	
2	4	2	2.6	3	5	4	**10.4**

Soil contamination from hydrocarbon spills

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
4	5	1	3.3	3	2	2.5	**8.3**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low-Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
4	5	1	3.3	3	2	2.5	**8.3**
Rating: Low-Medium			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
4	5	1	3.3	3	2	2.5	**8.3**

Potential impact on areas of palaeontological concern.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
5	5	5	5	3	1	2	**10**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
5	5	5	5	3	1	2	**10**
Rating: Medium			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
5	5	5	5	3	1	2	**10**

Potential damage to the power line.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
4	4	4	4	3	1	2	**8**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low-Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
4	4	4	4	3	1	2	**8**
Rating: Low-Medium			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
4	4	4	4	3	1	2	**8**

Unsafe working environment for employees.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
5	5	1	3.6	3	5	4	**14.4**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
5	5	1	3.6	3	5	4	**14.4**
Rating: Medium			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
5	5	1	3.6	3	5	4	**14.4**

Mining through the drainage lines in the footprint area

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: No Mitigation**	
2	5	1	2.6	5	1	3	**7.8**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low-Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: No Mitigation**	
2	5	1	2.6	5	1	3	**7.8**
Rating: Low-Medium			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: No Mitigation**	
2	5	1	2.6	5	1	3	**7.8**

Potential impact on localised surface water quality

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
4	3	3	3.3	4	3	3.5	**11.5**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
4	3	3	3.3	4	3	3.5	**11.5**
Rating: Medium			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
4	3	3	3.3	4	3	3.5	**11.5**

Potential impact on the Mn10118 St / W-Road within the mining boundary

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	4	2	3	5	1	3	**9**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low-Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
3	4	2	3	5	1	3	**9**
Rating: Low-Medium			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
3	4	2	3	5	1	3	**9**

PROCESSING, STOCKPILING AND TRANPORT OF MATERIAL

Dust nuisance generated by the processing plant and transport of material.

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	4	2	3	5	5	5	**15**
Rating: Medium-High			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: Full**	
3	4	2	3	5	5	5	**15**
Rating: Medium-High			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: Full**	
4	4	2	3.3	5	5	5	**16.5**
Rating: Medium-High			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
3	4	2	3	5	5	5	**15**
Rating: Medium-High			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
3	4	2	3	5	5	5	**15**

Noise nuisance stemming from operation of the processing plant and transport of material.

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Partial**	
3	4	2	3	3	5	4	**12**
Rating: Medium			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: Partial**	
3	4	2	3	3	5	4	**12**
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
4	4	2	3.3	3	5	4	**13.2**
Rating: Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Partial**	
3	4	2	3	3	5	4	**12**
Rating: Medium			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Partial**	
3	4	2	3	3	5	4	**12**

Potential contamination of environment due to improper waste management.

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
4	5	1	3.3	3	2	2.5	**8.3**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low-Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
4	5	1	3.3	3	2	2.5	**8.3**
Rating: Low-Medium			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
4	5	1	3.3	3	2	2.5	**8.3**

Overloading of trucks impacting road infrastructure.

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: High			**Site Alternative 1**			**Degree of Mitigation: Full**	
4	5	5	4.6	4	5	4.5	**20.7**
Rating: High			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: Full**	
4	5	5	4.6	4	5	4.5	**20.7**
Rating: High			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: Full**	
4	5	5	4.6	4	5	4.5	**20.7**
Rating: N/A			**Technology Alternative 1: Blasting**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Degradation of the access roads.

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			**Site Alternative 1**			**Degree of Mitigation: Full**	
4	4	4	4	4	5	4.5	**18**
Rating: Medium-High			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: Full**	
4	4	4	4	4	5	4.5	**18**
Rating: Medium-High			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: Full**	
4	4	4	4	4	5	4.5	**18**
Rating: N/A			**Technology Alternative 1: Blasting**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Traffic impact on the surrounding gravel roads as a result of the mining activity.

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	5	4	4	4	5	4.5	**18**
Rating: Medium-High			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: Full**	
3	5	4	4	4	5	4.5	**18**
Rating: Medium-High			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: Full**	
4	5	4	4.3	4	5	4.5	**19.3**
Rating: N/A			**Technology Alternative 1: Blasting**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Potential impact on surrounding area should the SWD's fail.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	5	2	3.3	3	1	2	**6.6**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low-Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
3	5	2	3.3	3	1	2	**6.6**
Rating: Low-Medium			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
3	5	2	3.3	3	1	2	**6.6**

Contribution of mine to local economic development **(Positive Impact)**.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High (+)			**Site Alternative 1**			**Degree of Mitigation: N/A**	
1	5	5	3.6	5	5	5	**18**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Medium-High (+)			**Technology Alternative 1: Blasting**			**Degree of Mitigation: N/A**	
1	5	5	3.6	5	5	5	**18**
Rating: Medium-High (+)			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: N/A**	
1	5	5	3.6	5	5	5	**18**

CUMULATIVE IMPACTS

Potential depreciation of surrounding property values

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Partial**	
3	5	3	3.6	3	1	2	**7.2**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low-Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Partial**	
3	5	3	3.6	3	1	2	**7.2**
Rating: Low-Medium			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Partial**	
3	5	3	3.6	3	1	2	**7.2**

Expansion of mining area negatively affecting safety and security of the surrounding area

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
4	4	5	4.3	3	2	2.5	**10.8**
Rating: Medium			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: Full**	
4	4	5	4.3	3	2	2.5	**10.8**
Rating: Medium			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: Full**	
4	4	5	4.3	3	2	2.5	**10.8**
Rating: Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
4	4	5	4.3	3	2	2.5	**10.8**
Rating: Medium			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
4	4	5	4.3	3	2	2.5	**10.8**

Reduced ability to meet conservation obligations and targets

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			**Site Alternative 1**			**Degree of Mitigation: Full**	
5	4	5	4.6	2	5	3.5	**16**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Medium-High			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
5	4	5	4.6	2	5	3.5	**16**
Rating: Medium-High			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
5	4	5	4.6	2	5	3.5	**16**

Potential negative impact on the CBA and broad-scale ecological processes

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			**Site Alternative 1**			**Degree of Mitigation: Full**	
5	4	5	4.6	2	5	3.5	**16**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Medium-High			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
5	4	5	4.6	2	5	3.5	**16**
Rating: Medium-High			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
5	4	5	4.6	2	5	3.5	**16**

Impact on existing infrastructure as a direct result of the mining operation.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
4	5	3	4	4	3	3.5	**14**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
4	5	3	4	4	3	3.5	**14**
Rating: Medium			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
4	5	3	4	4	3	3.5	**14**

Potential impact on water quality of the Qinira River.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
4	5	5	4.6	3	1	2	**9.2**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low-Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
4	5	5	4.6	3	1	2	**9.2**
Rating: Low-Medium			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
4	5	5	4.6	3	1	2	**9.2**

SLOPING AND LANDSCAPING

Safety risk posed by un-sloped areas.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	5	1	3	4	5	4.5	**13.5**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
4	5	1	3.3	4	5	4.5	**14.9**
Rating: Medium			**Technology Alternative 2: Mechanical Excavation**			**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: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	5	1	3	4	2	3	**9**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low-Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
3	5	1	3	4	2	3	**9**
Rating: Low-Medium			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
3	5	1	3	4	2	3	**9**

Infestation of the reinstated area with invader plant species

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
4	4	2	3.3	5	2	3.5	**11.5**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
4	4	2	3.3	5	2	3.5	**11.5**
Rating: Medium			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
4	4	2	3.3	5	2	3.5	**11.5**

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	5	2	3.3	4	5	4.5	**14.9**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
3	5	2	3.3	4	5	4.5	**14.9**
Rating: Medium			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
3	5	2	3.3	4	5	4.5	**14.9**

Return of the mining area to agricultural use upon closure **(Positive Impact)**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High (+)			**Site Alternative 1**			**Degree of Mitigation: N/A**	
1	5	5	3.6	5	5	5	**18**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Medium-High (+)			**Technology Alternative 1: Blasting**			**Degree of Mitigation: N/A**	
1	5	5	3.6	5	5	5	**18**
Rating: Medium-High (+)			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: N/A**	
1	5	5	3.6	5	5	5	**18**

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).

SECTION 102 APPLICATION

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 recognized from the various interpretations:

- Environmental significance is a value judgment
- 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 realized (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 organization 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 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.

Table 1 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 below and in tables 6 and 7.

Determination of Frequency

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

Table 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 summarized 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 prioritizations 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 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)

APPROVED WANSLEY QUARRY

Project/site alternatives does not apply to the current Wansley operation, as the mine has been in operation since 2000.

S102 APPLICATION – POSITIVE IMPACTS ASSOCIATED WITH THE PROPOSED EXPANSION OF WANSLEY QUARRY

Site Alternative 1 (only viable site alternative)

Site Alternative 1 (S1) entails the extension of the current mining footprint (±5.2 ha) with ±32.6 ha over Portion 1 of Farm No 652. S1 was selected as the only viable- and preferred site alternative for the following reasons:

- The proposed footprint offers the MR holder access to the dolerite deposit on the property.
- The extension of the mining area will prolong the lifespan of Wansley Quarry.
- The extension footprint was chosen over an area that was previously used for pineapple cultivation, and no areas of CBA importance need to be disturbed to allow the proposed activity.
- The proposed mining footprint falls outside the sensitive riparian areas identified by the ecologist.
- The proposed mining sequence will ensure a mining area with a slope geometry that conforms to the norms and standards of the DMRE, and mining the quarry in bench-form will simplify the rehabilitation of the disturbed area during the closure phase.

Project Alternative 1 (preferred alternative)

Project Alternative 1 (P1) allows only the use of the W-Road by mining related vehicles to and from the quarry. P1 was identified as the preferred alternative due to the following:

- Wansley Quarry already makes use of the existing W-Road to access the quarry, and enter the N6 national road via a formal (existing) entrance;
- If only the W-Road is used, mining related traffic will no longer have an impact on the B-Road, -road users, or surrounding residents;
- The use of only the W-Road will focus maintenance resources to one route instead of dividing it between both the B- and W-Roads;
- Although the proposed future increase in traffic does not affect any peak capacities of the road or intersections, the transport of heavy goods generated by the quarry does/will impact the pavement structure of the gravel roads. The TIA therefore proposed that the W-Road be surfaced. This will culminate in a surfaced road (W-Road) (within 3 years of approval of the S102) that will conform to the provincial minimum standards. Surfacing of the W-Road will address impacts such as increased road noise, dust generation, and with proper alignment controlling driver speed;
- Until such time as the W-Road is surfaced, quarry management will be responsible for the maintenance of the W-Road as discussed earlier.

Technology Alternative 1 (preferred alternative)

Technology Alternative 1 (T1) makes provision for the mining of the dolerite resource by means of blasting. The use of blasting was identified as the preferred option due to the following:

- As confirmed by the mine planner, Wansley Quarry is underlain predominantly by a near vertical dolerite dyke that could be mined to a limiting depth of 120 m (based on present data). The topsoil and weathered zone extends to ±40 m in depth (varying over the proposed footprint), where after the fresh rock mass zone extends to >120 m in depth. Should the mining method be restricted to only mechanical excavation (no blasting), ±67% of the available dolerite resource on the property cannot be mined. In other words, excluding blasting from the mining method will sterilise ±67% (±17 125 631 m^3) of the available resource on the property;
- The mine planner estimated that based on the current available data and the planned volume to be mined, the predicted Life of Mine (LoM) is approximately 60 years (departmental approval dependent). If, the mining method is restricted to only mechanical excavation it reduces the LoM to ±20 years. A reduction in the LoM will directly affect the employees of the quarry and discontinue the contributions of the quarry in terms of the SLP requirements. Indirectly, it will reduce the contribution of the operation to the local- and national economy;
- Although blasting will periodically increase the dust levels of the receiving environment (directly after a blast), it was shown that the potential hindrance to occupants of the nearest

properties, to the north-west, will most likely only be between December – February where after the seasonal changes in wind direction will probably move a dust plume away from existing housing infrastructure (except those of the landowner). If, the mitigation measures proposed in this document is implemented by site management, it is believed that this impact can be reduced to a Low-Medium significance;

- The model proposed by Cambrian CC, showed that the predicted disturbance levels (PPV and dB) will be well below the USBM standards, and within acceptable limits at 500 meters from the quarry workings. The initial mining direction is proposed to be from the southern boundary towards the north, until Step 3 (refer to Figure 14) is reached where after the quarry pit will be mined from the outside boundaries towards the centre. This translates to the initial blasting impact being centred along the southern property/mining boundary. If, the mitigation measures proposed in this document is implemented by site management, it is believed that blasting at the quarry will not affect any structures in the surrounding environment, and the impact can be reduced to Low significance.

No-go Alternative

The following positive impacts will apply should the proposed expansion not go ahead:

- The mining related traffic impact on the W-Road will be eliminated.
- There will be no blasting and/or mining related impacts on the surrounding environment.

Potential Negative Impacts Associated with S1; P1; and/or T1

The following table shows the potential negative impacts associated with S1, P1, and/or T1 that were identified during the EIA:

Table 28: List of potential negative impacts associated with S1, P1 and/or T1.

ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION	SIGNIFICANCE (AFTER MITIGATION)
♦ Site establishment and infrastructure development ♦ Drilling and blasting ♦ Cumulative impacts	♦ Alteration of the surrounding agricultural sense of place due to the proposed development. ♦ Disturbance to the surrounding agricultural practices due to the proposed blasting activities. ♦ Potential depreciation of surrounding property values.	♦ Low-Medium (S1) ♦ Medium (S1, T1) ♦ Low-Medium (S1, T1, T2)	♦ Low-Medium (S1) ♦ Low-Medium (S1, T1) ♦ Low-Medium (S1, T1, T2)
♦ Site establishment and infrastructure development ♦ Excavation, loading and hauling to processing area	♦ Visual intrusion due to site establishment. ♦ Visual intrusion associated with the extraction activities..	♦ Low (S1) ♦ Medium-High (S1, T1)	♦ Low (S1) ♦ Medium (S1, T1)

ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION	SIGNIFICANCE (AFTER MITIGATION)
♦ Site establishment and infrastructure development ♦ Stripping and stockpiling of topsoil and/or overburden	♦ Potential impact on vegetation and listed and protected plant species. ♦ Potential impact on vegetation and listed and protected plant species.	♦ Medium (S1) ♦ Medium (S1, T1)	♦ Low (S1) ♦ Low (S1, T1)
♦ Site establishment and infrastructure development ♦ Cumulative impacts	♦ Potential impact on the ECBCP-CBA due to site establishment. ♦ Reduced ability to meet conservation obligations and targets. ♦ Potential negative impact on the CBA and broad-scale ecological processes.	♦ Low-Medium (S1) ♦ Medium-High (S1, T1) ♦ Medium-High (S1, T1)	♦ Low (S1) ♦ Low (S1, T1) ♦ Low (S1, T1)
♦ Site establishment and infrastructure development	♦ Potential impact on fauna within the footprint area.	♦ Low-Medium (S1)	♦ Low (S1)
♦ Site establishment and infrastructure development ♦ Stripping and stockpiling of topsoil and/or overburden ♦ Excavation, loading and hauling to processing area	♦ Potential impact on archaeological artefacts or palaeontological finds. ♦ Potential impact on archaeological artefacts or palaeontological finds. ♦ Potential impact on areas of palaeontological concern.	♦ Low-Medium (S1) ♦ Low-Medium (S1) ♦ Medium (S1, T1)	♦ Low (S1) ♦ Low (S1) ♦ Low (S1, T1)
♦ Stripping and stockpiling of topsoil and/or overburden	♦ Loss of agricultural land for duration of mining.	♦ Medium (S1)	♦ Medium (S1)
♦ Stripping and stockpiling of topsoil and/or overburden	♦ Potential loss of riparian vegetation	♦ Medium (S1, T1)	♦ Low (S1, T1)
♦ Stripping and stockpiling of topsoil and/or overburden ♦ Drilling and Blasting ♦ Excavation, loading and hauling to processing plant ♦ Processing, stockpiling and transport of material	♦ Dust nuisance as a result of stripping and stockpiling of topsoil/overburden. ♦ Dust nuisance caused by blasting activities. ♦ Dust nuisance due to excavation and from loading and vehicles transporting the material. ♦ Dust nuisance generated by the processing plant and transport of material.	♦ Low-Medium (S1, T1) ♦ Medium (S1, T1) ♦ Medium-High (S1, P1, T1) ♦ Medium-High (S1, P1 T1)	♦ Low (S1, T1) ♦ Low-Medium (S1, T1) ♦ Low-Medium (S1, T1) ♦ Low-Medium (S1, P1, T1)
♦ Stripping and stockpiling of topsoil and/or overburden ♦ Drilling and blasting ♦ Excavation, loading and hauling to processing plant	♦ Noise nuisance due to stripping and stockpiling of topsoil/overburden. ♦ Noise nuisance as a result of blasting. ♦ Noise as a result of the mining activities.	♦ Low-Medium (S1, T1) ♦ Medium (S1, T1)	♦ Low (S1, T1) ♦ Medium (S1, T1) ♦ Low-Medium (S1, T1)

ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION	SIGNIFICANCE (AFTER MITIGATION)
♦ Processing, stocpiling and transport of material	♦ Noise nuisance stemming from operation of the processing plant and transport of material.	♦ Medium (S1, P1, T1) ♦ Medium (S1, P1, T1)	♦ Low-Medium (S1, P1, T1)
♦ Stripping and stockpiling of topsoil and/or overburden ♦ Sloping and landscaping	♦ Loss of stockpiled topsoil. ♦ Potential erosion of denuded areas. ♦ Erosion of returned topsoil after rehabilitation.	♦ Low-Medium (S1, T1) ♦ Low-Medium (S1, T1) ♦ Low-Medium (S1, T1)	♦ Low (S1, T1) ♦ Low (S1, T1) ♦ Low (S1, T1)
♦ Stripping and stockpiling of topsoil and/or overburden ♦ Sloping and landscaping	♦ Potential infestation of the topsoil heaps and mining area with invader plant species. ♦ Infestation of the reinstated area with invader plant species.	♦ Medium (S1, T1) ♦ Medium (S1, T1)	♦ Low (S1, T1) ♦ Low (S1, T1)
♦ Stripping and stockpiling of topsoil and/or overburden ♦ Excavation, loading and hauling to processing area ♦ Processing, stockpiling and transport of material ♦ Sloping and landscaping	♦ Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages. ♦ Soil contamination from hydrocarbon spills. ♦ Potential contamination of environment due to improper waste management. ♦ Potential impact associated with litter/waste left at the mining area.	♦ Low-Medium (S1, T1) ♦ Low-Medium (S1, T1) ♦ Low-Medium (S1, T1) ♦ Medium (S1, T1)	♦ Low (S1, T1) ♦ Low (S1, T1) ♦ Low (S1, T1) ♦ Low (S1, T1)
♦ Stripping and stockpiling of topsoil and/or overburden ♦ Drilling and blasting ♦ Excavation, loading and hauling to processing area.	♦ Potential damage to the power line. ♦ Potential damage to the power line. ♦ Potential damage to the power line.	♦ Low-Medium (S1, T1) ♦ Low-Medium (S1, T1) ♦ Low-Medium (S1, T1)	♦ Low-Medium (S1, T1) ♦ Low-Medium (S1, T1) ♦ Low-Medium (S1, T1)
♦ Drilling and blasting ♦ Excavation, loading and hauling to processing area ♦ Sloping and landscaping	♦ Health and safety risk posed by blasting activities. ♦ Unsafe working environment for employees. ♦ Safety risk posed by un-sloped areas.	♦ Medium-High (S1, T1) ♦ Medium (S1, T1) ♦ Medium (S1, T1)	♦ Low (S1, T1) ♦ Low (S1, T1) ♦ Low (S1, T1)

ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION	SIGNIFICANCE (AFTER MITIGATION)
♦ Drilling and blasting	♦ Potential impact of blasting on nearby exotic bird farm.	♦ Medium (S1, T1)	♦ Low-Medium (S1, T1)
♦ Drilling and blasting ♦ Cumulative impacts	♦ Potential impact on build infrastructure surrounding the quarry. ♦ Impact on existing infrastructure as a direct result of the mining operation.	♦ Medium (S1, T1) ♦ Medium (S1, T1)	♦ Low (S1, T1) ♦ Low (S1, T1)
♦ Drilling and blasting	♦ Potential impact of blasting on groundwater availability.	♦ Low-Medium (S1, T1)	♦ Low (S1, T1)
♦ Excavation, loading and hauling to processing area	♦ Mining through the drainage lines in the footprint area.	♦ Low-Medium (S1, T1)	♦ Low-Medium (S1, T1)
♦ Excavation, loading and hauling to processing area ♦ Cumulative impacts	♦ Potential impact on localised surface water quality. ♦ Potential impact on water quality of the Qinira River.	♦ Medium (S1, T1) ♦ Low-Medium (S1, T1)	♦ Low (S1, T1) ♦ Low (S1, T1)
♦ Excavation, loading and hauling to processing area	♦ Potential impact on the Mn10118 ST / W-Road within the mining boundary.	♦ Low-Medium (S1, T1)	♦ Low-Medium (S1, T1)
♦ Processing, stockpiling and transport of material	♦ Overloading of trucks impacting road infrastructure.	♦ High (S1, P1)	♦ Low (S1, P1)
♦ Processing, stockpiling and transport of material	♦ Degradation of the access roads.	♦ Medium-High (S1, P1)	♦ Low-Medium (S1, P1)
♦ Processing, stockpiling and transport of material	♦ Traffic impact on the surrounding gravel roads as a result of the mining activity.	♦ Medium-High (S1, P1)	♦ Medium (S1, P1)
♦ Processing, stockpiling and transport of material	♦ Potential impact on surrounding area should the SWD's fail.	♦ Low-Medium (S1, T1)	♦ Low (S1, T1)
♦ Cumulative impacts	♦ Expansion of mining area negatively affecting safety and security of the surrounding area.	♦ Medium (S1, P1, T1)	♦ Low (S1, P1, T1)

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

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

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

TOPOGRAPHY

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.
- 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 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.
- 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-, and/or stockpiling 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 be kept in good condition at all times.
- Mining equipment must be stored neatly in a dedicated area with a sealed drip tray underneath when not in use.
- The MR 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 mining right.
- All riparian areas and watercourses (outside the mining footprint) along with the recommended 100 m buffer area are regarded as No-Go areas.
- Upon closure the site must be rehabilitated and landscaped to ensure that the visual impact on the aesthetic value of the area is kept to a minimum.

AIR QUALITY AND NOISE AMBIANCE

Fugitive Dust Emission Mitigation:

- The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, straw, water spraying and/or environmentally friendly dust-allaying agents that contains no PCB's (e.g. DAS products).
- Water truck/s must be used to moisten denuded areas during dry periods/windy spells. These water trucks must also moisten the W-Road until it is surfaced.
- The site manager must ensure continuous assessment of the dust suppression equipment to confirm its effectiveness in addressing dust suppression.
- Speed on the access road must be limited to 40 km/h 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.
- The MR Holder must implement a dust management plan and conduct monthly fall-out dust monitoring on site to accurately determine the site specific dust levels;
- Loads must be flattened to prevent spillage and covered during transportation on public roads.

- 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, GNR 827 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, blasting, excavating, processing, and transporting of the material from site to minimize potential dust impacts.
- No blasting to take place when high wind conditions are experienced in the area.

Noise Handling:

- The MR holder must ensure that the employee and visitors to the site 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 land owners must be notified in writing prior to each blasting occasion.
- No blasting may take place under overcast conditions.
- Vibration- and noise monitoring equipment must be used at every blast. A seismograph must be placed at strategic points and should the vibration/noise results show excessive readings the blasting plan must be amended accordingly.
- 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.
- Best practice measures shall be implemented in order to minimize potential noise impacts.
- Mining operations, including crushing and screening, must be limited Monday – Friday from 06:00 to 18:00 and Saturdays from 06:00 to 13:00.
- Blasting may only take pace during the week before 15:00, and trucks transporting material may only use the W-Road from 06:00 to 20:30 during weekdays, and 06:00 to 16:00 on Saturdays.

GEOLOGY AND SOIL

Topsoil Management:

- The upper 300 mm of the soil, of the strip to be mined, 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 have to 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 (weeds or a cover crop) on the stockpiles will help to prevent erosion.
- Topsoil heaps may not exceed 2 m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen.
- The temporary topsoil stockpiles must be kept free of invasive plant species.
- Topsoil heaps to be stored longer than a period of 6 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 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.
- The MR 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.
- A cover crop must be planted, irrigated and established immediately after spreading of topsoil, to stabilize the soil and protect it from erosion. The cover crop must be fertilized for optimum biomass production, and any soil deficiencies must be corrected, based on a chemical analysis of the re-spread soil (if deemed necessary). It is important that rehabilitation be taken up to the point of cover crop stabilization. Rehabilitation cannot be considered complete until the first cover crop is well established.

- The rehabilitated area must be monitored for erosion, and appropriately stabilized if any erosion occurs for at least 12 months after reinstatement.

HYDROLOGY AND GEOHYDROLOGY

Erosion Control and Storm Water Management:

- The recommendations of the SWMP must be implemented and managed on site:
  - Two SWD's must be used to contain stormwater runoff from the mining area.
  - Stormwater drains must be used to channel stormwater toward the SWD's.
  - It is recommended that water from the SWD's be reused for dust suppression within the mining area to ensure sufficient storage capacity during flooding events.
  - Polluting activities including storage of mining fleet, equipment wash down facilities and vehicle maintenance yards must be restricted to the workshop areas and must be undertaken on impermeable hard standing surfaces, which are formally drained to a dirty water drainage system at the site.
  - All fuels and chemicals stored or used on site must be contained within fit for purpose containers and stored within designated storage areas. In order 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 frequently.
- Existing access roads must be used as far as possible.
- No activities or movement of any mining vehicles within the downstream semi-ephemeral stream or associated riparian fringe.
- A Rehabilitation Plan must be put in place addressing phased rehabilitation methods where areas that are no longer mined or utilised, are systematically rehabilitated. Any erosion problems within the mining area as a result of the mining activities observed must be rectified immediately (within 24 hours) and monitored thereafter to ensure that they do not re-occur.
- All bare areas resulting from the development must be re-vegetated, post-operation, with locally occurring species, to bind the soil and limit erosion potential.
- Roads and other disturbed areas within the project area must be regularly monitored for erosion problems and problem areas must receive follow-up monitoring to assess the success of the remediation.
- 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 so as to ensure effective drainage of the areas.

- Construction of gabions and other stabilisation features must be undertaken to prevent erosion, where deemed necessary.
- Sheet runoff from cleared areas, paved surfaces and access roads needs to be curtailed; Runoff from paved surfaces must be slowed down by the strategic placement of berms;
- Erosion can also be limited by ensuring that mine vehicles and human movement is limited to project-specific dedicated access ways.
- Storm water 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.
- 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.

Conservation of riparian vegetation, downstream rivers and watercourses:

- The MR Holder must adhere to the proposed mine plan, presented as S1 in this report.
- The MR Holder must demarcate the 100 m buffer area as indicate in the EFRSA and manage it as part of the abovementioned no-go area where no mining can take place.
- All riparian areas and watercourses (outside the mining footprint) along with the recommended 100 m buffer area are regarded as No-Go areas
- Vegetation clearing within the development footprint must be kept to a minimum and phased development must occur.
- All material stockpiles must be located outside drainage lines and watercourse areas.

- The erosion control mitigation measures described in this document must be implemented.
- All topsoil- and waste (if any) stockpiles must have berms and catchment paddocks at their toe to contain runoff of the facilities
- Only the vegetation within the identified footprint may be disturbed,
- No equipment of any kind may be stored within the semi-ephemeral stream or associated riparian fringe.
- Concerned semi-ephemeral stream may only be accessed by the staff conducting the Invasive Alien Plant monitoring and eradication.
- All the condition of the WULA must be implemented for the duration of the site establishment-, operational-, and decommissioning phases.

Management of Surface Water Quality:

- Implement appropriate measures to ensure strict use and management of all hazardous materials used on site.
- Operate using best practises by storing hazardous substances in an adequately sized bunded area, with appropriate safety equipment at the off-site workshop.
- Collection of water within any bunded areas must be deemed hazardous and disposed of as such.
- Bunded areas must be water tight and inspected for leaks on a frequent basis.
- Leaks to the bunded areas must be rectified as soon as possible (within 24 hours).
- Drip trays must be utilised for the collection of leaks from vehicles and machinery parked for more than an hour.
- All refuelling must take place at the off-site workshop or refuelling area. Refuelling of machinery that cannot move of site must take place over drip trays.
- Place spill kits on site which are operated by trained staff members for the *ad hoc* remediation of minor chemical and hydrocarbon spillages.
- No vehicles to refuel within drainage lines, streams/riparian vegetation.
- Vehicular access to the annual stream/Qinira River must be restricted.
- Implement appropriate measures to ensure strict management of potential sources of pollutants (e.g. litter, hydrocarbons from vehicles and machinery, cement during construction etc.).
- Should a spill occur, this must be handled at the source of the leak and prevented from transpiring to the downstream semi-ephemeral watercourse;
- Ensure that routine maintenance on all vehicles is undertaken as per maintenance schedule and records are kept.
- Waste must be stored in clearly marked containers in a demarcated area.

- All waste material must be removed at the end of every working day to designated waste facilities at the main camp/suitable waste disposal facility.
- Sewage spillages must be seen as hazardous waste and must be handled as such.
- Construct diversion drains and containment dams/ponds (SWD dams) around the site timeously prior to operation; and ensure adherence to GNR 704 of the NWA.
- Ensure that these diversions of the drainage lines enter the containment SWD dams.
- Ensure that the capacity of these dams is sufficient to store all surface ("dirty") without overflowing and subsequently entering the annual stream.
- Monthly inspections of the integrity of the stormwater dams must be part of site managements responsibility.

MINING, BIODIVERSITY CONSERVATION AREAS, AND VEGETATION

Management of Vegetation Removal and Conservation of the CBA:

- The mining boundaries must be clearly demarcated and all operations must be contained to the approved mining area.
- The MR Holder must adhere to the layout of S1, as proposed in this document.
- A pre-commencement walk-through of the final mining footprint, must be done by a suitably qualified botanist, for species of conservation concern that would be affected (also to comply with the Eastern Cape Nature and Environmental Conservation Ordinance and DEDEAT/DAFF permit conditions).
- Permits for the removal of protected plant species (if required) must be kept on-site and in the possession of the flora search and rescue team at all times.
- A pre-commencement environmental induction for all staff on site 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.
- The on-site ECO must provide supervision and oversight of vegetation clearing activities and other activities which may cause damage to the environment, especially at the initiation of each new strip, when the majority of vegetation clearing is taking place.
- Blanket clearing of vegetation must be limited to the proposed mining footprint (S1) and associated infrastructure. No clearing outside of the minimum required footprint to take place.
- Topsoil must be stripped and stockpiled separately during site preparation and replaced over disturbed areas on completion.
- 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.
- After the operation, rehabilitate an acceptable vegetation layer according to rehabilitation recommendations as provided within a site-specific Rehabilitation Plan compiled by a suitably qualified botanist.

Management of Invasive Plant Species:

- An invasive plant species management plan (Appendix O) 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.
- All stockpiles (topsoil & overburden) must be kept free of invasive plant species.
- Regular monitoring for alien plants at the site must occur and could be conducted simultaneously with erosion monitoring.
- 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) through the use of an herbicide recommended for use by the PCO in accordance with the directions for the use of such an herbicide.
- Clearing methods should aim to keep disturbance to a minimum and must be undertaken in accordance with relevant guidelines.
- No planting or importing of any alien species to the site for landscaping, rehabilitation or any other purpose may be allowed.
- This management plan/programme must also address the management and monitoring of especially *C. laevigatum* along the semi-ephemeral water course as this species have become severely invasive along this freshwater resource.
- Monitoring and eradication along the drainage lines and within the annual watercourse and associated riparian fringe must occur annually.

Cumulative Impacts:

- The MR Holder must adhere to the layout of S1, as proposed in this document.
- The activity footprint must be kept to a minimum and a stable vegetation must be encouraged to return during the post-operational phase.

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.
- 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 (40 km/h is recommended) to avoid collisions with susceptible species such as snakes and tortoises.
- When possible, no activity must be undertaken at the site between sunset and sunrise, except for security personnel guarding the operation (if needed).
- Any dangerous fauna (snakes, scorpions, etc.) that are encountered during construction must not be handled or antagonised by the construction staff. A suitably qualified person(s) must be contacted to remove the animals to safety.
- No litter, food or other foreign material must be thrown or left around the site and must be placed in demarcated and fenced rubbish and litter areas that are animal proof.

Minimising the Impact of Blasting on Caged Birds:

- Site manager must investigate the possibility of minimising blasting at the quarry as much as possible during the breeding season of the birds in question.
- The possibility of a research project must be investigated whereby the MR Holder and bird farmer collaborate to address the gap in knowledge regarding the impact of impulse noise on caged birds.
- On the actual day, blasting must be contained to the smallest possible timeframe to prevent numerous disturbances to the birds.
- If possible the owner (of the birds) should be busy/present in the cages during the blasting event, as this might contribute to distracting the bird's attention.
- The mitigation measures proposed under Noise Handling must be adhered to at all times.

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 SAHRA.
- Work may only continue once the go-ahead was issued by SAHRA.
- The Fossil Chance Find Procedure, proposed in this document, must be implemented should fossils be uncovered.

SOCIO-ECONOMIC ENVIRONMENT / LAND USE

Potential impact on the Character of the Surrounding Area:

- The SPLUMA application must be approved prior to the expansion of the quarry operation.
- The MR Holder must comply with the conditions of the SPLUMA approval, once received, for the duration of the mine's lifespan.
- Only the activities applied for as part of this application may be operated once approved. Any changes to, or deviations from, the project description set out in this document must be approved, in writing, by the DMRE before such changes or deviations may be effected.

Loss of Agricultural Land for Duration of Mining:

- The temporary loss of agricultural land for the duration of the mining period is acceptable to the landowner. If needed, mined-out/rehabilitated areas will revert back to agricultural use once the cover crop stabilised.

Expansion of Mining Area Negatively Affecting Safety and Security of Area:

- Any new employees, or sub-contractors must be vetted prior to inception of their contract.
- No unauthorised personnel may be allowed to enter the mining area.
- Mining employees, including truck drivers, must be educated to report suspicious looking person/s and/or matters within the surrounding area.
- The MR Holder is already part of the Holm Hill Residents WhatsApp group where security and safety related matters are/can be discussed. Communication between the mine and surrounding landowners must be maintained for the duration of the site establishment-, operational- and decommissioning phases.

EXISTING INFRASTRUCTURE

Management of the Mn10118 St/W-Road within Mining Boundary:

- Prior to the realignment of the W-Road within the mining footprint, the MR Holder must consult with the relevant provincial authorities.
- The road may not be realigned without prior approval from the provincial roads authority.

Access Road Mitigation and Traffic Accommodation:

- Mining related vehicles may only make use of the W-Road to access the quarry. No mining vehicles may be allowed on the B-Road.
- The W-Road must be surfaced from the intersection with the N6 up to the property boundary of the quarry to minimum cross-sectional standards, as required by the provincial authority. Surfacing of the road must take place within at least three (3) years from approval of the Section 102 application.
- Until such time that the upgrading of W-Road to a paved surface becomes financially viable (or within a 3-year period after commencement of the new activities), it is proposed that the gravel pavement structure of the W-Road be maintained by means of regular re-gravelling (once/year), vegetation clearance and side drainage clearance.
- The MR Holder must maintain the upgraded W-Road, according to provincial requirements.
- The speed of all mining equipment/vehicles must be restricted to 40 km/h on the public access roads and 20 km/h on the internal roads.
- Overloading of the trucks must be prevented and proof of load weights must be filed and be available for auditing by relevant officials.
- Trucks transporting material may only use the W-Road from 06:00 to 20:30 during weekdays, and 06:00 to 16:00 on Saturdays.

Managing the Power Line:

- A 10 m no-go buffer area must be demarcated around the power line to protect it against mining related damages until the line could be deviated.
- Eskom must be informed (in writing) at least two weeks prior to each blasting event.

Protection of Existing Infrastructure:

- All mining activities must be contained inside the approved mining boundary.
- The type, duration and timing of the blasting procedures must be planned with due cognisance of the other land users and structures in the vicinity of the mining area.
- Blasting must be done by an appropriately qualified blaster in accordance with the USBM standards and measures will be implemented to limit flyrock.

- Prior to the first blast, the structural integrity of the infrastructure near (within 500 m) the mining footprint must be determined.
- During the blast, vibration measuring equipment (seismograph) must be placed at strategic points to measure the ground vibrations that extents from the quarry. Should the vibration tests indicate excessive high readings the blasting at the quarry must be amended to lower the impact.
- Any structural damage, that results as a direct result of the mining at the quarry, must be repaired at the cost of the MR Holder.

GENERAL

Waste Management:

- Regular vehicle maintenance, repairs and services may only take place at the off-site 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.
- The MR Holder must ensure that employees make use of the formal ablution facilities at the site offices, alternatively the employees must be provided with a chemical toilet that must be serviced at least once a week by an accredited liquid waste handling contractor.
- 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 MR holder.
- If a diesel bowser is used on site, it must be equipped with a drip tray at all times. Drip trays must be used during each and every refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling.
- Site management must ensure drip trays are cleaned after each use. No dirty drip trays may be used on site.
- 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 recognized facility.
- Should spillage occur, such or as oil or diesel leaking from a burst pipe, the contaminated soil must, within the first hour of occurrence, be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. Proof must be filed.
- Suitable covered receptacles must be available at all times and conveniently placed for the disposal of 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;
- Biodegradable refuse must be handled as indicated above;
- No waste may be buried burned on the site.
- Re-use or recycling of waste products must be encouraged on site.
- 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.

Management of Health and Safety Risks:

- 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 and communities must be informed in writing ahead of any blasting event.
- Measures to limit flyrock must be taken.
- Audible warning of a pending blast must be given at least 3 minutes in advance of the blast.
- 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.
- All flyrock (of diameter 150 mm and larger) which falls beyond the working area, together with the rock spill must be collected and removed.
- Adequate ablution facilities and water for human consumption must daily be available on site.
- Workers must have access to the correct personal protection equipment (PPE) as required by law.
- All operations must comply with the Mine Health and Safety Act, 1996 (Act No 29 of 1996).

ix) Motivation where no alternative sites were considered.

N/A

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

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

APPROVED WANSLEY QUARRY

Not applicable.

As mentioned earlier, the environmental assessment considered one site alternative (S1), two project alternatives (P1 & P2) and two technology alternatives (T1 & T2), apart from the no-go alternative. S1 entails the extension of the current mining footprint with ±32.6 ha. P1 allows only the use of the W-Road by mining related vehicles to and from the quarry, and T1 makes provision for the mining of the dolerite resource by means of blasting.

Please refer to Part A(1)(g) *Motivation for the preferred development footprint within the approved site including a full description of the process followed to reach the proposed development footprint within the approved site*; as well as Part A(1)(g)(i) *Details of the development footprint alternatives considered* for a discussion regarding the matters that were considered when determining the preferred development location within the overall site.

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.

(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).

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 associated with the identified alternatives 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.

SITE ESTABLISHMENT AND INFRASTRUCTURE DEVELOPMENT

Alteration of the surrounding agricultural sense of place due to the proposed development

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: No Mitigation**	
2	5	1	2.6	2	5	3.5	**9**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Technology Alternative 1: Blasting**			**Degree of Mitigation: N/A**	

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Visual intrusion due to site establishment

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Partial**	
1	5	1	2.3	2	1	1.5	**3.4**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Technology Alternative 1: Blasting**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Potential impact on vegetation and listed and protected plant species

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: :Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	3	5	3.3	2	1	1.5	**4.9**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Potential impact on the ECBCP-CBA due to site establishment

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
4	4	5	4.3	1	1	1	**4.3**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: N/A			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Potential impact on faunal species within the footprint area

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
4	3	1	2.6	2	1	1.5	**3.9**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Potential impact on archaeological artefacts or palaeontological finds

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	3	4	3.3	2	1	1.5	**4.9**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

STRIPPING AND STOCKPILING OF TOPSOIL AND/OR OVERBURDEN

Loss of agricultural land for duration of mining

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Partial**	
1	4	1	2	5	5	5	**10**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Technology Alternative 1: Blasting**			**Degree of Mitigation: N/A**	

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Potential impact on vegetation and listed and protected plant species

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	3	5	3.3	2	1	1.5	**4.9**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
2	3	5	3.3	2	1	1.5	**4.9**
Rating: Low			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
2	3	5	3.3	2	1	1.5	**4.9**

Potential loss of riparian vegetation

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
4	3	1	2.6	2	1	1.5	**3.9**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
4	3	1	2.6	2	1	1.5	**3.9**
Rating: Low			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
4	3	1	2.6	2	1	1.5	**3.9**

Dust nuisance as a result of stripping and stockpiling of topsoil/overburden

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	2	2	2	2	2	2	**4**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
2	2	2	2	2	2	2	**4**

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
2	2	2	2	2	2	2	**4**

Noise nuisance due to stripping and stockpiling of topsoil/overburden

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Partial**	
2	2	2	2	2	2	2	**4**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Partial**	
2	2	2	2	2	2	2	**4**
Rating: Low			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Partial**	
2	2	2	2	2	2	2	**4**

Potential impact on archaeological artefacts or palaeontological finds

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	3	4	3.3	2	1	1.5	**4.9**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Partial**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Loss of stockpiled topsoil

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	4	1	2.3	2	2	2	**4.6**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
2	4	1	2.3	2	2	2	**4.6**
Rating: Low			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
2	4	1	2.3	2	2	2	**4.6**

Potential infestation of the topsoil heaps and mining area with invader plant species

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	3	1	2	2	2	2	**2**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
2	3	1	2	2	2	2	**2**
Rating: Low			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
2	3	1	2	2	2	2	**2**

Potential erosion of denuded areas

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	3	1	2	2	2	2	**4**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
2	3	1	2	2	2	2	**4**
Rating: Low			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
2	3	1	2	2	2	2	**4**

Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	2	1	1.6	3	2	2.5	**4**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
2	2	1	1.6	3	2	2.5	**4**
Rating: Low			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
2	2	1	1.6	3	2	2.5	**4**

Potential damage to the power line.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	4	4	3.6	2	1	1.5	**5.4**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low-Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
3	4	4	3.6	2	1	1.5	**5.4**
Rating: Low-Medium			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
3	4	4	3.6	2	1	1.5	**5.4**

DRILLING AND BLASTING

Disturbance to the surrounding agricultural practices due to the proposed blasting activities.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Partial**	
2	5	2	3	2	4	3	**9**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low-Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Partial**	
2	5	2	3	2	4	3	**9**
Rating: N/A			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Health and safety risk posed by blasting activities

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	5	1	3	2	1	1.5	**4.5**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
3	5	1	3	2	1	1.5	**4.5**
Rating: N/A			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Dust nuisance caused by blasting activities.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Partial**	
3	5	2	3.3	3	3	3	**9.9**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low-Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Partial**	
3	5	2	3.3	3	3	3	**9.9**
Rating: N/A			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Noise nuisance as a result of blasting.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Partial**	
2	5	4	3.6	3	3	3	**10.8**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Partial**	
2	5	4	3.6	3	3	3	**10.8**
Rating: N/A			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Potential damage to the power line.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	4	4	3.6	2	1	1.5	**5.4**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low-Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Low**	
3	4	4	3.6	2	1	1.5	**5.4**
Rating: N/A			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Potential impact of blasting on nearby exotic bird farm

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: To be confirmed**	
3	5	4	4	2	2	2	**8**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low-Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: To be confirmed**	
3	5	4	4	2	2	2	**8**
Rating: N/A			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Potential impact on build infrastructure surrounding the quarry

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	5	2	3.3	2	1	1.5	**4.9**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
3	5	2	3.3	2	1	1.5	**4.9**
Rating: N/A			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Potential impact of blasting on groundwater availability

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	5	4	4	1	1	1	**4**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
3	5	4	4	1	1	1	**4**
Rating: N/A			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

EXCAVATION, LOADING AND HAULING TO PROCESSING AREA

Visual intrusion associated with the excavation activities.

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Partial**	
2	5	2	3	3	5	4	**12**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Partial**	
2	5	2	3	3	5	4	**12**
Rating: Medium			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Partial**	
2	5	2	3	3	5	4	**12**

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

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	4	2	2.6	2	3	2.5	**6.5**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low-Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
2	4	2	2.6	2	3	2.5	**6.5**
Rating: Low-Medium			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
2	4	2	2.6	2	3	2.5	**6.5**

Noise nuisance as a result of the mining activities

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Partial**	
2	4	2	2.6	2	4	3	**7.8**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low-Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Partial**	
2	4	2	2.6	2	4	3	**7.8**
Rating: Low-Medium			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Partial**	
2	4	2	2.6	2	4	3	**7.8**

Soil contamination from hydrocarbon spills

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	4	1	2.3	2	2	2	**4.6**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
2	4	1	2.3	2	2	2	**4.6**
Rating: Low			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
2	4	1	2.3	2	2	2	**4.6**

Potential impact on areas of palaeontological concern.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
4	5	5	4.6	1	1	1	**4.6**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
4	5	5	4.6	1	1	1	**4.6**
Rating: Low			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
4	5	5	4.6	1	1	1	**4.6**

Potential damage to the power line.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	4	4	3.6	2	1	1.5	**5.4**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low-Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
3	4	4	3.6	2	1	1.5	**5.4**
Rating: Low-Medium			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
3	4	4	3.6	2	1	1.5	**5.4**

Unsafe working environment for employees.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	5	1	3	2	1	1.5	**4.5**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
3	5	1	3	2	1	1.5	**4.5**
Rating: Low			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
3	5	1	3	2	1	1.5	**4.5**

Mining through the drainage lines in the footprint area

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: No Mitigation**	
2	5	1	2.6	5	1	3	**7.8**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low-Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: No Mitigation**	
2	5	1	2.6	5	1	3	**7.8**
Rating: Low-Medium			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: No Mitigation**	
2	5	1	2.6	5	1	3	**7.8**

Potential impact on localised surface water quality.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	3	2	2.6	2	1	1.5	**3.9**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
3	3	2	2.6	2	1	1.5	**3.9**
Rating: Low			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
3	3	2	2.6	2	1	1.5	**3.9**

Potential impact on the Mn10118 St / W-Road within the mining boundary

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	4	1	2.3	4	1	2.5	**5.7**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low-Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
2	4	1	2.3	4	1	2.5	**5.7**
Rating: Low-Medium			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
2	4	1	2.3	4	1	2.5	**5.7**

PROCESSING, STOCKPILING AND TRANPORT OF MATERIAL

Dust nuisance generated by the processing plant and transport of material.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	4	2	2.6	2	3	2.5	**6.5**
Rating: Low-Medium			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: Full**	
2	4	2	2.6	2	3	2.5	**6.5**
Rating: Medium-High			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: Full**	
3	4	2	3	3	3	3	**9**
Rating: Low-Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
2	4	2	2.6	2	3	2.5	**6.5**
Rating: Low-Medium			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
2	4	2	2.6	2	3	2.5	**6.5**

Noise nuisance stemming from operation of the processing plant and transport of material

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Partial**	
2	4	2	2.6	2	4	3	**7.8**
Rating: Low-Medium			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: Partial**	
2	4	2	2.6	2	4	3	**7.8**
Rating: Medium			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: Partial**	
3	4	2	3	3	4	3.5	**10.5**
Rating: Low-Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Partial**	
2	4	2	2.6	2	4	3	**7.8**
Rating: Low-Medium			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Partial**	
2	4	2	2.6	2	4	3	**7.8**

Potential contamination of environment due to improper waste management.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	5	1	3	2	1	1.5	**4.5**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
3	5	1	3	2	1	1.5	**4.5**
Rating: Low			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
3	5	1	3	2	1	1.5	**4.5**

Overloading of trucks impacting road infrastructure.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	2	5	3.3	2	1	1.5	**4.9**
Rating: Low			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: Full**	
3	2	5	3.3	2	1	1.5	**4.9**
Rating: Low			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: Full**	
3	2	5	3.3	2	1	1.5	**4.9**
Rating: N/A			**Technology Alternative 1: Blasting**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Degradation of the access roads.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	2	4	2.6	2	2	2	**5.2**
Rating: Low-Medium			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: Full**	
2	2	4	2.6	2	2	2	**5.2**
Rating: Low-Medium			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: Full**	
2	2	4	2.6	2	2	2	**5.2**
Rating: N/A			**Technology Alternative 1: Blasting**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Traffic impact on the surrounding gravel roads as a result of the mining activity.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	5	4	3.6	3	5	4	**14.4**
Rating: Medium			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: Full**	
2	5	4	3.6	3	5	4	**14.4**
Rating: Medium-High			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: Full**	
3	5	4	4	3	5	4	**16**
Rating: N/A			**Technology Alternative 1: Blasting**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Potential impact on surrounding area should the SWD's fail.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	5	1	2.6	2	1	1.5	**3.9**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
2	5	1	2.6	2	1	1.5	**3.9**
Rating: Low			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
2	5	1	2.6	2	1	1.5	**3.9**

Contribution of mine to local economic development **(Positive Impact)**.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High (+)			**Site Alternative 1**			**Degree of Mitigation: N/A**	
1	5	5	3.6	5	5	5	**18**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Medium-High (+)			**Technology Alternative 1: Blasting**			**Degree of Mitigation: N/A**	
1	5	5	3.6	5	5	5	**18**
Rating: Medium-High (+)			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: N/A**	
1	5	5	3.6	5	5	5	**18**

CUMULATIVE IMPACTS

Potential depreciation of surrounding property values

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Partial**	
3	5	3	3.6	2	1	1.5	**5.4**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low-Medium			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Partial**	
3	5	3	3.6	2	1	1.5	**5.4**
Rating: Low-Medium			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Partial**	
3	5	3	3.6	2	1	1.5	**5.4**

Expansion of mining area negatively affecting safety and security of the surrounding area

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	4	4	3.3	2	1	1.5	**4.9**
Rating: Low			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: Full**	
2	4	4	3.3	2	1	1.5	**4.9**
Rating: Low			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: Full**	
2	4	4	3.3	2	1	1.5	**4.9**
Rating: Low			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
2	4	4	3.3	2	1	1.5	**4.9**
Rating: Low			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
2	4	4	3.3	2	1	1.5	**4.9**

Reduced ability to meet conservation obligations and targets

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
5	4	5	4.6	1	1	1	**4.6**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
5	4	5	4.6	1	1	1	**4.6**
Rating: Low			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
5	4	5	4.6	1	1	1	**4.6**

Potential negative impact on the CBA and broad-scale ecological processes

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
5	4	5	4.6	1	1	1	**4.6**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
5	4	5	4.6	1	1	1	**4.6**
Rating: Low			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
5	4	5	4.6	1	1	1	**4.6**

Impact on existing infrastructure as a direct result of the mining operation.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	1	2	2	2	1	1.5	**3**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
3	1	2	2	2	1	1.5	**3**
Rating: Low			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
3	1	2	2	2	1	1.5	**3**

Potential impact on water quality of the Qinira River.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	1	5	2.6	2	1	1.5	**3.9**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
2	1	5	2.6	2	1	1.5	**3.9**
Rating: Low			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
2	1	5	2.6	2	1	1.5	**3.9**

SLOPING AND LANDSCAPING

Safety risk posed by un-sloped areas.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	3	1	2	2	1	1.5	**3**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
2	3	1	2	2	1	1.5	**3**
Rating: Low			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
2	3	1	2	2	1	1.5	**3**

Erosion of returned topsoil after rehabilitation

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	2	1	1.6	2	2	2	**3.2**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
2	2	1	1.6	2	2	2	**3.2**
Rating: Low			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
2	2	1	1.6	2	2	2	**3.2**

Infestation of the reinstated area with invader plant species

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	3	2	2.3	2	2	2	**4.6**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
2	3	2	2.3	2	2	2	**4.6**
Rating: Low			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
2	3	2	2.3	2	2	2	**4.6**

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	2	1	1.6	2	1	1.5	**2.4**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Low			**Technology Alternative 1: Blasting**			**Degree of Mitigation: Full**	
2	2	1	1.6	2	1	1.5	**2.4**
Rating: Low			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: Full**	
2	2	1	1.6	2	1	1.5	**2.4**

Return of the mining area to agricultural use upon closure **(Positive Impact)**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High (+)			**Site Alternative 1**			**Degree of Mitigation: N/A**	
1	5	5	3.6	5	5	5	**18**
Rating: N/A			**Project Alternative 1: Use of only W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: N/A			**Project Alternative 2: Use of B- & W-Road**			**Degree of Mitigation: N/A**	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rating: Medium-High (+)			**Technology Alternative 1: Blasting**			**Degree of Mitigation: N/A**	
1	5	5	3.6	5	5	5	**18**
Rating: Medium-High (+)			**Technology Alternative 2: Mechanical Excavation**			**Degree of Mitigation: N/A**	
1	5	5	3.6	5	5	5	**18**

i) Assessment of each identified potentially significant impact and risk

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

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

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
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.)	(E.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, air pollution, etc…etc…etc.)		In which impact is anticipated. (E.g. Construction, commissioning, operational Decommissioning closure, post closure.)	If not mitigated.	(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.	If mitigated.
SECTION 102 APPLICATION						
♦ 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	<u>Control:</u> Implementation of proper housekeeping and site management.	N/A
♦ Site establishment and infrastructure development ♦ Drilling and blasting	♦ Alteration of the surrounding agricultural sense of place due to the	The impact affects the agricultural operations of the property.	Site Establishment- & Operational Phase	♦ Low-Medium (S1) ♦ Medium (S1, T1)	<u>Control:</u> Proper site management, and adherence to legislated conditions as presented in the EA, SPLUMA, and WULA.	♦ Low-Medium (S1) ♦ Low-Medium (S1, T1)

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
♦ Cumulative impacts	proposed development. ♦ Disturbance to the surrounding agricultural practices due to the proposed blasting activities. ♦ Potential depreciation of surrounding property values.			♦ Low-Medium (S1, T1, T2)		♦ Low-Medium (S1, T1, T2)
♦ Site establishment and infrastructure development ♦ Excavation, loading and hauling to processing area	♦ Visual intrusion due to site establishment. ♦ Visual intrusion associated with the extraction activities..	The visual impact may affect the aesthetics of the landscape.	Site Establishment- & Operational Phase	♦ Low (S1) ♦ Medium-High (S1, T1, T2)	Control: Proper housekeeping and implementation of progressive rehabilitation.	♦ Low (S1) ♦ Medium (S1, T1, T2)
♦ Site establishment and infrastructure development ♦ Stripping and stockpiling of topsoil and/or overburden	♦ Potential impact on vegetation and listed and protected plant species. ♦ Potential impact on vegetation and listed and protected plant species.	This will impact on the biodiversity of the receiving environment.	Site Establishment- & Operational Phase	♦ Medium (S1) ♦ Medium (S1, T1, T2)	Control: Implementing the proposed mitigation measures and keeping mining operations to the approved boundaries.	♦ Low (S1) ♦ Low (S1, T1, T2)
♦ Site establishment and infrastructure development ♦ Cumulative impacts	♦ Potential impact on the ECBCP-CBA due to site establishment. ♦ Reduced ability to meet conservation	This will impact on the biodiversity of the receiving environment.	Site Establishment- & Operational Phase	♦ Low-Medium (S1) ♦ Medium-High (S1, T1, T2)	Control: Implementing the proposed mitigation measures and keeping mining operations to the approved boundaries.	♦ Low (S1) ♦ Low (S1, T1, T2) ♦ Low (S1, T1, T2)

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
	obligations and targets. ♦ Potential negative impact on the CBA and broad-scale ecological processes.			♦ Medium-High (S1, T1, T2)		
♦ Site establishment and infrastructure development	♦ Potential impact on fauna within the footprint area.	This will impact on the biodiversity of the receiving environment.	Site Establishment & Operational Phase	♦ Low-Medium (S1)	Control & Stop: Implementing good management practices.	♦ Low (S1)
♦ Site establishment and infrastructure development ♦ Stripping and stockpiling of topsoil and/or overburden ♦ Excavation, loading and hauling to processing area	♦ Potential impact on archaeological artefacts or palaeontological finds. ♦ Potential impact on archaeological artefacts or palaeontological finds. ♦ Potential impact on areas of palaeontological concern.	This could impact on the cultural and heritage legacy of the receiving environment.	Site Establishment- and, Operational Phase	♦ Low-Medium (S1) ♦ Low-Medium (S1) ♦ Medium (S1, T1, T2)	Control & Stop: Implementation of a chance-find procedure.	♦ Low (S1) ♦ Low (S1) ♦ Low (S1, T1, T2)
♦ Stripping and stockpiling of topsoil and/or overburden	♦ Loss of agricultural land for duration of mining.	The impact affects the agricultural operations of the property.	Site Establishment- & Operational Phase	♦ Medium (S1)	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	♦ Medium (S1)

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
					progressive rehabilitation (if possible).	
♦ Stripping and stockpiling of topsoil and/or overburden	♦ Potential loss of riparian vegetation	This impact could affect the hydrology and biodiversity of the surrounding environment.	Site Establishment- and, Operational Phase	♦ Medium (S1, T1, T2)	Control: Implementing the proposed mitigation measures and keeping mining operations to the approved boundaries.	♦ Low (S1, T1, T2)
♦ Stripping and stockpiling of topsoil and/or overburden ♦ Drilling and Blasting ♦ Excavation, loading and hauling to processing plant ♦ Processing, stockpiling and transport of material	♦ Dust nuisance as a result of stripping and stockpiling of topsoil/overburden. ♦ Dust nuisance caused by blasting activities. ♦ Dust nuisance due to excavation and from loading and vehicles transporting the material. ♦ Dust nuisance generated by the processing plant and transport of material.	Increased dust will impact on the air quality of the receiving environment.	Site Establishment- & Operational Phase	♦ Low-Medium (S1, T1, T2) ♦ Medium (S1, T1) ♦ Medium-High (S1, P1, P2, T1, T2) ♦ Medium-High (S1, P1, P2, T1, T2)	Control: Dust suppression methods and proper housekeeping.	♦ Low (S1, T1, T2) ♦ Low-Medium (S1, T1) ♦ Low-Medium (S1, T1, T2) ♦ Low-Medium (S1, P1, P2, T1, T2)
♦ Stripping and stockpiling of topsoil and/or overburden ♦ Drilling and blasting ♦ Excavation, loading and hauling to processing plant	♦ Noise nuisance due to stripping and stockpiling of topsoil/overburden.	Should the noise levels become excessive it may have an impact on the noise ambiance of the receiving environment.	Site Establishment- and, Operational Phase	♦ Low-Medium (S1, T1, T2) ♦ Medium (S1, T1)	Control: Noise suppression methods and proper housekeeping.	♦ Low (S1, T1, T2) ♦ Medium (S1, T1) ♦ Low-Medium (S1, T1, T2)

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
♦ Processing, stocpiling and transport of material	♦ Noise nuisance as a result of blasting. ♦ Noise as a result of the mining activities. ♦ Noise nuisance stemming from operation of the processing plant and transport of material.			♦ Medium (S1, P1, P2, T1, T2) ♦ Medium (S1, P1, P2, T1, T2)		♦ Low-Medium (S1, P1, T1, T2) ♦ Medium (P2)
♦ Stripping and stockpiling of topsoil and/or overburden ♦ Sloping and landscaping	♦ Loss of stockpiled topsoil. ♦ Potential erosion of denuded areas. ♦ Erosion of returned topsoil after rehabilitation.	Loss of topsoil will affect the rehabilitation success upon closure of the mine.	Site Establishment, Operational- and Decommissioning Phase	♦ Low-Medium (S1, T1, T2) ♦ Low-Medium (S1, T1, T2) ♦ Low-Medium (S1, T1, T2)	Control & Remedy: Proper housekeeping and storm water management.	♦ Low (S1, T1, T2) ♦ Low (S1, T1, T2) ♦ Low (S1, T1, T2)
♦ Stripping and stockpiling of topsoil and/or overburden ♦ Sloping and landscaping	♦ Potential infestation of the topsoil heaps and mining area with invader plant species. ♦ Infestation of the reinstated area with invader plant species.	This will impact on the biodiversity of the receiving environment.	Site Establishment & Operational-, and Decommissioning Phase	♦ Medium (S1, T1, T2) ♦ Medium (S1, T1, T2)	Control: Implementing soil- and invader plant control/management.	♦ Low (S1, T1, T2) ♦ Low (S1, T1, T2)

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
♦ Stripping and stockpiling of topsoil and/or overburden ♦ Excavation, loading and hauling to processing area ♦ Processing, stockpiling and transport of material ♦ Sloping and landscaping	♦ Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages. ♦ Soil contamination from hydrocarbon spills. ♦ 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 MR Holder. .	Operational-, and Decommissioning Phase	♦ Low-Medium (S1, T1, T2) ♦ Low-Medium (S1, T1, T2) ♦ Low-Medium (S1, T1, T2) ♦ Medium (S1, T1, T2)	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan.	♦ Low (S1, T1, T2) ♦ Low (S1, T1, T2) ♦ Low (S1, T1, T2) ♦ Low (S1, T1, T2)
♦ Stripping and stockpiling of topsoil and/or overburden ♦ Drilling and blasting ♦ Excavation, loading and hauling to processing area.	♦ Potential damage to the power line. ♦ Potential damage to the power line. ♦ Potential damage to the power line.	Damage to the power line will affect the electricity supply of the farm.	Site Establishment & Operational Phase	♦ Low-Medium (S1, T1, T2) ♦ Low-Medium (S1, T1) ♦ Low-Medium (S1, T1, T2)	Control & Remedy: Control mining activities so that it does not affect the power line, and/or remedy any damage as soon as possible.	♦ Low-Medium (S1, T1, T2) ♦ Low-Medium (S1, T1, T2) ♦ Low-Medium (S1, T1, T2)

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
♦ Drilling and blasting ♦ Excavation, loading and hauling to processing area ♦ Sloping and landscaping	♦ Health and safety risk posed by blasting activities. ♦ Unsafe working environment for employees. ♦ Safety risk posed by un-sloped areas.	Unsafe working conditions or health and safety risks posed as a result of the mining activity could affect the employees and possibly the nearby residents.	Operational Phase	♦ Medium-High (S1, T1) ♦ Medium (S1, T1, T2) ♦ Medium (S1, T1, T2)	Control & Modify: All work to take place in accoradance with the applicable MHSA and OHSA legislation.	♦ Low (S1, T1) ♦ Low (S1, T1, T2) ♦ Low (S1, T1, T2)
♦ Drilling and blasting	♦ Potential impact of blasting on nearby exotic bird farm.	Potential impact on the caged bird operation.	Operational Phase	♦ Medium (S1, T1)	Control & Modify: MR Holder to work with the owner of the caged birds to find a workable solution.	♦ Low-Medium (S1, T1)
♦ Drilling and blasting ♦ Cumulative impacts	♦ Potential impact on build infrastructure surrounding the quarry. ♦ Impact on existing infrastructure as a direct result of the mining operation.	This may have an impact on the activities of the affected landowners and result in additional costs to the MR Holder.	Operational Phase	♦ Medium (S1, T1) ♦ Medium (S1, T1, T2)	Stop, Control & Modify: Should the monitoring results show levels of concern the blasting program has to be modified accordingly.	♦ Low (S1, T1) ♦ Low (S1, T1, T2)
♦ Drilling and blasting	♦ Potential impact of blasting on groundwater availability.	Potential impact on the water use of the surrounding community.	Operational Phase	♦ Low-Medium (S1, T1)	Stop, Control & Modify: Should the monitoring results show levels of concern the blasting program has to be modified accordingly.	♦ Low (S1, T1)

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
♦ Excavation, loading and hauling to processing area	♦ Mining through the drainage lines in the footprint area.	The specialist studies concluded that this will not have a substantial impact on the receiving environment.	Operational Phase	♦ Low-Medium (S1, T1, T2)	Control: Implementation of the mitigation measures proposed in this report and the SWMP.	♦ Low-Medium (S1, T1, T2)
♦ Excavation, loading and hauling to processing area ♦ Cumulative impacts	♦ Potential impact on localised surface water quality. ♦ Potential impact on water quality of the Qinira River.	Potential impact on the water use of the surrounding community.	Operational Phase	♦ Medium (S1, T1, T2) ♦ Low-Medium (S1, T1, T2)	Control: Implementation of the mitigation measures proposed in this report and the SWMP.	♦ Low (S1, T1, T2) ♦ Low (S1, T1, T2)
♦ Excavation, loading and hauling to processing area	♦ Potential impact on the Mn10118 ST / W-Road within the mining boundary.	According to the TIA this will not have a significant impact on the receiving environment.	Operational Phase	♦ Low-Medium (S1, T1, T2)	Control & Modify: The MR Holder to follow the requirements and directions of the Provincial Roads Department.	♦ Low-Medium (S1, T1, T2)
♦ Processing, stockpiling and transport of material	♦ Overloading of trucks impacting road infrastructure.	Overloading negatively affects the road infrastructure used by mining related vehicles.	Operational Phase	♦ High (S1, P1, P2)	Control: No overloading to be allowed.	♦ Low (S1, P1, P2)
♦ Processing, stockpiling and transport of material	♦ Degradation of the access roads.	Impacting the condition of public roads may incur public complaints and additional costs to the MR Holder.	Operational Phase	♦ Medium-High (S1, P1, P2)	Modify: Implement P1 (use of W-Road exclusively) instead of P2 (use of both W-, and B-Roads). Control & Remedy: Maintaining the access road (W-Road) for the duration of the operational phase, as well as leaving it in a	♦ Low-Medium (S1, P1, P2)

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
					representative or better condition than prior to mining.	
♦ Processing, stockpiling and transport of material	♦ Traffic impact on the surrounding gravel roads as a result of the mining activity.	Additional traffic impacts may incur public complaints and additional costs to the MR Holder.	Operational Phase	♦ Medium-High (S1, P1, P2)	Modify: Implement P1 (use of W-Road exclusively) instead of P2 (use of both W-, and B-Roads). Control & Remedy: Implenting the mitigation measures proposed in this document and the TIA.	♦ Medium (S1, P1) ♦ Medium-High (P2)
♦ Processing, stockpiling and transport of material	♦ Potential impact on surrounding area should the SWD's fail.	Potential impact on the water use of the surrounding community.	Operational Phase	♦ Low-Medium (S1, T1, T2)	Control: Implementation of the mitigation measures proposed in this report and the SWMP.	♦ Low (S1, T1, T2)
♦ Cumulative impacts	♦ Expansion of mining area negatively affecting safety and security of the surrounding area.	Safety and security of the receiving environment.	Operational Phase	♦ Medium (S1, P1, P2, T1, T2)	Control: Implementation of the mitigation measures proposed in this report.	♦ Low (S1, P1, P2, T1, T2)

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

j) Summary of specialist reports.

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

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
Ecological and Freshwater Resource Study and Assessment Proposed expansion of the Wansley Siyakhula Quarry, Eastern Cape. November 2020 *(See Appendix H2 for a full copy of the document)*	**<u>Recommendations:</u>** <u>Potential impacts on vegetation and listed and protected plant species:</u> ♦ Pre-construction walk-through of the final mining footprint, by a suitably qualified botanist, for species of conservation concern that would be affected (also to comply with the Eastern Cape Nature and Environmental Conservation Ordinance and DENC/DAFF permit conditions). ♦ Permits must be kept on-site and in the possession of the flora search and rescue team at all times. ♦ Pre-construction environmental induction for all staff on site 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. ♦ Contractor's EO must provide supervision and oversight of vegetation clearing activities and other activities which may cause damage to the environment, especially at the initiation of the project, when the majority of vegetation clearing is taking place. ♦ Blanket clearing of vegetation must be limited to the proposed mining footprint and associated infrastructure. No	All the recommendations apart from the below listed were incorporated into this report: <u>Potential impacts on vegetation and listed and protected plant species:</u> ♦ Ensure that laydown areas, construction camps, and other temporary use areas are located in areas of low sensitivity and are properly fenced or demarcated as appropriate and practically possible. *This condition was not added to the report as no laydown areas or construction camps will be established inside the mining footprint area.* <u>Potential increased erosion risk during and post-operational phase:</u> ♦ New vehicle crossing points of the upper drainage lines should be identified before the commencement of construction activities and no vehicles or machinery may be allowed to cross these identified drainage lines outside of the identified areas.	Part A(1)(d)(ii) Description of the activities to be undertaken – 2.2.3 Clearing of Vegetation. Part A(1)(g)(iv)(1)(a) Type of environment affected by the proposed activity: Hydrology and Geohydrology. Part A(1)(g)(iv)(1)(a) Type of environment affected by the proposed activity: Biodiversity Conservation Areas. Part A(1)(g)(iv)(1)(a) Type of environment affected by the proposed activity: Vegetation. Part A(1)(g)(iv)(1)(b) Description of the current land uses. Part A(1)(g)(iv)(1)(c) Description of specific environmental features and infrastructure on the site: Site Specific Hydrology and Geohydrology.

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
	clearing outside of the minimum required footprint to take place. ♦ Topsoil must be stripped and stockpiled separately during site preparation and replaced over disturbed areas on completion ♦ Ensure that laydown areas, construction camps, and other temporary use areas are located in areas of low sensitivity and are properly fenced or demarcated as appropriate and practically possible. ♦ All vehicles to remain on demarcated roads and no unnecessary driving in the veld outside these areas should be allowed. ♦ Regular dust suppression during operation. ♦ No plants may be translocated or otherwise uprooted or disturbed for rehabilitation or other purposes without express permission from the Contractor's EO and without the relevant permits. ♦ No fires must be allowed on-site. ♦ After the operation, rehabilitate an acceptable vegetation layer according to rehabilitation recommendations as provided within a site-specific Rehabilitation Plan compiled by a suitably qualified botanist ♦ Revegetation should occur naturally where topsoils were not severely altered. <u>Potential faunal impact:</u> ♦ Any fauna directly threatened by the construction activities should be removed to a safe location by a suitably qualified person.	*This condition was excluded as no vehicle will be allowed to cross any of the watercourses/drainage lines outside the mining footprint. Inside the mining area the drainage lines will be mined through and therefore removed.* <u>Potential loss of riparian vegetation & Impact on downstream rivers and watercourses through possible alteration in water input and flooding magnitude and frequency:</u> ♦ As far as possible undertake construction activities in the dry season. *This condition is not deemed practical for the proposed project.* ♦ Gabions and mattresses should be used to protect the portions of the drainage lines, immediately downstream of the construction footprint to slow down and regulate the flow of water into the annual watercourse and prevent erosion and a reduction in water quality throughout the construction phase; Water velocity should be reduced as far as feasible. ♦ Construction of gabions and other stabilisation features to prevent erosion if deemed necessary. *The conditions of the SWMP are deemed sufficient to control run-off water from the proposed mining area.*	Part A(1)(g)(iv)(1)(c) Description of specific environmental features and infrastructure on the site: Site Specific Mining and Biodiversity Conservation Areas. Part A(1)(g)(iv)(1)(c) Description of specific environmental features and infrastructure on the site: Site Specific Vegetation. Part A(1)(g)(iv)(1)(c) Description of specific environmental features and infrastructure on the site: Site Specific Fauna. Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk: Hydrology and Geohydrology. Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk: Mining, Biodiversity Conservation Areas, and Vegetation. Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk: Fauna.

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	♦ All personnel must undergo environmental induction with regards to fauna and in particular awareness about not harming or collecting species such as snakes, tortoises, and owls which are often persecuted out of superstition. ♦ All hazardous materials used during operation should be stored appropriately to prevent contamination of the site. Any accidental chemical, fuel, and oil spills that occur at the site should be cleaned up appropriately as related to the nature of the spill. ♦ All construction vehicles should adhere to a low-speed limit (30km/h is recommended) to avoid collisions with susceptible species such as snakes and tortoises. ♦ When possible, no activity should be undertaken at the site between sunset and sunrise, except for security personnel guarding the development. ♦ Any dangerous fauna (snakes, scorpions, etc.) that are encountered during construction should not be handled or antagonised by the construction staff. A suitably qualified person(s) should be contacted to remove the animals to safety. ♦ No litter, food or other foreign material must be thrown or left around the site and must be placed in demarcated and fenced rubbish and litter areas that are animal proof. ♦ The collection, hunting or harvesting of any plants or animals at the site must be strictly forbidden. Personnel must not be allowed to wander off the demarcated construction site. ♦ Fires must not be allowed on site.		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. Part B(1) Mechanisms for monitoring compliance with and performance assessment 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.

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	<u>Potential increased erosion risk during and post-operational phase:</u> ♦ Adequate stormwater management should be considered in the detailed design of the proposed infrastructure to minimize undue erosion; ♦ Existing access roads to be used as far as possible. ♦ No activities or movement of any construction vehicles within the downstream semi-ephemeral stream or associated riparian fringe. ♦ New vehicle crossing points of the upper drainage lines should be identified before the commencement of construction activities and no vehicles or machinery may be allowed to cross these identified drainage lines outside of the identified areas. ♦ Any erosion problems observed, to be associated with the relating activity, should be rectified as soon as possible and monitored thereafter to ensure that they do not re-occur. ♦ A Rehabilitation Plan should also be put in place addressing phased rehabilitation methods where areas that are no longer mined or utilised, are systematically rehabilitated. Any erosion problems within the mining area as a result of the mining activities observed should be rectified immediately and monitored thereafter to ensure that they do not re-occur. ♦ All bare areas resulting from the development should be re-vegetated, post-operation, with locally occurring species, to bind the soil and limit erosion potential. ♦ Roads and other disturbed areas within the project area should be regularly monitored for erosion problems and		

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	problem areas should receive follow-up monitoring to assess the success of the remediation. ♦ Silt traps should be used where there is a danger of topsoil or material stockpiles eroding and entering downstream drainage lines and other sensitive areas. ♦ Topsoil should be removed and stored separately from the subsoil. Topsoil should be reapplied where appropriate as soon as possible to encourage and facilitate the rapid regeneration of the natural vegetation on cleared areas. ♦ Practical phased development and vegetation clearing should be practiced so that cleared areas are not left un-vegetated and vulnerable to erosion for extended periods. ♦ Construction of gabions and other stabilisation features must be undertaken to prevent erosion, where deemed necessary. ♦ Sheet runoff from cleared areas, paved surfaces and access roads needs to be curtailed; Runoff from paved surfaces should be slowed down by the strategic placement of berms; ♦ Erosion can also be limited by ensuring that mine vehicles and human movement is limited to project-specific dedicated access ways. <u>Increased alien plant invasion during the operational phase:</u> ♦ Alien species must be removed from the site as per NEMBA requirements. ♦ A suitable weed management strategy to be implemented in the construction and operation phases.		

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	♦ Regular monitoring for alien plants at the site should occur and could be conducted simultaneously with erosion monitoring. ♦ When alien plants are detected, these should be controlled and cleared using the recommended control measures for each species to ensure that the problem is not exacerbated or does not re-occur and increase to problematic levels. ♦ Clearing methods should aim to keep disturbance to a minimum and must be undertaken per relevant guidelines. ♦ No planting or importing of any alien species to the site for landscaping, rehabilitation or any other purpose should be allowed. ♦ The area is especially prone to the invasion of *Lantana camara, Cestrum laevigatum, Solanum mauritianum* and *Solanum chrysotrichum* all of which are classified as Category 1b IAPs. ♦ The management and eradication of these species, as well as other IAPs, should be addressed in detail within the Management Plan. ♦ This management plan/programme should also address the management and monitoring of especially *C. laevigatum* along the semi-ephemeral watercourse as this species has become severely invasive along this freshwater resource. ♦ Monitoring and eradication along the drainage lines and within the annual watercourse and associated riparian fringe should occur annually.		

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	<u>Potential loss of riparian vegetation & Impact on downstream rivers and watercourses through possible alteration in water input and flooding magnitude and frequency:</u> ♦ Vegetation clearing within the development footprint must be kept to a minimum and phased development should occur. ♦ As far as possible undertake construction activities in the dry season. ♦ All material stockpiles should be located outside drainage lines and watercourse areas. ♦ Regular monitoring for erosion. ♦ Any erosion problems observed, to be associated with the relating activity, should be rectified as soon as possible and monitored thereafter to ensure that they do not re-occur. ♦ Silt traps should be used where there is a danger of topsoil or material stockpiles eroding and entering streams and other sensitive areas. ♦ Gabions and mattresses should be used to protect the portions of the drainage lines, immediately downstream of the construction footprint to slow down and regulate the flow of water into the annual watercourse and prevent erosion and a reduction in water quality throughout the construction phase; Water velocity should be reduced as far as feasible. ♦ Construction of gabions and other stabilisation features to prevent erosion if deemed necessary.		

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	♦ All topsoil and waste stockpiles must have berms and catchment paddocks at their toe to contain runoff of the facilities ♦ Only the vegetation within the identified footprint may be disturbed, and ♦ No indigenous vegetation outside of the development footprint may be disturbed. ♦ No equipment of any kind may be stored within the semi-ephemeral stream or associated riparian fringe. ♦ All riparian areas and watercourses along with the recommended 100m buffer area are regarded as No-Go areas ♦ Concerned semi-ephemeral stream may only be accessed by the staff conducting the Invasive Alien Plant monitoring and eradication. <u>Potential impact on localised surface water quality:</u> ♦ Access to the construction site will be controlled; ♦ Implement appropriate measures to ensure strict use and management of all hazardous materials used on site. ♦ Operate using best practises by storing hazardous substances in an adequately sized bunded area, with appropriate safety equipment; ♦ Collection of water within the bunded areas will be deemed hazardous and disposed of as such; ♦ Bunded areas will be watertight and inspected for leaks on a frequent basis;		

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	♦ Leaks to the bunded areas will be rectified as soon as possible; ♦ Drip trays will be utilised for the collection of leaks from vehicles and machinery parked for a long period; ♦ Refuelling areas will be bunded and nozzles protected from spillage during refuelling; ♦ Place spill kits on site which are operated by trained staff members for the Ad hoc remediation of minor chemical and hydrocarbon spillages. ♦ No vehicles to refuel within drainage lines, streams/riparian vegetation. ♦ Vehicular access to the annual stream will be restricted; ♦ Implement appropriate measures to ensure strict management of potential sources of pollutants (e.g. litter, hydrocarbons from vehicles and machinery, cement during construction etc.). ♦ All spillages will need to be cleaned up as soon as practically possible; ♦ Should a spill occur, this will be handled at the source of the leak and prevented from transpiring to the downstream semi-ephemeral watercourse; ♦ Ensure that routine maintenance on all vehicles is undertaken as per maintenance schedule and records are kept ♦ Waste should be stored on-site in clearly marked containers in a demarcated area.		

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	♦ All waste material should be removed at the end of every working day to designated waste facilities at the main construction camp/suitable waste disposal facility. ♦ All waste must be disposed of offsite. Working protocols incorporating pollution control measures (including approved method statements by the contractor) should be clearly set out in the Construction Environmental Management Plan (CEMP) for the project and strictly enforced. ♦ Proper management of stormwater drainage infrastructure should be ensured; Hazardous substances stored on-site will be stored within a designated bunded areas fitted with a sump and value. ♦ Sewage spillages will be seen as hazardous waste and will be handled as such ♦ Construct diversion drains and containment dams/ponds (PCD dams) around the site timeously before the operation, and Ensure adherence to GNR 704 of the NWA. ♦ Ensure that these diversions of the drainage lines enter the containment PCD dams. ♦ Ensure that the capacity of these dams is sufficient to store all surface ("dirty") without overflowing and subsequently entering the annual stream.		

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	<u>Cumulative Impact 1: Reduced ability to meet conservation obligations and targets & Cumulative Impact 2: Impacts on ecological support areas and broad-scale ecological processes:</u> ♦ The activity footprint must be kept to a minimum and natural vegetation should be encouraged to return where possible during the post-operational phase. ♦ Reduce the footprint of mining areas as much as possible.		
Heritage Impact Assessment Wansley Quarry, North of East London in the Eastern Cape Province October 2020 *(See Appendix L for a full copy of the assessment)* & Palaeontological Impact Assessment of the proposed Reg 42 Mine Plan, Wansley, East London, Eastern Cape Province. *(See Appendix M for a full copy of the assessment)*	**<u>Recommendations:</u>** Due to the lack of significant heritage resources in the study area the impact of the proposed project on heritage resources is considered low and impacts can be mitigated to an acceptable level. It is therefore recommended that the proposed project can commence on the condition that the following recommendations are implemented as part of the EMPR and based on approval from SAHRA: ♦ Implementation of a chance find procedure for both heritage and paleontological resources as outlined below. ♦ The presence of graves in the study area must be confirmed through the social consultation process. <u>Change Find Procedures:</u> This procedure applies to the developer's permanent employees, its subsidiaries, contractors and subcontractors, and service providers. The aim of this procedure is to establish monitoring and reporting procedures to ensure compliance with this policy and its associated procedures. Construction crews	All the recommendations proposed by the specialist were incorporated into this report.	Part A(1)(g)(iv)(1)(a) Type of environment affected by the proposed activity: *Cultural and Heritage Environment.* Part A(1)(g)(iv)(1)(c) Description of specific environmental features and infrastructure on the site: *Site Specific Cultural and Heritage Environment.* Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk: *Archaeological, Heritage and Paleontological Aspects.* 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

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	must be properly inducted to ensure they are fully aware of the procedures regarding chance finds as discussed below. ♦ 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 the SAHRA. <u>Monitoring Programme for Palaeontology – to commence once the excavations / drilling activities begin:</u> 1. The following procedure is only required if fossils are seen on the surface and when drilling/excavations commence. 2. When excavations begin the rocks and must be given a cursory inspection by the environmental officer or designated person. Any fossiliferous material (stromatolites, plants, insects, bone, coal) should be put aside in a suitably protected place. This way the project activities will not be interrupted. 3. Photographs of similar fossil plants must be provided to the developer to assist in recognizing the fossil plants in the		preferred site (in respect of the final site layout plan) through the life of the activity. Part A(1)(u)(i)(2) Impact on any national estate referred to in section 3(2) of the NHRA. Part B(1) Mechanisms for monitoring compliance with and performance assessment 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.

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	shales and mudstones. This information will be built into the EMP's training and awareness plan and procedures. 4. Photographs of the putative fossils can be sent to the palaeontologist for a preliminary assessment. 5. If there is any possible fossil material found by the developer/environmental officer/miners then the qualified palaeontologist sub-contracted for this project, should visit the site to inspect the selected material and check the dumps where feasible. 6. Fossil plants or vertebrates that are considered to be of good quality or scientific interest by the palaeontologist must be removed, catalogued and housed in a suitable institution where they can be made available for further study. Before the fossils are removed from the site a SAHRA permit must be obtained. Annual reports must be submitted to SAHRA as required by the relevant permits. 7. If no good fossil material is recovered, then no site inspections by the palaeontologist will be necessary. A final report by the palaeontologist must be sent to SAHRA once the project has been completed and only if there are fossils. 8. 8. If no fossils are found and the excavations have finished then no further monitoring is required.		
Ornithology Opinion The effect of human-caused noise on birds, with specific reference to the potential impact of blasting on caged exotic birds.	**<u>Recommendations:</u>** ♦ One way to mitigate this would be to limit blasting at the Wansley Quarry as much as possible (especially during the breeding seasons of the birds) and/or deploy noise suppression features (plants?) around the bird enclosures. ♦ A complimentary strategy would be for the bird farmer and the management of the quarry to work together on a	All the recommendations proposed by the specialist were incorporated into this report.	Part A(1)(g)(iv)(1)(c) Description of specific environmental features and infrastructure on the site: *Site Specific Fauna.* Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk: *Fauna.*

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February 2021 *(See Appendix K for a full copy of the document)*	research project addressing the current knowledge gap with regards to the impact of impulse noise on caged birds. <u>Additional mitigation measures proposed by the specialist:</u> ♦ On the actual day, blasting should be contained to the smallest possible timeframe to prevent numerous disturbances to the birds. ♦ If possible the owner should be busy/present in the cages during the blasting event, as this might contribute to distracting the bird's attention.		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. Part B(1) Mechanisms for monitoring compliance with and performance assessment 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.
Stormwater Management Plan Wansley Siyakhula (Pty) Ltd Mining Rights Area Storm Water Management Plan. September 2020	**<u>Recommendations:</u>** The SWMP recommends using two storm water dams for containment of storm water runoff from the mining area. Stormwater water drains are also recommended to channel storm water toward the storm water dams. It is recommended that water from the containment dams be reused for dust	All the recommendations proposed by the specialist were incorporated into this report.	Part A(1)(d)(ii) Description of the activities to be undertaken - *2.2.6.1 Stormwater Management.* Part A(1)(g)(iv)(1)(c) Description of specific environmental features and infrastructure on the site: *Site*

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(See Appendix J for a full copy of the document)	suppression within the mining area to ensure sufficient storage capacity during flooding events. The National Environmental Management Water Act (NEMWA) classifies wastes from the quarry industry as general waste. General waste is defined as waste that does not pose an immediate hazard or threat to health or to the environment (NEMWA, 2014). Therefore, it can be concluded that the extended mining area can be unlined. In accordance with Condition 7 of GN 704, it is recommended that polluting activities including storage of mining fleet, equipment wash down facilities and vehicle maintenance yards are restricted to the workshop areas and are undertaken on impermeable hard standing surfaces, which are formally drained to a dirty water drainage system at the site. It is recommended that the mining sequence be followed in order for all runoff water within the mining area to be directed to the valley and into the respective stormwater ponds. It is recommended that stormwater water drainage channels from the mining should be constructed to divert water towards the mining area valley or stormwater pond. All fuels and chemicals stored or used on site should be contained within fit for purpose containers and stored within designated storage areas. In order to prevent pollution of the surrounding environment during an accidental spillage, the designated storage areas should be situated on an impermeable surface and should feature a perimeter bund and a drainage sump. The volume of the bund and sump should 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 should feature a		*Specific Hydrology and Geohydrology.* Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk: *Hydrology and Geohydrology.* 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. Part B(1) Mechanisms for monitoring compliance with and performance assessment 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.

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	roof to prevent inflow of rainwater, which would require the sump to be emptied frequently.		
Traffic Impact Assessment Traffic Impact Assessment for the expansion of Wansley Quarries on Portion 1 of Farm 652, East London as part of the specialist input for the environmental impact assessment. December 2020 *(See Appendix I for a full copy of the assessment)*	The following mitigation measures are recommended with regard to the proposed expansion of the mining footprint at Wansley Quarries: ♦ It is proposed that only Road W be used for access to the quarry. This will mitigate against the negative impact spread over two roads. It would also allow for the improvement and maintenance of only one access road, as opposed to two access roads. ♦ It is also proposed that the developer surfaces Road W from the intersection with the National Route 6 up to the property boundary of the quarry to minimum cross-sectional standards, as required by the provincial authority. Further investigations and design will be required for the finalisation of the cross-section and pavement structure. ♦ The developer will be required to maintain the upgraded Road W, according to provincial requirements. This will ensure that the impact of the heavy vehicle transport along the route is mitigated through the operational life of the quarry. ♦ While the surfacing of Road W is considered the preferred recommendation, it is proposed that the gravel pavement structure of Road W be maintained by means of regular regravelling (scheduling to be established), vegetation clearance and side drainage clearance until such time that the upgrading of Road W to a paved surface becomes financially viable as a result of the quarry operations or	All the recommendations proposed by the specialist were incorporated into this report.	Part A(1)(d)(ii) Description of the activities to be undertaken - *2.2.5 Access Roads.* Part A(1)(g)(iv)(1)(c) Description of specific environmental features and infrastructure on the site: *Site Air Quality and Noise Ambiance.* Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk: *Air Quality and Noise Ambiance.* Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk: *Existing Infrastructure.* 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. Part B(1) Mechanisms for monitoring compliance with and performance

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	within a three-year period after commencement of the new activities. ♦ It is proposed that the necessary communications with the provincial authorities for the realignment of the portion of Road W affected by the expansion of the mining footprint be initiated. With the implementation of the abovementioned recommendations, the expansion of the mining footprint of Wansley Quarry may be supported from a traffic engineering perspective.		assessment 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.

k) Environmental impact statement

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

The key findings of the environmental impact assessment regarding the proposed expansion of Wansley Quarry entail the following:

Project Proposal:

Wansley Siyakhula (Pty) Ltd submitted a S102 amendment application to:

- align the mining documentation with the Section 11 approval,
- comply with the latest departmental and legislative requirements,
- add blasting and processing of material to the EMPR,
- add dolerite as a commodity to the mining right, and
- expand the mining footprint to 37.8575 ha.

Topography:

The proposed activity will impact the topography of the earmarked footprint in that the quarry pit will create a crater like features with benched side walls in accordance with the proposed mine plan.

Visual Characteristics:

The proposed mining extension will be screened from the western and southern neighbours. No permanent residences, within <1 km, were identified on the northern and/or eastern neighbouring properties that could be negatively affected by the potential visual impact associated with the proposed activity and therefore the potential visual impact is deemed to be of medium significance.

Air Quality:

Blasting: Dust could hinder the occupants of properties number 5 and 6 (Figure 33) between December – February, where after the seasonal change in wind direction will most likely move any dust (due to blasting) away from the neighbouring properties. Monthly fallout dust monitoring will report on the direction and level of dust generated as a direct result of the mining activities, and based on these results the blasting plan could be adjusted should the dust levels exceed the allowable standard.

Processing Plant: The potential dust impact to be created as a direct result of the crushing and screening of the dolerite can be reduced through the implementation of the mitigation measures proposed in this document. As with the dust generated during a blast, it is proposed that the actual dust levels be monitored through the implementation of a monthly fallout dust monitoring programme that will identify problem areas in need of additional mitigation.

Stockpile areas, handling and transport of material: Minimising the amount of material stockpiled at the site, moistening denuded areas and gravel roads within the mining footprint, as well as the W-Road for as long as it remains unsurfaced will contribute to mitigating the potential increase in dust levels as a result of the mining activity.

Noise Ambiance:

Blasting: The modelling results (provisional) show that the predicted disturbance levels are within acceptable limits at 500 meters from the quarry workings, and as the distance increases the disturbance levels decrease.

Geology:

The site (S1) is underlain predominantly by an elongated north-south trending, near vertical dolerite dyke. Presently, it is believed that the proposed extension area may have an inferred reserve of >25 000 000 m³ dolerite with a potential life of mine of ±60 years.

Hydrology and Geohydrology:

The EFRSA states that the loss of the two drainage lines (within the mining footprint) is acceptable as these drainage lines are already in severe degraded and transformed state with very limited functionality maintained. Activities and impacts are regarded as acceptable from an ecological perspective and will not cause detrimental impacts to the ecological features located within the affected area and surrounding properties.

The SWMP requires the potential development of two SWD's. For the northern dam, a total storage capacity of 2 680 m³ was recommended, and for the southern dam a total SWD storage capacity of 5 685 m³. In addition to the SWDs, stormwater containment systems will be implemented to contain dirty water generated on the site. Water from the SWDs will be used for dust suppression purposes.

Mining and Biodiversity Conservation Areas:

Ground truthing confirmed that a large portion of the Wansley property as well as some of the surrounding landscape do not meet the criteria that justify the area as a CBA2. These areas should rather be regarded as Other Natural Areas. S1 is outside of the High Sensitive (No-Go) areas and will not contribute to a further reduction in landscape connectivity.

Vegetation:

The EFRSA concludes that the vegetation within the study site resembles a severely modified and transformed form of Albany Coastal Thicket, and as such, the current layout is regarded as acceptable from an ecological point.

Fauna:

No resident faunal species of conservation concern were identified within the approved mining area or proposed extension footprint.

Blasting impact on caged birds: The projected features suggest that there is a real potential for a negative impact on the caged birds. However, the nature of this impact is unclear. It is proposed that baseline vibration- and noise monitoring be done at the bird enclosures prior to the first blast, and thereafter with each blast to determine the exact ground vibration and noise levels experienced during a blast at the bird enclosures. Following the first readings (after the first blast) guidance could be obtained from an ornithologist regarding the best way forward to minimise the potential impact of blasting on the caged birds in question.

Cultural and Heritage Environment:

HIA: Due to the lack of significant heritage resources in the study area the impact of the proposed project on heritage resources is considered low and impacts can be mitigated to an acceptable level.

PIA: Based on the site visit and the lack of any previously recorded fossils from the area, it is extremely unlikely that any fossils would be preserved in the shales around the quarry site, and certainly not in the dolerites. Although no fossils were seen during the site visit, there is a very small chance that fossils may occur in the unexposed shales of the Adelaide Subgroup.

Socio-economic Environment:

The MR Holder intends to spend at least R 636 418.70 on Human Resource Development, and R 177 325.20 on LED over a 5-year period. The LED project consists of assistance to Guardians of Hope that is a non-profit organisation that takes care of abandoned and destitute babies. In addition to the LED project, Wansley Quarry will afford two employees with an opportunity to become functionally literate.

Character of Surrounding Area:

It is the opinion of the DBP Consulting that the impacts of the proposed project on the existing character of the area will be minimal. The increase in the size of this quarry will only add to an existing feature and will not disrupt the *status quo*. From a Town Planning perspective, the location and proposed size of Wansley Quarry is in line with similar precedents that have been set. DBP Consulting concluded that the proposed project has no associated risk to the community from a land use or spatial planning point of view.

Existing Infrastructure:

Power Line: Eskom will be approached regarding the deviation of the power line that will be within the mining footprint. Until such time as the deviation is finalised a buffer no-go area of 10 m will be maintained around the power line.

Access Roads: The quarry currently gains access to the greater road network via the W-Road, linking to the National Route 6 to the west of the site and the B-Road, linking to the municipal Class 3 Municipal Main Road, R102, to the south of the site. The W-Road is classified as a Provincial Minor Road and the B-Road is classified as a Municipal Road. Both roads are unsurfaced. Existing traffic to and from the quarry is estimated to be approximately 100 loads per day, according to the operations manager and in line with the traffic survey. Future traffic generated from the site expansion is estimated to be 200 loads per day.

Initial investigations into the impact of the heavy goods transport reveal that this proposed development would require a surfaced access route (W-Road). The expanded mining footprint crosses a portion of the provincial minor road (W-Road) that falls on the property. This will require realignment of a portion of the road and the provincial roads department should be informed of such action.

Should the S102 application be successful, Wansley Quarry will cease to use the B-Road for the hauling of mined material with heavy vehicles. Even though Wansley Quarry is committed to upgrade the W-Road from a gravel to a surfaced road, the proposed upgrade is not financially viable at the onset of the expansion of the quarry. The quarry therefore commits, in the interim, to maintain the gravel pavement structure of the W-Road by means of regular re-gravelling, vegetation clearance and side drainage clearance until the upgrading of the road to a paved surface is achievable (within 3 years from approval of the S102).

ii) Finale Site Map

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

See the map showing the site activities attached as Appendix C.

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

The positive impacts associated with the proposed extension of the mining area in terms of S1, P1 and T1 include the following:

- The proposed footprint offers the MR holder access to the dolerite deposit on the property.
- The extension of the mining area will prolong the lifespan of Wansley Quarry.
- The extension footprint was chosen over an area that was previously used for pineapple cultivation, and no areas of CBA importance need to be disturbed to allow the proposed activity.
- The proposed mining footprint falls outside the sensitive riparian areas identified by the ecologist.
- The proposed mining sequence will ensure a mining area with a slope geometry that conforms to the norms and standards of the DMRE, and mining the quarry in bench-form will simplify the rehabilitation of the disturbed area during the closure phase.
- Wansley Quarry already makes use of the existing W-Road to access the quarry, and enter the N6 national road via a formal (existing) entrance;
- If only the W-Road is used, mining related traffic will no longer have an impact on the B-Road, -road users, or surrounding residents;

- The use of only the W-Road will focus maintenance resources to one route instead of dividing it between both the B- and W-Roads;
- The TIA proposed that the W-Road be surfaced. This will culminate in a surfaced road (W-Road) (within 3 years of approval of the S102) that will conform to the provincial minimum standards. Surfacing of the W-Road will address impacts such as increased road noise, dust generation, and with proper alignment controlling driver speed;
- Until such time as the W-Road is surfaced, quarry management will be responsible for the maintenance of the W-Road as discussed earlier.
- Allowing blasting will afford the MR Holder the opportunity to mine ±67% (±17 125 631 m³) of the available dolerite resource on the property.
- Blasting will increase the LoM to approximately 60 years that directly contributes to the employees of the quarry and contributions of the quarry in terms of the SLP requirements. Indirectly, it will contribute to the local- and national economy;
- The model proposed by Cambrian CC, showed that the predicted disturbance levels (PPV and dB) will be well below the USBM standards, and within acceptable limits at 500 meters from the quarry workings.

The following table shows the potential negative impacts associated with the proposed S102 Application that were deemed to have a Low-Medium or higher significance/risk:

Table 31: List of potential impacts deemed to have a low-medium or higher significance/risk.

ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION	SIGNIFICANCE (AFTER MITIGATION)
♦ Site establishment and infrastructure development ♦ Drilling and blasting ♦ Cumulative impacts	♦ Alteration of the surrounding agricultural sense of place due to the proposed development. ♦ Disturbance to the surrounding agricultural practices due to the proposed blasting activities. ♦ Potential depreciation of surrounding property values.	♦ Low-Medium (S1) ♦ Medium (S1, T1) ♦ Low-Medium (S1, T1, T2)	♦ Low-Medium (S1) ♦ Low-Medium (S1, T1) ♦ Low-Medium (S1, T1, T2)
♦ Site establishment and infrastructure development ♦ Excavation, loading and hauling to processing area	♦ Visual intrusion due to site establishment. ♦ Visual intrusion associated with the extraction activities..	♦ Low (S1) ♦ Medium-High (S1, T1, T2)	♦ Low (S1) ♦ Medium (S1, T1, T2)

ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION	SIGNIFICANCE (AFTER MITIGATION)
♦ Stripping and stockpiling of topsoil and/or overburden	♦ Loss of agricultural land for duration of mining.	♦ Medium (S1)	♦ Medium (S1)
♦ Stripping and stockpiling of topsoil and/or overburden ♦ Drilling and Blasting ♦ Excavation, loading and hauling to processing plant ♦ Processing, stockpiling and transport of material	♦ Dust nuisance caused by blasting activities. ♦ Dust nuisance due to excavation and from loading and vehicles transporting the material. ♦ Dust nuisance generated by the processing plant and transport of material.	♦ Medium (S1, T1) ♦ Medium-High (S1, P1, P2, T1, T2) ♦ Medium-High (S1, P1, P2, T1, T2)	♦ Low-Medium (S1, T1) ♦ Low-Medium (S1, T1, T2) ♦ Low-Medium (S1, P1, P2, T1, T2)
♦ Stripping and stockpiling of topsoil and/or overburden ♦ Drilling and blasting ♦ Excavation, loading and hauling to processing plant ♦ Processing, stocpiling and transport of material	♦ Noise nuisance as a result of blasting. ♦ Noise as a result of the mining activities. ♦ Noise nuisance stemming from operation of the processing plant and transport of material.	♦ Medium (S1, T1) ♦ Medium (S1, P1, P2, T1, T2) ♦ Medium (S1, P1, P2, T1, T2)	♦ Medium (S1, T1) ♦ Low-Medium (S1, T1, T2) ♦ Low-Medium (S1, P1, T1, T2) ♦ Medium (P2)
♦ Stripping and stockpiling of topsoil and/or overburden ♦ Drilling and blasting ♦ Excavation, loading and hauling to processing area.	♦ Potential damage to the power line. ♦ Potential damage to the power line. ♦ Potential damage to the power line.	♦ Low-Medium (S1, T1, T2) ♦ Low-Medium (S1, T1) ♦ Low-Medium (S1, T1, T2)	♦ Low-Medium (S1, T1, T2) ♦ Low-Medium (S1, T1, T2) ♦ Low-Medium (S1, T1, T2)
♦ Drilling and blasting	♦ Potential impact of blasting on nearby exotic bird farm.	♦ Medium (S1, T1)	♦ Low-Medium (S1, T1)
♦ Excavation, loading and hauling to processing area	♦ Mining through the drainage lines in the footprint area.	♦ Low-Medium (S1, T1, T2)	♦ Low-Medium (S1, T1, T2)
♦ Excavation, loading and hauling to processing area	♦ Potential impact on the Mn10118 ST / W-Road within the mining boundary.	♦ Low-Medium (S1, T1, T2)	♦ Low-Medium (S1, T1, T2)
♦ Processing, stockpiling and transport of material	♦ Degradation of the access roads.	♦ Medium-High (S1, P1, P2)	♦ Low-Medium (S1, P1, P2)
♦ Processing, stockpiling and transport of material	♦ Traffic impact on the surrounding gravel roads as a result of the mining activity.	♦ Medium-High (S1, P1, P2)	♦ Medium (S1, P1) ♦ Medium-High (P2)

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

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

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. Mine Planner/Rock Engineer to comment on the rehabilitation of the quarry upon closure.	♦ Ensure that the excavated area serve as a final depositing area for the placement 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 areas and return the topsoil to its original depth to provide a growth medium. ♦ Do not deposit any waste 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, return the topsoil previously stored to its original depth over the area. ♦ Fertilized the areas if necessary 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 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. ♦ 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 restoring the mining area to allow for the proposed agricultural end-use.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		♦ On completion of mining operations, scarify the surface of all plant-, and/or stockpiling areas, if compacted due to hauling and dumping operations, to a depth of at least 200 mm and grade it to an even surface condition. Where applicable/possible return the 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 kept in good condition at all times. ♦ Store mining equipment neatly in a dedicated area with a sealed drip tray underneath when not in use. ♦ Limit vegetation removal, and only strip topsoil immediately prior to the mining/use of a specific area. ♦ Contain the excavation within the approved footprint of the mining right. ♦ Manage all riparian areas and watercourses (outside the mining footprint) along with the recommended 100 m buffer area as no-go areas. ♦ Rehabilitate and landscape the site upon closure to ensure that the visual impact on the aesthetic value of the area is kept to a 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 QUALITY AND NOISE AMBIANCE Dust Mitigation	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer. Occupational Hygienist to report on the noise levels of the quarry.	♦ Control the liberation of dust into the surrounding environment by the use of; inter alia, water spraying and/or other dust-allaying agents. ♦ Use water trucks to moisten the W-Road until it is surfaced. ♦ Ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. ♦ Limit speed on the access roads to 40 km/h to prevent the generation of excess dust. ♦ Minimise areas devoid of vegetation, and only remove vegetation immediately prior to mining. ♦ Add operational water sprayers to the crusher plan to alleviate dust generation from the conveyor belts.	♦ Dust prevention measures are applied to minimise the generation of dust.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		♦ Minimize fines, blowing form 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. ♦ Implement a dust management plan and conduct monthly fall-out dust monitoring on site to accurately determine the site specific dust levels. ♦ Flatten and cover loads to prevent spillage of material during transportation on public roads. ♦ Consider weather conditions upon commencement of daily operations. Limit operations during very windy periods. ♦ 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, loading, and transporting of the mineral from the site to minimize potential dust impacts. ♦ No blasting allowed when high wind conditions are experienced in the area.	
AIR QUALITY AND NOISE AMBIANCE Noise Handling	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer. Occupational Hygienist to report on the noise levels of the quarry. Qualified blaster to record vibration and noise levels during a blast.	♦ Ensure that employee and visitors to the site conduct themselves in an acceptable manner while on site. ♦ Do not permit loud music 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 surrounding landowners in writing prior to each blasting occasion. ♦ No blasting under overcast conditions. ♦ Use vibration- and noise monitoring equipment at every blast. Place a seismograph at strategic points and amend the blasting plan should the vibration/noise results show excessive readings.	♦ Prevent unnecessary noise to the environment by ensuring that noise from development activity is mitigated.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		♦ Appoint a qualified occupational hygienist to quarterly monitor and report on the personal noise exposure of the employees working at the mine. Monitoring must be done in accordance with the SANS10083:2004 (Edition 5) sampling method as well as NEM:AQA, 2004, SANS 10103:2008. ♦ Implement best practice measures to minimise potential noise impacts. ♦ Limit mining operations, including crushing and screening, to Monday – Friday from 06.00 to 18:00 and Saturdays from 06:00 to 13:00. ♦ Only do blasting during the week before 15:00, and ensure that the trucks transporting material use the W-Road only from 06:00 to 20:30 during weekdays, and 06:00 to 16:00 on Saturdays.	
GEOLOGY AND SOIL Topsoil Handling	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	♦ Strip and stockpile the upper 300 mm of the soil before mining. ♦ Carefully manage and conserve the topsoil throughout the stockpiling and rehabilitation process. ♦ 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 heaps on a levelled area within the mining footprint area. Do not stockpile topsoil in undisturbed areas. ♦ Protect topsoil stockpiles against losses by water- and wind erosion. Position stockpiles so as not to be vulnerable to erosion by wind and water. Establish plants (weeds or a cover crop) on the stockpiles to prevent erosion. ♦ Ensure that topsoil heaps do not exceed 2 m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen. ♦ Keep temporary topsoil stockpiles free of invasive plant species. ♦ Vegetate topsoil heaps to be stored longer than 6 months with an indigenous grass seed mix if vegetation does not naturally germinate within the first growth season.	♦ Adequate fertile topsoil is available to rehabilitate the mining area.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		♦ Divert storm- and runoff water around the stockpile area to prevent erosion. ♦ Spread the topsoil evenly, to a depth of 300 m, over the rehabilitated area upon closure of the site. ♦ 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 a cover crop immediately after spreading topsoil to stabilise the soil and protect it from erosion. Fertilise the cover crop for optimum production. Rehabilitation extends until the first cover crop is well established. ♦ Monitor the rehabilitated area for erosion, and appropriately stabilize if erosion do occur, for at least 12 months after reinstatement.	
HYDROLOGY AND GEOHYDROLOGY 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.	♦ Contain stormwater runoff from the mining area with two SWD's. ♦ Use stormwater drains to channel stormwater toward the SWD's. ♦ Reuse the water from the SWD's for dust suppression within the mining area to ensure sufficient storage capacity during flooding events. ♦ Restrict polluting activities including storage of mining fleet, equipment wash down facilities and vehicle maintenance yards to impermeable hard standing surfaces at the workshop areas that formally drain to a dirty water drainage system at the site. ♦ Contain all fuels and chemicals stored or used on site within fit for purpose containers and store it within designated storage areas. Ensure that the designated storage area is 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. Add a roof to the storage area to prevent inflow of rainwater, which would require the sump to be emptied frequently.	♦ Impact to the environment caused by storm water discharge is avoided and erosion is managed.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		♦ Use existing roads as far as possible. ♦ Prevent activities or movement of any mining vehicles within the downstream semi-ephemeral stream or associated riparian fringe. ♦ Establish a Rehabilitation Plan addressing phase rehabilitation methods where areas that are no longer mined or utilised, are systematically rehabilitated. Rectify any erosion problems within the mining area as a result of the mining activities within 24 hours and monitor the area thereafter to prevent re-occurrence. ♦ Re-vegetate all bare areas resulting from the development, post-operation, with locally occurring species, to bind the soil and limit erosion potential. ♦ Regularly monitor roads and other disturbed areas within the project area for erosion problems and once remediated ensure follow-up monitoring is implemented. ♦ 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. Regularly maintain and clear these sediment/silt barriers to ensure effective drainage of the area. ♦ When deemed necessary, construct gabions and/or other stabilisation features to prevent erosion. ♦ Curtail sheet runoff from cleared areas, paved surfaces and access roads. Slow runoff from paved surfaces down by the strategic placement of berms. ♦ Limit erosion by ensuring that mine vehicles and human movement is limited to project-specific dedicated access ways. ♦ Divert storm water around the topsoil heaps and mining areas to prevent erosion. ♦ Protect stockpiles from erosion, stored it on flat areas, and surround it by appropriate berms where possible. ♦ Conduct activity in terms of the Best Practice Guidelines for small-scale mining as developed by DWS.	

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
HYDROLOGY AND GEOHYDROLOGY Conservation of riparian vegetation, downstream rivers and watercourses.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	♦ Adhere to the proposed mine plan, presented as S1 in this report. ♦ Demarcate the 100 m buffer area as indicated in the EFRSA and manage it as part of the above mentioned no-go area where no mining can take place. ♦ Regard all riparian areas and watercourses (outside the mining footprint) along with the recommended 100 m buffer area as no-go area. ♦ Keep vegetation clearing within the development footprint to a minimum and implement phased development. ♦ Place all material stockpiles outside drainage lines and watercourse areas. ♦ Implement the erosion control mitigation measures described in this document. ♦ Place berms and catchment paddocks around all topsoil- and waste (if any) stockpiles at their toe to contain runoff from the facilities. ♦ Only disturb the vegetation within the identified footprint. ♦ Do not store any equipment within the semi-ephemeral stream or associated riparian fringe. ♦ Ensure only the staff conducting the Invasive Alien Plant monitoring and eradication enters the semi-ephemeral stream. ♦ Implement all the conditions of the WULA for the duration of the site establishment-, operational-, and decommissioning phases.	♦ Riparian vegetation and downstream rivers and watercourses (outside the mining area) remains unaffected by mining.
HYDROLOGY AND GEOHYDROLOGY Management of Surface Water Quality.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	♦ Implement appropriate measures to ensure strict use and management of all hazardous materials used on site. ♦ Operate using best practises by storing hazardous substances in an adequately sized bunded area, with appropriate safety equipment at the off-site workshop. ♦ Consider any water that collects within a bunded area as hazardous and dispose as such. ♦ Ensure bunded areas are water tight and frequently inspect for leaks.	♦ Drainage areas protected from any impact as a result of mining.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		♦ Rectify leaks to the bunded areas within 24 hours. ♦ Use drip trays to collect leaks from vehicles and machinery parked for more than an hour. ♦ Ensure all refuelling takes place at the off-site workshop or refuelling area. Refuel machinery that cannot move of site over drip trays. ♦ Place spill kits on site which are operated by trained staff members for the ad hoc remediation of minor chemical and hydrocarbon spillages. ♦ Do not refuel any vehicles within drainage lines, streams/riparian vegetation. ♦ Restrict vehicular access to the annual stream/Qinira River. ♦ Implement appropriate measures to ensure strict management of potential sources of pollutants (e.g. litter, hydrocarbons from vehicles and machinery, cement during construction etc.). ♦ Handle a spill at the source of the leak and prevent it from transpiring to the downstream semi-ephemeral watercourse. ♦ Conduct routine maintenance on all vehicles as per maintenance schedule and keep records. ♦ Store waste in clearly marked containers in a demarcated area. ♦ Remove all waste material at the end of every work day to the designated waste facilities at the main camp/suitable waste disposal facility. ♦ Treat sewage spills as hazardous waste and handle as such. ♦ Construct diversion drains and containment dams/ponds (SWD dams) around the site timeously prior to operation; and ensure adherence to GNR 704 of the NWA. ♦ Ensure that these diversions of the drainage lines enter the containment SWD dams. ♦ Ensure that the capacity of these dams is sufficient to store all surface ("dirty") without overflowing and subsequently entering the annual stream.	

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		♦ Inspect the integrity of the SWD's monthly as part of site management responsibilities.	
MINING, BIODIVERSITY CONSERVATION AREAS AND VEGETATION Management of Vegetation Removal and Conservation of the CBA.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Botanist to assist with the relocation of plants of importance (when needed). Compliance to be monitored by the Environmental Control Officer.	♦ Clearly demarcate the mining boundaries and contain all operations to the approved mining area. ♦ Adhere to the layout of S1, as proposed in this document. ♦ Arrange a pre-commencement walk-through of the final mining footprint by a suitably qualified botanist, for species of conservation concern that would be affected. ♦ Keep permits for the removal of protected plant species (if required) on-site and in the possession of the flora search and rescue team at all times. ♦ Conduct a pre-commencement environmental induction for all staff on site 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. ♦ Ensure that the on-site ECO provide supervision and oversee vegetation clearing activities and other activities which may cause damage to the environment, especially at the initiation of each new strip, when the majority of vegetation clearing is taking place. ♦ Limit blanket clearing of vegetation to the proposed mining footprint (S1) and associated infrastructure. Prevent clearing outside of the minimum required footprint. ♦ Strip and stockpile topsoil separately during site preparation and replace over disturbed areas on completion. ♦ Keep all vehicles on demarcated roads and prevent unnecessary driving in the veld outside these areas. ♦ Do not translocate plants or otherwise uprooted or disturbed it for rehabilitation or other purposes without express permission from the ECO and without the relevant permits. ♦ Do not allow fires on-site.	♦ Vegetation clearing is restricted to the authorised development footprint of the mine.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		♦ After the operation, rehabilitate an acceptable vegetation layer according to rehabilitation recommendations as provided within a site-specific Rehabilitation Plan compiled by a suitably qualified botanist.	
MINING, BIODIVERSITY CONSERVATION AREAS AND VEGETATION 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 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, 2004. Do weed/alien clearing on an ongoing basis throughout the life of the mining activities. ♦ Keep all stockpiles (topsoil & overburden) free of invasive plant species. ♦ Regularly monitor the site for alien plants. ♦ Control declared invader or exotic species on the rehabilitated areas. ♦ Keep disturbance to a minimum when clearing. ♦ No planting or importing of any alien species to the site for landscaping, rehabilitation or any other purpose may be allowed. ♦ Implement the management and monitoring of especially *C. laevigatum* along the semi-ephemeral water course. ♦ Annually monitor and eradicate problem species along the drainage lines and within the annual watercourse.	♦ Mining area is kept free of invasive plant species.
MINING, BIODIVERSITY CONSERVATION AREAS AND VEGETATION Cumulative Impacts	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	♦ Adhere to the layout of S1, as proposed in this document. ♦ Keep the activity footprints of various proposed mining locations and other development proposals in the area to a minimum and encourage a stable vegetation to return during the post-operational phase.	♦ Mining area does not affect the conservation obligations and targets of the CBA or impact on the broad-scale ecological processes.
FAUNA Protection of Fauna	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.	♦ Ensure no fauna is caught, killed, harmed, sold or played with. ♦ Arrange the ECO or other suitably qualified person to remove any fauna directly threatened by the operational activities to a safe location.	♦ Disturbance to fauna is minimised.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
	Compliance to be monitored by the Environmental Control Officer.	♦ Conduct environmental induction with all personnel 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 (40 km/h) to avoid collisions with susceptible species such as snakes and tortoises. ♦ When possible, prevent activity at the site between sunset and sunrise, except for security personnel guarding the operation (if needed). ♦ Do not handle any dangerous fauna that are encountered. Contact a suitable qualified person to remove the animals to safety. ♦ Prevent litter, food or other foreign material being thrown or left around the site.	
FAUNA Minimising the Impact of Blasting on Caged Birds.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer. Ornithologist to assist with bird related matters when needed.	♦ Investigate the possibility of minimising blasting at the quarry as much as possible during the breeding season of the birds in question. ♦ Consider the possibility of a research project whereby the MR Holder and bird farmer collaborate to address the gap in knowledge regarding the impact of impulse noise on caged birds. ♦ Contain blasting to the smallest possible timeframe to prevent numerous disturbances to the birds on the actual day of blasting. ♦ Request the bird owner to be present in the cages during the blasting event, to distract the bird's attention. ♦ Implement the mitigation measures listed under Noise Handling at all times.	♦ Disturbance to the caged birds is minimised.
CULTURAL AND HERITAGE ENVIRONMENT Archaeological, Heritage and Palaeontological Aspects	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: ▪ If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the	♦ Impact to cultural/heritage resources is avoided or at least minimised.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
	Archaeologist/Palaeontologist to comment should any features of importance be unearthed. Compliance to be monitored by the Environmental Control Officer.	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 the SAHRA. ▪ Work may only continue once the go-ahead was issued by SAHRA. ♦ Implement the Fossil Chance Find Procedure, proposed in this document, should fossils be uncovered.	
SOCIO-ECONOMIC ENVIRONEMNT / LAND USE Potential impact on the character of the surrounding area.	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 SPLUMA application is approved prior to the expansion of the quarry operation. ♦ Comply with the conditions of the SPLUMA approval, once received, for the duration of the mine's lifespan. ♦ Ensure that only the activities applied for as part of this application is operated once approved. Any changes to, or deviations from, the project description set out in this document must be approved, in writing, by the DMRE before such changes or deviations may be effected.	♦ Impact on the character of the surrounding area is avoided or at least minimised.
SOCIO-ECONOMIC ENVIRONEMNT / 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-out/rehabilitated areas back to agricultural use once the cover crop stabilised.	♦ Mining has the least possible impact on the operation of the property.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
SOCIO-ECONOMIC ENVIRONEMNT / LAND USE Expansion of Mining Area Negatively Affecting Safety and Security of Area.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	♦ Ensure any new employees, or sub-contractors are vetted prior to inception of their contract. ♦ Prohibit entry of unauthorised personnel into mining area. ♦ Educate mining employees, including truck drivers, to report suspicious looking person/s and/or matters within the surrounding area. ♦ Maintain communication between the mine and surrounding landowners for the duration of the site establishment-, operational- and decommissioning phases.	♦ Mining activity does not have an adverse effect on the safety and security of the area.
EXISTING INFRASTRUCTURE Management of the Mn10118 St/W-Road within Mining Boundary	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer. Road Engineer when the road needs to be realigned.	♦ Consult with the relevant provincial authorities prior to the realignment of the W-Road. ♦ Do not realign the road prior to receipt of approval from the provincial road authority.	♦ The W-Road is aligned in accordance with the requirements of the provincial road authorities.
EXISTING INFRASTRUCTURE Access Road Mitigation and Traffic Accommodation	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer. Road Engineer to assist with the paving of the W-Road.	♦ Only make use of the W-Road to access the quarry. No mining vehicles may be allowed on the B-Road. ♦ Surface the W-Road from the intersection with the N6 up to the property boundary of the quarry to minimum cross-sectional stands, as required by the provincial authority. Ensure surfacing of the road takes place within at least three (3) years from approval of the Section 102 application. ♦ Until the W-Road is paved, maintain the gravel pavement structure of the W-Road by means of regular re-gravelling (once/year), vegetation clearance and side drainage clearance.	♦ The access road remains accessible to the landowner during the operational phase, and upon closure, the road is returned in a better, or at least the same state as received by the right holder.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		♦ Once upgraded, maintain the W-Road according to provincial requirements. ♦ Restrict the speed of all mining equipment/vehicles to 40 km/h on the public access roads and 20 km/h on the internal roads. ♦ Prevent the overloading of the trucks, and file proof of load weights for auditing purposes. ♦ Restrict trucks transporting material on the W-Road to 06:00 – 20:30 during weekdays, and 06:00 – 16:00 on Saturdays.	
EXISTING INFRASTRUCTURE Managing the Power Line	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer. Eskom to assist with the deviation of the power line.	♦ Demarcate a 10 m no-go buffer area around the power line until the line was deviated. ♦ Inform Eskom (in writing) at least two weeks prior to each blasting event.	♦ Mining does not adversely affect the power line or power supply.
EXISTING INFRASTRUCTURE Protection of Existing Infrastructure.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	♦ Contain all mining activities inside the approved mining boundary. ♦ Plan the type, duration and timing of the blasting procedures with due cognisance of the other land users and structures in the vicinity of the mining area. ♦ Appoint an appropriately qualified blast to conduct blasting in accordance with the USBM standards and implement measures to limit flyrock. ♦ Determine the structural integrity of the infrastructure near (within 500) the mining footprint prior to the first blast. ♦ Place vibration measuring equipment (seismograph) at strategic points to measure the ground vibrations that extents from the quarry during each blast. Amend the blasting plan should vibration tests indicate excessive high readings.	♦ Mining does not adversely affect any of the existing infrastructure.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		♦ Repair any structural damage that directly results from the mining at the quarry at the cost of the MR Holder.	
GENERAL Waste Management	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	♦ Ensure regular vehicle maintenance, repairs and services only take place at the off-site 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. ♦ Ensure that employees make use of the formal ablution facilities at the site offices, alternatively provide them with a chemical toilet that is serviced at least once a week by an accredited liquid waste handling contractor. ♦ Ensure that the use of any temporary, chemical toilet facilities does not cause pollution to water sources or pose a health hazard. In addition, prevent any form of secondary pollution from the disposal of refuse or sewage from the temporary, chemical toilets. Address any pollution problems arising from the above immediately. ♦ If a diesel bowser is used on site, equip it with a drip tray at all times. Ensure that drip trays are used during each and every refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling. ♦ Clean drip trays after use. Do not use dirty drip trays. ♦ Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. ♦ Should spillage occur, such as oil or diesel leaking from a burst pipe, collect the contaminated soil, within the first hour of occurrence, in a suitable receptacle and remove it from the site, either for resale or for appropriate disposal at a recognized facility. File proof. ♦ Place suitable covered receptacles at convenient places for disposal of waste.	♦ Wastes are appropriately handled and safely disposed of at recognised waste facilities.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		♦ Store non-biodegradable refuse in a container with a closable lid at a collecting point to be collected at least once a month and disposed of at a recognised landfill site. Do not allow the dumping of refuse on or in the vicinity of the mine area. ♦ Handle biodegradable refuse as indicated above. ♦ Prevent the burning or burying of waste on site. ♦ Encourage re-use and/or recycling of waste products on site. ♦ Report any significant spillage of chemicals, fuels etc. during the lifespan of the mining activities to the DWS and other relevant authorities.	
GENERAL Management of Health and Safety Risks	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Health and safety representative to manage H&S aspects at the mine. Compliance to be monitored by the Environmental Control Officer.	♦ Plan the type, duration and timing of the blasting procedures with due cognisance of other land users and structure in the vicinity. ♦ Inform the surrounding landowners and communities in writing ahead of any blasting event. ♦ Take measures to limit flyrock. ♦ Give audible warning of a pending blast at least 3 minutes in advance of the blast. ♦ Ensure each blasting event complies with the USBM ground vibration and airblast levels. ♦ Use a vibro recorder to record all blasts. ♦ Collect and remove all flyrock (of diameter 150 mm and larger) which falls beyond the working area, together with the rock spill. ♦ Ensure adequate ablution facilities and water for human consumption are daily available on site. ♦ Ensure that workers have access to the correct PPE as required by law. ♦ Manage all operations in compliance with the Mine Health and Safety Act, 1996 (Act No 29 of 1996).	♦ Employees work in a healthy and safe environment.

m) Final proposed alternatives.

(provide an explanation for the final layout of the infrastructure and activities on the overall site as shown on the final site map together with the reasons why they are the final proposed alternatives, which respond to the impact management measures, avoidance, and mitigation measures identified through the assessment)

During the EIA phase, apart from the no-go alternative, one site alternative, two project alternatives and two technology alternatives were considered upon review of the site specific information, comments received from the public, and the results of the specialist studies. Below is a summary of the final proposed alternatives:

- **Site Alternative:**

  S1 is deemed the only viable site alternative as the position of the dolerite deposit and the property boundaries dictate the layout.

- **Project Alternative:**

  The use of only the W-Road by mining related vehicles to and from the quarry was identified as the preferred option.

- **Technology Alternative:**

  The use of blasting was identified as the preferred technology alternative.

n) Aspects for inclusion as conditions of Authorization.

Any aspects which have not formed part of the EMPR that must be made conditions of the Environmental Authorization

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

Additional to those conditions the following must be considered as conditions of the Environmental Authorisation:

- The Land Use Application for the Departure to Permit Mining Rights on Portion 1 of Farm No 652 in terms of the SPLUMA legislation must be approved.
- The MR Holder must obtain a Water Use Authorization in terms of Section 39 of the National Water Act,1998 (Act No. 36 of 1998) for water uses as defined in Section 21 of the act.

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 the MR Holder, as well as site inspections, and background information. No uncertainty regarding the proposed project or the receiving environment could be identified at this stage.

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

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

Wansley Quarry has been operational for 20 years and this report accompanies a Section 102 amendment application to expand the existing mining boundaries. Should the MR Holder commit to S1, P1, T1, the mitigation measures, and monitoring programmes proposed in this document, no fatal flaws could at this point and time be identified that were deemed as severe as to prevent the activity continuing.

ii) Conditions that must be included in the authorization

(1) Specific conditions to be included into the compilation and approval of EMPR

The management objectives listed in this report under *Part A(1)(l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR* must be included into the compilation and approval of the EMPR.

(2) Rehabilitation requirements

The rehabilitation- and closure objectives proposed in *Part B(d)(i) Determination of Closure Objectives* and the Closure Plan attached as Appendix Q, to this report, must be included in the authorisation.

Once the entire mining area was rehabilitated the MR 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 also be submitted in terms of Regulation 62 of the MPRDA, 2002, and Government Notice 940 of NEMA, 1998 (as amended).

q) Period for which the Environmental Authorization is required.

The MR Holder requested that the Environmental Authorisation be valid for the duration of the mining right (at least until 2026).

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 Environmental Impact 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 amount required to manage and rehabilitate the affected environment was estimated to be R 844 320.39. Please refer to Part B(1)(f)(i)(1)(e) *Calculate and state the quantum of the financial provision required to manage and rehabilitate the environment in accordance with the applicable guideline* for and explanation as to how this amount was arrived at.

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

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

Wansley Siyakhula (Pty) Ltd is responsible for the financial and technical aspects of the mining project. The MR Holder has a financial guarantee to the value of R 216 242.50 lodged with the DMRE, and upon departmental request the MR Holder will provide for the shortfall associated with the proposed expansion of the mining footprint.

t) Deviations from the approved scoping report and plan of study.

i) Deviations from the methodology used in determining the significance of potential environmental impacts and risks.

(Provide a list of activities in respect of which the approved scoping report was deviated from, the reference in this report identifying where the deviation was made, and a brief description of the extent of the deviation).

No deviation from the methodology used in determining the significance of potential environmental impacts and risks were deemed necessary. The methodology described in the Scoping Report was also used in the Environmental Impact Assessment Report.

ii) Motivation for the deviation.

Not applicable.

u) Other 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 Appendix 219.1 and confirm that the applicable mitigation is reflected in 2.5.3, 2.11.6 and 2.12 herein).

The following potential impacts were identified that may affect socio-economic conditions of directly affected persons:

- **Increased/prolonged traffic on the public access roads:**
  Should the S102 application be successful, Wansley Quarry will cease to use the B-Road for the hauling of mined material with heavy vehicles. Even though Wansley Quarry is committed to upgrade the W-Road from a gravel to a surfaced road, the proposed upgrade is not financially viable at the onset of the expansion of the quarry. The quarry therefore commits, in the interim, to maintain the gravel pavement structure of the W-Road by means of regular re-gravelling, vegetation clearance and side drainage clearance until the upgrading of the road to a paved surface is achievable (within 3 years from approval of the S102).

Further to this, the EIAR proposes specific work hours that mining related trucks will be allowed to use the W-Road.

- **Visual intrusion associated with the mining:**
  The proposed mining extension will be screened from the western and southern neighbours. No permanent residences, within <1 km, were identified on the northern and/or eastern neighbouring properties that could be negatively affected by the potential visual impact associated with the proposed activity and therefore the potential visual impact is deemed to be of medium significance.

- **Impact on the air quality and noise ambiance of the study area:**

  Blasting: Monthly fallout dust monitoring will report on the direction and level of dust generated as a direct result of the mining activities, and based on these results the blasting plan could be adjusted should the dust levels exceed the allowable standard.

  The modelling results (provisional) show that the predicted noise disturbance levels are within acceptable limits at 500 meters from the quarry workings, and as the distance increases the disturbance levels decrease.

  Processing Plant: The potential dust impact to be created as a direct result of the crushing and screening of the dolerite can be reduced through the implementation of the mitigation measures proposed in this document.

  Stockpile areas, handling and transport of material: Minimising the amount of material stockpiled at the site, moistening denuded areas and gravel roads within the mining footprint, as well as the W-Road for as long as it remains unsurfaced will contribute to mitigating the potential increase in dust levels as a result of the mining activity.

- **Weeds/invader plants spreading from the mining area:**
  Should the mitigation measures and management plans proposed in this document be implemented the germination of weeds/invader plant species at the mining area will be controlled.

- **Potential impact on the character of the surrounding area:**

  It is the opinion of the DBP Consulting that the impacts of the proposed project on the existing character of the area will be minimal. The increase in the size of this quarry will only add to an existing feature and will not disrupt the *status quo*. From a Town Planning perspective, the location and proposed size of Wansley Quarry is in line with similar precedents that have been set. DBP Consulting concluded that the proposed project has no associated risk to the community from a land use or spatial planning point of view.

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

(Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any national estate referred to in section 3(2) of the National Heritage Resources Act, 1999 (Act No 25 of 1999) with the exception of the national estate contemplated in section 3(2)(*i*)(*vi*) and (*vii*) of that Act, attach the investigation report as **Appendix 219.2** and confirm that the applicable mitigation is reflected in 2.5.3; 2.11.6 and 2.12 herein).

The specialists did not identify the presence of national estate as referred to in Section 3(2) of the NHRA, 1999 within the earmarked footprint of the extension area.

v) Other matter 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 site alternatives associated with the proposed extension of the mining area, 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. As discussed earlier the following alternatives were considered:

1. **Site Alternative 1 –** Extension of the current mining footprint (±5.2 ha) with ±32.6 ha over Portion 1 of Farm No 652.

2. **Project Alternatives –** The use of both roads (B- & W-Road) was compared to the use of only the W-Road.

3. **Technology Alternatives –** During the EIA process the mining of the proposed dolerite resource on the property by means of blasting was assessed

opposed to the continued mining of only the weathered material through mechanical excavation.

4. **No-go Alternative –** No change to the *status quo.*

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

1. Draft environmental management programme.

a) Details of the EAP,

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

The details and expertise of Ms C 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* as well as Appendix S as required.

b) Description of the Aspects of the Activity

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

The aspects of the activity that are covered by the draft 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 should be avoided, including buffers)

As mentioned under *Part A(1)(k)(ii) Finale Site Map* the map was compiled and is attached as Appendix C.

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 in 2.4 herein)

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

- Remove all temporary infrastructure and waste from the mine as per the requirements of this EMPR and of the Provincial Department of Minerals and Resources and Energy.
- Shape and contour disturbed areas in compliance with the EMPR.
- Ensure that permanent changes in topography (due to mining) are sustainable and do not cause erosion or the 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 detail in the attached Closure Plan (Appendix Q), however, a summary of the closure objectives for Wansley Quarry 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 quarry area 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 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 agriculture. Upon replacement of the topsoil, the area around the excavation will be available for grazing purposes, and the planting of the cover crop (to protect the topsoil) will tie in with the proposed land use.

The MR Holder will comply with the minimum closure objectives as prescribed by 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 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.

Rehabilitation of plant/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 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.

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 mining 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).

Once the mining area was rehabilitated the MR 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) The process for managing any environmental damage, pollution, pumping and treatment of extraneous water or ecological degradation as a result of undertaking a listed activity.

Due to the nature of the mining operation, it is believed that the risk of environmental damage or pollution is of low significance. If site management implement the mitigation measures as prescribed in this document, it is believed that the impact on the receiving environment can be adequately controlled.

iii) Potential risk of Acid Mine Drainage.

(Indicate whether or not the mining can result in acid mine drainage).

Not applicable.

iv) Steps taken to investigate, assess, and evaluate the impact of acid mine drainage.

Not applicable.

v) Engineering or mine design solutions to be implemented to avoid or remedy acid mine drainage.

Not applicable.

vi) Measures that will be put in place to remedy any residual or cumulative impact that may result from acid mine drainage.

Not applicable.

vii) Volumes and rate of water use required for the mining, trenching or bulk sampling operation.

As mentioned in *Part A(1)(d)(ii) Description of the activities to be undertaken – 1.2.4 Water Management & 2.3.4 Water Use*, the water used at Wansley Quarry is extracted from a borehole on the farm. The mining related water requirements mainly consist of water needed for dust suppression on the haul roads and the processing plant. This water will be supplemented with water from the SWD's once constructed. The WULA of Wansley Quarry makes provision for the use of ±3 888 m^3/annum.

viii) Has a water use license been applied for?

The presence of the drainage lines within the mining footprint, and the use of borehole water necessitate a water use application in terms of Section 21 of the National Water Act, 1998 (Act No 36 of 1998) (NWA). The application was submitted in November 2020 and approval is pending with the DWS.

ix) Impacts to be mitigated in their respective phases

Measures to rehabilitate the environment affected by the undertaking of any listed activity

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.
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♦ Demarcation of site with visible beacons.	Site Establishment phase	37.8575 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, 2002 ♦ NEMA, 1998	Beacons need to be in place throughout the life of the mine.
♦ Site establishment and infrastructure development	Site Establishment- & Operational Phase	37.8575 ha	**<u>Potential Impact on the Character of the Surrounding Area:</u>**	Use of agricultural land must be managed in accordance with the: ♦ CARA, 1983	Throughout the site establishment- and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
♦ Drilling and blasting ♦ Cumulative impacts			♦ The SPLUMA application must be approved prior to the expansion of the quarry operation. ♦ The MR Holder must comply with the conditions of the SPLUMA approval, once received, for the duration of the mine's lifespan. ♦ Only the activities applied for as part of this application may be operated once approved. Any changes to, or deviations from, the project description set out in this document must be approved, in writing, by the DMRE before such changes or deviations may be effected.	♦ Closure Plan (Appendix Q) ♦ SPLUMA, 2013	
♦ Site establishment and infrastructure development ♦ Excavation, loading and hauling to processing area	Site Establishment- & Operational Phase	37.8575 ha	**Visual Mitigation:** ♦ The site must have a neat appearance and be kept in good condition at all times. ♦ Mining equipment must be stored neatly in a dedicated area with a sealed drip tray underneath when not in use. ♦ The MR 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 mining right. ♦ All riparian areas and watercourses (outside the mining footprint) along with the recommended 100 m buffer area are regarded as No-Go areas. ♦ Upon closure the site must be rehabilitated and landscaped to ensure that the visual impact on the aesthetic value of the area is kept to a minimum.	Management of the mining activities must be in accordance with the: ♦ MPRDA, 2002 ♦ 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
♦ Site establishment and infrastructure development ♦ Stripping and stockpiling of topsoil and/or overburden	Site Establishment- & Operational Phase	37.8575 ha	**<u>Management of vegetation Removal and Conservation of the CBA:</u>** ♦ The mining boundaries must be clearly demarcated and all operations must be contained to the approved mining area. ♦ The MR Holder must adhere to the layout of S1, as proposed in this document. ♦ A pre-commencement walk-through of the final mining footprint, must be done by a suitably qualified botanist, for species of conservation concern that would be affected (also to comply with the Eastern Cape Nature and Environmental Conservation Ordinance and DEDEAT/DAFF permit conditions). ♦ Permits for the removal of protected plant species (if required) must be kept on-site and in the possession of the flora search and rescue team at all times. ♦ A pre-commencement environmental induction for all staff on site 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. ♦ The on-site ECO must provide supervision and oversight of vegetation clearing activities and other activities which may cause damage to the environment, especially at the initiation of each	Natural vegetated areas must be managed in accordance with the: ♦ NEM:BA 2004 ♦ Eastern Cape Nature and Environmental Ordinance 19 of 1974	Throughout the site establishment- and operational-, and decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			new strip, when the majority of vegetation clearing is taking place. ♦ Blanket clearing of vegetation must be limited to the proposed mining footprint (S1) and associated infrastructure. No clearing outside of the minimum required footprint to take place. ♦ Topsoil must be stripped and stockpiled separately during site preparation and replaced over disturbed areas on completion. ♦ 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. ♦ After the operation, rehabilitate an acceptable vegetation layer according to rehabilitation recommendations as provided within a site-specific Rehabilitation Plan compiled by a suitably qualified botanist.		
♦ Site establishment and infrastructure development ♦ Cumulative impacts	Site Establishment- & Operational Phase	37.8575 ha	**<u>Protection of Fauna:</u>** ♦ 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. ♦ All personnel must undergo environmental induction regarding fauna management and in	Fauna must be managed in accordance with the: ♦ NEM:BA 2004	Throughout the site establishment- and operational phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			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 (40 km/h is recommended) to avoid collisions with susceptible species such as snakes and tortoises. ♦ When possible, no activity must be undertaken at the site between sunset and sunrise, except for security personnel guarding the operation (if needed). ♦ Any dangerous fauna (snakes, scorpions, etc.) that are encountered during construction must not be handled or antagonised by the construction staff. A suitably qualified person(s) must be contacted to remove the animals to safety. ♦ No litter, food or other foreign material must be thrown or left around the site and must be placed in demarcated and fenced rubbish and litter areas that are animal proof.		
♦ Site establishment and infrastructure development	Site Establishment & Operational Phase	37.8575 ha	**Archaeological, Heritage and Palaeontological Aspects:** ♦ All mining must be confined to the development footprint area.	Cultural/heritage aspects must be managed in accordance with the: ♦ NHRA, 1999	Throughout the site establishment-, and operational phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			♦ 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 SAHRA. ♦ Work may only continue once the go-ahead was issued by SAHRA. ♦ The Fossil Chance Find Procedure, proposed in this document, must be implemented should fossils be uncovered.		
♦ Site establishment and infrastructure development ♦ Stripping and stockpiling of	Site Establishment- and, Operational Phase	37.8575 ha	**<u>Loss of Agricultural Land for Duration of Mining:</u>** ♦ The temporary loss of agricultural land for the duration of the mining period is acceptable to the landowner. If needed, mined-out/rehabilitated areas will revert back to agricultural use once the cover crop stabilised.	Use of agricultural land must be managed in accordance with the: ♦ CARA, 1983 ♦ Closure Plan (Appendix Q)	Throughout the site establishment-, and operational phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
topsoil and/or overburden ♦ Excavation, loading and hauling to processing area					
♦ Stripping and stockpiling of topsoil and/or overburden	Site Establishment- & Operational Phase	37.8575 ha	**<u>Conservation of riparian vegetation, downstream rivers and watercourses:</u>** ♦ The MR Holder must adhere to the proposed mine plan, presented as S1 in this report. ♦ The MR Holder must demarcate the 100 m buffer area as indicate in the EFRSA and manage it as part of the abovementioned no-go area where no mining can take place. ♦ All riparian areas and watercourses (outside the mining footprint) along with the recommended 100 m buffer area are regarded as No-Go areas ♦ Vegetation clearing within the development footprint must be kept to a minimum and phased development must occur. ♦ All material stockpiles must be located outside drainage lines and watercourse areas. ♦ The erosion control mitigation measures described in this document must be implemented. ♦ All topsoil- and waste (if any) stockpiles must have berms and catchment paddocks at their toe to contain runoff of the facilities ♦ Only the vegetation within the identified footprint may be disturbed,	The riparian vegetation must be protected in accordance with the: ♦ NWA, 1998; ♦ NEM:BA, 2004	Throughout the site establishment-, and operational phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			♦ No equipment of any kind may be stored within the semi-ephemeral stream or associated riparian fringe. ♦ Concerned semi-ephemeral stream may only be accessed by the staff conducting the Invasive Alien Plant monitoring and eradication. ♦ All the condition of the WULA must be implemented for the duration of the site establishment-, operational-, and decommissioning phases.		
♦ Stripping and stockpiling of topsoil and/or overburden	Site Establishment- and, Operational Phase	37.8575 ha	**Fugitive Dust Emission Mitigation:** ♦ The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, straw, water spraying and/or environmentally friendly dust-allaying agents that contains no PCB's (e.g. DAS products). ♦ Water truck/s must be used to moisten denuded areas during dry periods/windy spells. These water trucks must also moisten the W-Road until it is surfaced. ♦ The site manager must ensure continuous assessment of the dust suppression equipment to confirm its effectiveness in addressing dust suppression. ♦ Speed on the access road must be limited to 40 km/h to prevent the generation of excess dust. ♦ Areas devoid of vegetation, which could act as a dust source, must be minimized and	Dust generation 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 phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			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. ♦ The MR Holder must implement a dust management plan and conduct monthly fall-out dust monitoring on site to accurately determine the site specific dust levels; ♦ Loads must be flattened to prevent spillage and covered during transportation on public roads. ♦ 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, GNR 827 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, blasting, excavating, processing, and transporting of the material from site to minimize potential dust impacts. ♦ No blasting to take place when high wind conditions are experienced in the area.		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
♦ Stripping and stockpiling of topsoil and/or overburden ♦ Drilling and Blasting ♦ Excavation, loading and hauling to processing plant ♦ Processing, stockpiling and transport of material	Site Establishment- & Operational Phase	37.8575 ha	**Noise Handling:** ♦ The MR holder must ensure that the employee and visitors to the site 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 land owners must be notified in writing prior to each blasting occasion. ♦ No blasting may take place under overcast conditions. ♦ Vibration- and noise monitoring equipment must be used at every blast. A seismograph must be placed at strategic points and should the vibration/noise results show excessive readings the blasting plan must be amended accordingly. ♦ 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 must be managed in accordance with the: ♦ NEM:AQA. 2004 Regulation 6(1) ♦ NRTA, 1996	Throughout the site establishment-, and operational phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			♦ Best practice measures shall be implemented in order to minimize potential noise impacts. ♦ Mining operations, including crushing and screening, must be limited Monday – Friday from 06:00 to 18:00 and Saturdays from 06:00 to 13:00. ♦ Blasting may only take pace during the week before 15:00, and trucks transporting material may only use the W-Road from 06:00 to 20:30 during weekdays, and 06:00 to 16:00 on Saturdays.		
♦ Stripping and stockpiling of topsoil and/or overburden ♦ Drilling and blasting ♦ Excavation, loading and hauling to processing plant ♦ Processing, stocpiling and transport of material	Site Establishment- and, Operational Phase	37.8575 ha	**Topsoil Management:** ♦ The upper 300 mm of the soil, of the strip to be mined, 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 have to 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	Topsoil stripping must be managed in accordance with the: ♦ CARA, 1983 ♦ NEM:BA, 2004 ♦ MPRDA, 2002 ♦ Closure Plan (Appendix Q)	Throughout the site establishment-, operational- and decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			of plants (weeds or a cover crop) on the stockpiles will help to prevent erosion. ♦ Topsoil heaps may not exceed 2 m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen. ♦ The temporary topsoil stockpiles must be kept free of invasive plant species. ♦ Topsoil heaps to be stored longer than a period of 6 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 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. ♦ The MR 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. ♦ A cover crop must be planted, irrigated and established immediately after spreading of topsoil, to stabilize the soil and protect it from erosion. The cover crop must be fertilized for optimum biomass production, and any soil deficiencies must be corrected, based on a		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			chemical analysis of the re-spread soil (if deemed necessary). It is important that rehabilitation be taken up to the point of cover crop stabilization. Rehabilitation cannot be considered complete until the first cover crop is well established. ♦ 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 ♦ Sloping and landscaping	Site Establishment, Operational- and Decommissioning Phase	37.8575 ha	**<u>Erosion Cotnrol and Stormwater Management:</u>** ♦ The recommendations of the SWMP must be implemented and managed on site: ▪ Two SWD's must be used to contain stormwater runoff from the mining area. ▪ Stormwater drains must be used to channel stormwater toward the SWD's. ▪ It is recommended that water from the SWD's be reused for dust suppression within the mining area to ensure sufficient storage capacity during flooding events. ▪ Polluting activities including storage of mining fleet, equipment wash down facilities and vehicle maintenance yards must be restricted to the workshop areas and must be undertaken on impermeable hard standing surfaces, which are formally drained to a dirty water drainage system at the site. ▪ All fuels and chemicals stored or used on site must be contained within fit for purpose	Soil must be managed in accordance with the: ♦ CARA, 1983 ♦ NEM:BA, 2004 ♦ MPRDA, 2002 ♦ Closure Plan (Appendix Q)	Throughout the site establishment-, operational- and decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			containers and stored within designated storage areas. In order 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 frequently. ♦ Existing access roads must be used as far as possible. ♦ No activities or movement of any mining vehicles within the downstream semi-ephemeral stream or associated riparian fringe. ♦ A Rehabilitation Plan must be put in place addressing phased rehabilitation methods where areas that are no longer mined or utilised, are systematically rehabilitated. Any erosion problems within the mining area as a result of the mining activities observed must be rectified immediately (within 24 hours) and monitored thereafter to ensure that they do not re-occur. ♦ All bare areas resulting from the development must be re-vegetated, post-operation, with locally occurring species, to bind the soil and limit erosion potential. ♦ Roads and other disturbed areas within the project area must be regularly monitored for erosion problems and problem areas must		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			receive follow-up monitoring to assess the success of the remediation. ♦ 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 so as to ensure effective drainage of the areas. ♦ Construction of gabions and other stabilisation features must be undertaken to prevent erosion, where deemed necessary. ♦ Sheet runoff from cleared areas, paved surfaces and access roads needs to be curtailed; Runoff from paved surfaces must be slowed down by the strategic placement of berms; ♦ Erosion can also be limited by ensuring that mine vehicles and human movement is limited to project-specific dedicated access ways. ♦ Storm water 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. ♦ 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:		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			▪ 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.		
♦ Stripping and stockpiling of topsoil and/or overburden ♦ Sloping and landscaping	Site Establishment & Operational-, and Decommissioning Phase	37.8575 ha	**<u>Management of Invasive Plant Species:</u>** ♦ An invasive plant species management plan (Appendix K) 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.	Invader plants must be managed in accordance with the: ♦ CARA, 1983 ♦ NEM:BA 2004 ♦ Invasive Plant Species Management Plan (Appendix O)	Throughout the site establishment-, operational-, and decommissioning phase.

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. ♦ Regular monitoring for alien plants at the site must occur and could be conducted simultaneously with erosion monitoring. ♦ 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) through the use of an herbicide recommended for use by the PCO in accordance with the directions for the use of such an herbicide. ♦ Clearing methods should aim to keep disturbance to a minimum and must be undertaken in accordance with relevant guidelines. ♦ No planting or importing of any alien species to the site for landscaping, rehabilitation or any other purpose may be allowed. ♦ This management plan/programme must also address the management and monitoring of especially *C. laevigatum* along the semi-ephemeral water course as this species have become severely invasive along this freshwater resource.		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			♦ Monitoring and eradication along the drainage lines and within the annual watercourse and associated riparian fringe must occur annually.		
♦ Stripping and stockpiling of topsoil and/or overburden ♦ Excavation, loading and hauling to processing area ♦ Processing, stockpiling and transport of material ♦ Sloping and landscaping	Operational-, and Decommissioning Phase	37.8575 ha	**Waste Management:** ♦ Regular vehicle maintenance, repairs and services may only take place at the off-site 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. ♦ The MR Holder must ensure that employees make use of the formal ablution facilities at the site offices, alternatively the employees must be provided with a chemical toilet that must be serviced at least once a week by an accredited liquid waste handling contractor. ♦ 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 MR holder. ♦ If a diesel bowser is used on site, it must be equipped with a drip tray at all times. Drip trays must be used during each and every refuelling	Mining related waste must be managed in accordance with the: ♦ NWA, 1998 ♦ NEM:WA, 2008 ♦ NEM:WA, 2008: National norms and standards for the storage of waste (GN 926) ♦ NEMA, 1998 (Section 30)	Throughout the site establishment-, operational- and decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling. ♦ Site management must ensure drip trays are cleaned after each use. No dirty drip trays may be used on site. ♦ 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 recognized facility. ♦ Should spillage occur, such or as oil or diesel leaking from a burst pipe, the contaminated soil must, within the first hour of occurrence, be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. Proof must be filed. ♦ Suitable covered receptacles must be available at all times and conveniently placed for the disposal of 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; ♦ Biodegradable refuse must be handled as indicated above; ♦ No waste may be buried burned on the site.		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			♦ Re-use or recycling of waste products must be encouraged on site. ♦ 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.		
♦ Stripping and stockpiling of topsoil and/or overburden ♦ Drilling and blasting ♦ Excavation, loading and hauling to processing area.	Site Establishment & Operational Phase	10 m buffer around power line footprint	**Managing the Power Line:** ♦ A 10 m no-go buffer area must be demarcated around the power line to protect it against mining related damages until the line could be deviated. ♦ Eskom must be informed (in writing) at least two weeks prior to each blasting event.	The power line must be managed in accordance with all Eskom servitudes and requirements.	Throughout the site establishment-, operational- and decommissioning phase.
♦ Drilling and blasting ♦ Excavation, loading and hauling to processing area ♦ Sloping and landscaping	Operational Phase	37.8575 ha	**Management of Health and Safety Risks:** ♦ 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 and communities must be informed in writing ahead of any blasting event. ♦ Measures to limit flyrock must be taken. ♦ Audible warning of a pending blast must be given at least 3 minutes in advance of the blast.	All mining activities must be in accordance with the: ♦ MHSA, 1996 ♦ OHSA, 1993	Throughout the operational-, and decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			♦ 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. ♦ All flyrock (of diameter 150 mm and larger) which falls beyond the working area, together with the rock spill must be collected and removed. ♦ Adequate ablution facilities and water for human consumption must daily be available on site. ♦ Workers must have access to the correct personal protection equipment (PPE) as required by law. ♦ All operations must comply with the Mine Health and Safety Act, 1996 (Act No 29 of 1996).		
♦ Drilling and blasting	Operational Phase	N/A	**Minimising the Impact of Blasting on Caged Birds:** ♦ Site manager must investigate the possibility of minimising blasting at the quarry as much as possible during the breeding season of the birds in question. ♦ The possibility of a research project must be investigated whereby the MR Holder and bird farmer collaborate to address the gap in knowledge regarding the impact of impulse noise on caged birds. ♦ On the actual day, blasting must be contained to the smallest possible timeframe to prevent numerous disturbances to the birds.	Blasting must take place in accordance with the: ♦ MHSA, 1996 ♦ NEM:AQA. 2004 Regulation 6(1) ♦ National Dust Control Regulations, GN No R827 ♦ ASTM D1739 (SANS 1137:2012) ♦ USBM Standards	Throughout the operational phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			♦ If possible the owner (of the birds) should be busy/present in the cages during the blasting event, as this might contribute to distracting the bird's attention. ♦ The mitigation measures proposed under Noise Handling must be adhered to at all times.		
♦ Drilling and blasting ♦ Cumulative impacts	Operational Phase	37.8575 ha and surrounding area	**Protection of Existing Infrastructure:** ♦ All mining activities must be contained inside the approved mining boundary. ♦ The type, duration and timing of the blasting procedures must be planned with due cognisance of the other land users and structures in the vicinity of the mining area. ♦ Blasting must be done by an appropriately qualified blaster in accordance with the USBM standards and measures will be implemented to limit flyrock. ♦ Prior to the first blast, the structural integrity of the infrastructure near (within 500 m) the mining footprint must be determined. ♦ During the blast, vibration measuring equipment (seismograph) must be placed at strategic points to measure the ground vibrations that extents from the quarry. Should the vibration tests indicate excessive high readings the blasting at the quarry must be amended to lower the impact. ♦ Any structural damage, that results as a direct result of the mining at the quarry, must be repaired at the cost of the MR Holder.	Blasting must take place in accordance with the: ♦ MHSA, 1996 ♦ NEM:AQA. 2004 Regulation 6(1) ♦ National Dust Control Regulations, GN No R827 ♦ ASTM D1739 (SANS 1137:2012) ♦ USMB Standards	Throughout the operational phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
♦ Excavation, loading and hauling to processing area ♦ Cumulative impacts	Operational Phase	37.8575 ha	**Management of Surface Water Quality:** ♦ Implement appropriate measures to ensure strict use and management of all hazardous materials used on site. ♦ Operate using best practises by storing hazardous substances in an adequately sized bunded area, with appropriate safety equipment at the off-site workshop. ♦ Collection of water within any bunded areas must be deemed hazardous and disposed of as such. ♦ Bunded areas must be water tight and inspected for leaks on a frequent basis. ♦ Leaks to the bunded areas must be rectified as soon as possible (within 24 hours). ♦ Drip trays must be utilised for the collection of leaks from vehicles and machinery parked for more than an hour. ♦ All refuelling must take place at the off-site workshop or refuelling area. Refuelling of machinery that cannot move of site must take place over drip trays. ♦ Place spill kits on site which are operated by trained staff members for the ad hoc remediation of minor chemical and hydrocarbon spillages. ♦ No vehicles to refuel within drainage lines, streams/riparian vegetation. ♦ Vehicular access to the annual stream/Qinira River must be restricted.	Mining must take place in accordance with the: ♦ NWA, 1998 ♦ WULA conditions ♦ SWMP	Throughout the operational phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			♦ Implement appropriate measures to ensure strict management of potential sources of pollutants (e.g. litter, hydrocarbons from vehicles and machinery, cement during construction etc.). ♦ Should a spill occur, this must be handled at the source of the leak and prevented from transpiring to the downstream semi-ephemeral watercourse; ♦ Ensure that routine maintenance on all vehicles is undertaken as per maintenance schedule and records are kept. ♦ Waste must be stored in clearly marked containers in a demarcated area. ♦ All waste material must be removed at the end of every working day to designated waste facilities at the main camp/suitable waste disposal facility. ♦ Sewage spillages must be seen as hazardous waste and must be handled as such. ♦ Construct diversion drains and containment dams/ponds (SWD dams) around the site timeously prior to operation; and ensure adherence to GNR 704 of the NWA. ♦ Ensure that these diversions of the drainage lines enter the containment SWD dams. ♦ Ensure that the capacity of these dams is sufficient to store all surface ("dirty") without overflowing and subsequently entering the annual stream.		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			♦ Monthly inspections of the integrity of the stormwater dams must be part of site managements responsibility.		
♦ Excavation, loading and hauling to processing area	Operational Phase	±1 km	**Management of the Mn10118 St/W-Road within Mining Boundary:** ♦ Prior to the realignment of the W-Road within the mining footprint, the MR Holder must consult with the relevant provincial authorities. ♦ The road may not be realigned without prior approval from the provincial roads authority.	The road must be managed in accordance with the: ♦ NRTA, 1996 ♦ TIA recommendations ♦ Provincial Department of Transport requirements.	Throughout the operational phase.
♦ Processing, stockpiling and transport of material	Operational Phase	±3 km	**Access Road Mitigation and Traffic Accomodation:** ♦ Mining related vehicles may only make use of the W-Road to access the quarry. No mining vehicles may be allowed on the B-Road. ♦ The W-Road must be surfaced from the intersection with the N6 up to the property boundary of the quarry to minimum cross-sectional standards, as required by the provincial authority. Surfacing of the road must take place within at least three (3) years from approval of the Section 102 application. ♦ Until such time that the upgrading of W-Road to a paved surface becomes financially viable (or within a 3-year period after commencement of the new activities), it is proposed that the gravel pavement structure of the W-Road be maintained by means of regular re-gravelling	All mining related traffic must adhere to the requirements of the: ♦ NRTA, 1996	Throughout the operational phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			(once/year), vegetation clearance and side drainage clearance. ♦ The MR Holder must maintain the upgraded W-Road, according to provincial requirements. ♦ The speed of all mining equipment/vehicles must be restricted to 40 km/h on the public access roads and 20 km/h on the internal roads. ♦ Overloading of the trucks must be prevented and proof of load weights must be filed and be available for auditing by relevant officials. ♦ Trucks transporting material may only use the W-Road from 06:00 to 20:30 during weekdays, and 06:00 to 16:00 on Saturdays.		
♦ Cumulative impacts	Operational Phase	37.8575 ha and surrounding community.	**Expansion of Mining Area Negatively Affecting Safety and Security of Area:** ♦ Any new employees, or sub-contractors must be vetted prior to inception of their contract. ♦ No unauthorised personnel may be allowed to enter the mining area. ♦ Mining employees, including truck drivers, must be educated to report suspicious looking person/s and/or matters within the surrounding area. ♦ The MR Holder is already part of the Holm Hill Residents Watsapp group where security and safety related matters are/can be discussed. Communication between the mine and surrounding landowners must be maintained for the duration of the site establishment-, operational- and decommissioning phases.	Mining related activities must adhere to the requirements of the: ♦ HBPAA, 1999 ♦ CLAA, 2013 ♦ PHA, 2011	Throughout the operational phase.

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	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
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.)	(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)		In which impact is anticipated (e.g. Construction, commissioning, operational Decommissioning, closure, post-closure))	(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.	(Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
S102 APPLICATION					
♦ 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: Implementation of proper housekeeping and site management.	Mining is only allowed within the boundaries of the approved area. ♦ MPRDA, 2002 ♦ NEMA, 1998
♦ Site establishment and infrastructure development ♦ Drilling and blasting	♦ Alteration of the surrounding agricultural sense of place due to the	The impact affects the agricultural operations of the property.	Site Establishment- & Operational Phase	Control: Proper site management, and adherence to legislated conditions as presented in the EA, SPLUMA, and WULA.	Use of agricultural land must be managed in accordance with the: ♦ CARA, 1983 ♦ Closure Plan (Appendix Q)

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
♦ Cumulative impacts	proposed development. ♦ Disturbance to the surrounding agricultural practices due to the proposed blasting activities. ♦ Potential depreciation of surrounding property values.				♦ SPLUMA, 2013
♦ Site establishment and infrastructure development ♦ Excavation, loading and hauling to processing area	♦ Visual intrusion due to site establishment. ♦ Visual intrusion associated with the extraction activities..	The visual impact may affect the aesthetics of the landscape.	Site Establishment- & Operational Phase	Control: Proper housekeeping and implementation of progressive rehabilitation.	Management of the mining activities must be in accordance with the: ♦ MPRDA, 2002 ♦ NEMA, 1998
♦ Site establishment and infrastructure development ♦ Stripping and stockpiling of topsoil and/or overburden	♦ Potential impact on vegetation and listed and protected plant species. ♦ Potential impact on vegetation and listed and protected plant species.	This will impact on the biodiversity of the receiving environment.	Site Establishment- & Operational Phase	Control: Implementing the proposed mitigation measures and keeping mining operations to the approved boundaries.	Natural vegetated areas must be managed in accordance with the: ♦ NEM:BA 2004

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
♦ Site establishment and infrastructure development ♦ Cumulative impacts	♦ Potential impact on the ECBCP-CBA due to site establishment. ♦ Reduced ability to meet conservation obligations and targets. ♦ Potential negative impact on the CBA and broad-scale ecological processes.	This will impact on the biodiversity of the receiving environment.	Site Establishment- & Operational Phase	Control: Implementing the proposed mitigation measures and keeping mining operations to the approved boundaries.	Natural vegetated areas must be managed in accordance with the: ♦ NEM:BA 2004 ♦ Eastern Cape Nature and Environmental Ordinance 19 of 1974
♦ Site establishment and infrastructure development	♦ Potential impact on fauna within the footprint area.	This will impact on the biodiversity of the receiving environment.	Site Establishment & Operational Phase	Control & Stop: Implementing good management practices.	Fauna must be managed in accordance with the: ♦ NEM:BA 2004
♦ Site establishment and infrastructure development ♦ Stripping and stockpiling of topsoil and/or overburden ♦ Excavation, loading and hauling to processing area	♦ Potential impact on archaeological artefacts or palaeontological finds. ♦ Potential impact on archaeological artefacts or palaeontological finds.	This could impact on the cultural and heritage legacy of the receiving environment.	Site Establishment- and, Operational Phase	Control & Stop: Implementation of a chance-find procedure.	Cultural/heritage aspects must be managed in accordance with the: ♦ NHRA, 1999

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
	♦ Potential impact on areas of palaeontological concern.				
♦ Stripping and stockpiling of topsoil and/or overburden	♦ Loss of agricultural land for duration of mining.	The impact affects the agricultural operations 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 (if possible).	Use of agricultural land must be managed in accordance with the: ♦ CARA, 1983 ♦ Closure Plan (Appendix Q)
♦ Stripping and stockpiling of topsoil and/or overburden	♦ Potential loss of riparian vegetation	This impact could affect the hydrology and biodiversity of the surrounding environment.	Site Establishment- and, Operational Phase	Control: Implementing the proposed mitigation measures and keeping mining operations to the approved boundaries.	The riparian vegetation must be protected in accordance with the: ♦ NWA, 1998; ♦ NEM:BA, 2004
♦ Stripping and stockpiling of topsoil and/or overburden ♦ Drilling and Blasting ♦ Excavation, loading and hauling to processing plant ♦ Processing, stockpiling and transport of material	♦ Dust nuisance as a result of stripping and stockpiling of topsoil/overburden. ♦ Dust nuisance caused by blasting activities. ♦ Dust nuisance due to excavation and from loading and vehicles transporting the material.	Increased dust will impact on the air quality of the receiving environment.	Site Establishment- & Operational Phase	Control: Dust suppression methods and proper housekeeping.	Dust generation 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
	♦ Dust nuisance generated by the processing plant and transport of material.				
♦ Stripping and stockpiling of topsoil and/or overburden ♦ Drilling and blasting ♦ Excavation, loading and hauling to processing plant ♦ Processing, stocpiling and transport of material	♦ Noise nuisance due to stripping and stockpiling of topsoil/overburden. ♦ Noise nuisance as a result of blasting. ♦ Noise as a result of the mining activities. ♦ Noise nuisance stemming from operation of the processing plant and transport of material.	Should the noise levels become excessive it may have an impact on the noise ambiance of the receiving environment.	Site Establishment- and, Operational Phase	Control: Noise suppression methods and proper housekeeping.	Noise generation must be managed in accordance with the: ♦ NEM:AQA. 2004 Regulation 6(1) ♦ NRTA, 1996
♦ Stripping and stockpiling of topsoil and/or overburden ♦ Sloping and landscaping	♦ Loss of stockpiled topsoil. ♦ Potential erosion of denuded areas. ♦ Erosion of returned topsoil after rehabilitation.	Loss of topsoil will affect the rehabilitation success upon closure of the mine.	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 Q)

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
♦ Stripping and stockpiling of topsoil and/or overburden ♦ Sloping and landscaping	♦ Potential infestation of the topsoil heaps and mining area with invader plant species. ♦ Infestation of the reinstated area with invader plant species.	This will impact on the biodiversity of the receiving environment.	Site Establishment & Operational-, and Decommissioning Phase	Control: Implementing soil- and invader plant control/management.	Invader plants must be managed in accordance with the: ♦ CARA, 1983 ♦ NEM:BA 2004 ♦ Invasive Plant Species Management Plan (Appendix O)
♦ Stripping and stockpiling of topsoil and/or overburden ♦ Excavation, loading and hauling to processing area ♦ Processing, stockpiling and transport of material ♦ Sloping and landscaping	♦ Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages. ♦ Soil contamination from hydrocarbon spills. ♦ 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 MR Holder. .	Operational-, and Decommissioning Phase	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan.	Mining related waste must be managed in accordance with the: ♦ NWA, 1998 ♦ NEM:WA, 2008 ♦ NEM:WA, 2008: National norms and standards for the storage of waste (GN 926) ♦ NEMA, 1998 (Section 30)

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
♦ Stripping and stockpiling of topsoil and/or overburden ♦ Drilling and blasting ♦ Excavation, loading and hauling to processing area.	♦ Potential damage to the power line. ♦ Potential damage to the power line. ♦ Potential damage to the power line.	Damage to the power line will affect the electricity supply of the farm.	Site Establishment & Operational Phase	Control & Remedy: Control mining activities so that it does not affect the power line, and/or remedy any damage as soon as possible.	The power line must be managed in accordance with all Eskom servitudes and requirements.
♦ Drilling and blasting ♦ Excavation, loading and hauling to processing area ♦ Sloping and landscaping	♦ Health and safety risk posed by blasting activities. ♦ Unsafe working environment for employees. ♦ Safety risk posed by un-sloped areas.	Unsafe working conditions or health and safety risks posed as a result of the mining activity could affect the employees and possibly the nearby residents.	Operational Phase	Control & Modify: All work to take place in accoradance with the applicable MHSA and OHSA legislation.	All mining activities must be in accordance with the: ♦ MHSA, 1996 ♦ OHSA, 1993
♦ Drilling and blasting	♦ Potential impact of blasting on nearby exotic bird farm.	Potential impact on the caged bird operation.	Operational Phase	Control & Modify: MR Holder to work with the owner of the caged birds to find a workable solution.	Blasting must take place in accordance with the: ♦ MHSA, 1996 ♦ NEM:AQA. 2004 Regulation 6(1) ♦ National Dust Control Regulations, GN No R827 ♦ ASTM D1739 (SANS 1137:2012) ♦ USBM Standards

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
♦ Drilling and blasting ♦ Cumulative impacts	♦ Potential impact on build infrastructure surrounding the quarry. ♦ Impact on existing infrastructure as a direct result of the mining operation.	This may have an impact on the activities of the affected landowners and result in additional costs to the MR Holder.	Operational Phase	Stop, Control & Modify: Should the monitoring results show levels of concern the blasting program has to be modified accordingly.	Blasting must take place in accordance with the: ♦ MHSA, 1996 ♦ NEM:AQA. 2004 Regulation 6(1) ♦ National Dust Control Regulations, GN No R827 ♦ ASTM D1739 (SANS 1137:2012) ♦ USMB Standards
♦ Drilling and blasting	♦ Potential impact of blasting on groundwater availability.	Potential impact on the water use of the surrounding community.	Operational Phase	Stop, Control & Modify: Should the monitoring results show levels of concern the blasting program has to be modified accordingly.	Blasting must take place in accordance with the: ♦ ASTM D1739 (SANS 1137:2012) ♦ USBM Standards
♦ Excavation, loading and hauling to processing area	♦ Mining through the drainage lines in the footprint area.	The specialist studies concluded that this will not have a substantial impact on the receiving environment.	Operational Phase	Control: Implementation of the mitigation measures proposed in this report and the SWMP.	Mining must take place in accordance with the: ♦ NWA, 1998 ♦ WULA conditions ♦ SWMP
♦ Excavation, loading and hauling to processing area ♦ Cumulative impacts	♦ Potential impact on localised surface water quality. ♦ Potential impact on water quality of the Qinira River.	Potential impact on the water use of the surrounding community.	Operational Phase	Control: Implementation of the mitigation measures proposed in this report and the SWMP.	Mining must take place in accordance with the: ♦ NWA, 1998 ♦ WULA conditions ♦ SWMP

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
♦ Excavation, loading and hauling to processing area	♦ Potential impact on the Mn10118 ST / W-Road within the mining boundary.	According to the TIA this will not have a significant impact on the receiving environment.	Operational Phase	Control & Modify: The MR Holder to follow the requirements and directions of the Provincial Roads Department.	The road must be managed in accordance with the: ♦ NRTA, 1996 ♦ TIA recommendations ♦ Provincial Department of Transport requirements.
♦ Processing, stockpiling and transport of material	♦ Overloading of trucks impacting road infrastructure.	Overloading negatively affects the road infrastructure used by mining related vehicles.	Operational Phase	Control: No overloading to be allowed.	All mining related traffic must adhere to the requirements of the: ♦ NRTA, 1996
♦ Processing, stockpiling and transport of material	♦ Degradation of the access roads.	Impacting the condition of public roads may incur public complaints and additional costs to the MR Holder.	Operational Phase	Modify: Implement P1 (use of W-Road exclusively) instead of P2 (use of both W-, and B-Roads). Control & Remedy: Maintaining the access road (W-Road) for the duration of the operational phase, as well as leaving it in a representative or better condition than prior to mining.	The access road must be managed in accordance with the: ♦ NRTA, 1996 ♦ TIA recommendations.
♦ Processing, stockpiling and transport of material	♦ Traffic impact on the surrounding gravel roads as a result of the mining activity.	Additional traffic impacts may incur public complaints and additional costs to the MR Holder.	Operational Phase	Modify: Implement P1 (use of W-Road exclusively) instead of P2 (use of both W-, and B-Roads). Control & Remedy: Implenting the mitigation measures proposed in this document and the TIA.	All mining related traffic must adhere to the requirements of the: ♦ NRTA, 1996

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
♦ Processing, stockpiling and transport of material	♦ Potential impact on surrounding area should the SWD's fail.	Potential impact on the water use of the surrounding community.	Operational Phase	Control: Implementation of the mitigation measures proposed in this report and the SWMP.	Mining must take place in accordance with the: ♦ NWA, 1998 ♦ WULA conditions ♦ SWMP
♦ Cumulative impacts	♦ Expansion of mining area negatively affecting safety and security of the surrounding area.	Safety and security of the receiving environment.	Operational Phase	Control: Implementation of the mitigation measures proposed in this report.	Mining related activities must adhere to the requirements of the: ♦ HBPAA, 1999 ♦ CLAA, 2013 ♦ PHA, 2011

f) Impact Management Actions

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

Table 35: Impact Management Actions

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
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.)	(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)	(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.	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.	(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)
S102 APPLICATION				
♦ Demarcation of site with visible beacons.	♦ No impact could be identified other than the beacons being outside the boundaries of the approved mining area.	<u>Control:</u> Implementation of proper housekeeping and site management.	Beacons need to be in place throughout the life of the mine.	Mining is only allowed within the boundaries of the approved area. ♦ MPRDA, 2002 ♦ NEMA, 1998
♦ Site establishment and infrastructure development ♦ Drilling and blasting ♦ Cumulative impacts	♦ Alteration of the surrounding agricultural sense of place due to the proposed development. ♦ Disturbance to the surrounding agricultural	<u>Control:</u> Proper site management, and adherence to legislated conditions as presented in the EA, SPLUMA, and WULA.	Site Establishment- & Operational Phase	Use of agricultural land must be managed in accordance with the: ♦ CARA, 1983 ♦ Closure Plan (Appendix Q) ♦ SPLUMA, 2013

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
	practices due to the proposed blasting activities. ♦ Potential depreciation of surrounding property values.			
♦ Site establishment and infrastructure development ♦ Excavation, loading and hauling to processing area	♦ Visual intrusion due to site establishment. ♦ Visual intrusion associated with the extraction activities..	Control: Proper housekeeping and implementation of progressive rehabilitation.	Site Establishment- & Operational Phase	Management of the mining activities must be in accordance with the: ♦ MPRDA, 2002 ♦ NEMA, 1998
♦ Site establishment and infrastructure development ♦ Stripping and stockpiling of topsoil and/or overburden	♦ Potential impact on vegetation and listed and protected plant species. ♦ Potential impact on vegetation and listed and protected plant species.	Control: Implementing the proposed mitigation measures and keeping mining operations to the approved boundaries.	Site Establishment- & Operational Phase	Natural vegetated areas must be managed in accordance with the: ♦ NEM:BA 2004
♦ Site establishment and infrastructure development ♦ Cumulative impacts	♦ Potential impact on the ECBCP-CBA due to site establishment. ♦ Reduced ability to meet conservation obligations and targets. ♦ Potential negative impact on the CBA and broad-scale ecological processes.	Control: Implementing the proposed mitigation measures and keeping mining operations to the approved boundaries.	Site Establishment- & Operational Phase	Natural vegetated areas must be managed in accordance with the: ♦ NEM:BA 2004 ♦ Eastern Cape Nature and Environmental Ordinance 19 of 1974

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
♦ Site establishment and infrastructure development	♦ Potential impact on fauna within the footprint area.	Control & Stop: Implementing good management practices.	Site Establishment & Operational Phase	Fauna must be managed in accordance with the: ♦ NEM:BA 2004
♦ Site establishment and infrastructure development ♦ Stripping and stockpiling of topsoil and/or overburden ♦ Excavation, loading and hauling to processing area	♦ Potential impact on archaeological artefacts or palaeontological finds. ♦ Potential impact on archaeological artefacts or palaeontological finds. ♦ Potential impact on areas of palaeontological concern.	Control & Stop: Implementation of a chance-find procedure.	Site Establishment-and, Operational Phase	Cultural/heritage aspects must be managed in accordance with the: ♦ NHRA, 1999
♦ Stripping and stockpiling of topsoil and/or overburden	♦ Loss of agricultural land 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 controlled through progressive rehabilitation (if possible).	Site Establishment- & Operational Phase	Use of agricultural land must be managed in accordance with the: ♦ CARA, 1983 ♦ Closure Plan (Appendix Q)
♦ Stripping and stockpiling of topsoil and/or overburden	♦ Potential loss of riparian vegetation	Control: Implementing the proposed mitigation measures and keeping mining operations to the approved boundaries.	Site Establishment-and, Operational Phase	The riparian vegetation must be protected in accordance with the: ♦ NWA, 1998; ♦ NEM:BA, 2004
♦ Stripping and stockpiling of topsoil and/or overburden ♦ Drilling and Blasting	♦ Dust nuisance as a result of stripping and stockpiling of topsoil/overburden.	Control: Dust suppression methods and proper housekeeping.	Site Establishment- & Operational Phase	Dust generation must be managed in accordance with the: ♦ NEM:AQA. 2004 Regulation 6(1)

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
♦ Excavation, loading and hauling to processing plant ♦ Processing, stockpiling and transport of material	♦ Dust nuisance caused by blasting activities. ♦ Dust nuisance due to excavation and from loading and vehicles transporting the material. ♦ Dust nuisance generated by the processing plant and transport of material.			♦ 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 processing plant ♦ Processing, stocpiling and transport of material	♦ Noise nuisance due to stripping and stockpiling of topsoil/overburden. ♦ Noise nuisance as a result of blasting. ♦ Noise as a result of the mining activities. ♦ Noise nuisance stemming from operation of the processing plant and transport of material.	Control: Noise suppression methods and proper housekeeping.	Site Establishment-and, Operational Phase	Noise generation must be managed in accordance with the: ♦ NEM:AQA. 2004 Regulation 6(1) ♦ NRTA, 1996
♦ Stripping and stockpiling of topsoil and/or overburden ♦ Sloping and landscaping	♦ Loss of stockpiled topsoil. ♦ Potential erosion of denuded areas.	Control & Remedy: Proper housekeeping and storm water management.	Site Establishment, Operational- and Decommissioning Phase	Topsoil stripping must be managed in accordance with the: ♦ CARA, 1983 ♦ NEM:BA, 2004 ♦ MPRDA, 2002

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
	♦ Erosion of returned topsoil after rehabilitation.			♦ Closure Plan (Appendix Q)
♦ Stripping and stockpiling of topsoil and/or overburden ♦ Sloping and landscaping	♦ Potential infestation of the topsoil heaps and mining area with invader plant species. ♦ Infestation of the reinstated area with invader plant species.	Control: Implementing soil- and invader plant control/management.	Site Establishment & Operational-, and Decommissioning Phase	Invader plants must be managed in accordance with the: ♦ CARA, 1983 ♦ NEM:BA 2004 ♦ Invasive Plant Species Management Plan (Appendix O)
♦ Stripping and stockpiling of topsoil and/or overburden ♦ Excavation, loading and hauling to processing area ♦ Processing, stockpiling and transport of material ♦ Sloping and landscaping	♦ Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages. ♦ Soil contamination from hydrocarbon spills. ♦ Potential contamination of environment due to improper waste management. ♦ Potential impact associated with litter/waste left at the mining area.	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan.	Operational-, and Decommissioning Phase	Mining related waste must be managed in accordance with the: ♦ NWA, 1998 ♦ NEM:WA, 2008 ♦ NEM:WA, 2008: National norms and standards for the storage of waste (GN 926) ♦ NEMA, 1998 (Section 30)
♦ Stripping and stockpiling of topsoil and/or overburden ♦ Drilling and blasting	♦ Potential damage to the power line.	Control & Remedy: Control mining activities so that it does not affect the power line, and/or remedy any damage as soon as possible.	Site Establishment & Operational Phase	The power line must be managed in accordance with all Eskom servitudes and requirements.

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
♦ Excavation, loading and hauling to processing area.	♦ Potential damage to the power line. ♦ Potential damage to the power line.			
♦ Drilling and blasting ♦ Excavation, loading and hauling to processing area ♦ Sloping and landscaping	♦ Health and safety risk posed by blasting activities. ♦ Unsafe working environment for employees. ♦ Safety risk posed by un-sloped areas.	Control & Modify: All work to take place in accoradance with the applicable MHSA and OHSA legislation.	Operational Phase	All mining activities must be in accordance with the: ♦ MHSA, 1996 ♦ OHSA, 1993
♦ Drilling and blasting	♦ Potential impact of blasting on nearby exotic bird farm.	Control & Modify: MR Holder to work with the owner of the caged birds to find a workable solution.	Operational Phase	Blasting must take place in accordance with the: ♦ MHSA, 1996 ♦ NEM:AQA. 2004 Regulation 6(1) ♦ National Dust Control Regulations, GN No R827 ♦ ASTM D1739 (SANS 1137:2012) ♦ USBM Standards
♦ Drilling and blasting ♦ Cumulative impacts	♦ Potential impact on build infrastructure surrounding the quarry.	Stop, Control & Modify: Should the monitoring results show levels of concern the blasting program has to be modified accordingly.	Operational Phase	Blasting must take place in accordance with the: ♦ MHSA, 1996 ♦ NEM:AQA. 2004 Regulation 6(1)

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
	♦ Impact on existing infrastructure as a direct result of the mining operation.			♦ National Dust Control Regulations, GN No R827 ♦ ASTM D1739 (SANS 1137:2012) ♦ USBM Standards
♦ Drilling and blasting	♦ Potential impact of blasting on groundwater availability.	Stop, Control & Modify: Should the monitoring results show levels of concern the blasting program has to be modified accordingly.	Operational Phase	Blasting must take place in accordance with the: ♦ ASTM D1739 (SANS 1137:2012) ♦ USBM Standards
♦ Excavation, loading and hauling to processing area	♦ Mining through the drainage lines in the footprint area.	Control: Implementation of the mitigation measures proposed in this report and the SWMP.	Operational Phase	Mining must take place in accordance with the: ♦ NWA, 1998 ♦ WULA conditions ♦ SWMP
♦ Excavation, loading and hauling to processing area ♦ Cumulative impacts	♦ Potential impact on localised surface water quality. ♦ Potential impact on water quality of the Qinira River.	Control: Implementation of the mitigation measures proposed in this report and the SWMP.	Operational Phase	Mining must take place in accordance with the: ♦ NWA, 1998 ♦ WULA conditions ♦ SWMP
♦ Excavation, loading and hauling to processing area	♦ Potential impact on the Mn10118 ST / W-Road within the mining boundary.	Control & Modify: The MR Holder to follow the requirements and directions of the Provincial Roads Department.	Operational Phase	The road must be managed in accordance with the: ♦ NRTA, 1996 ♦ TIA recommendations ♦ Provincial Department of Transport requirements.

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
♦ Processing, stockpiling and transport of material	♦ Overloading of trucks impacting road infrastructure.	Control: No overloading to be allowed.	Operational Phase	All mining related traffic must adhere to the requirements of the: ♦ NRTA, 1996
♦ Processing, stockpiling and transport of material	♦ Degradation of the access roads.	Modify: Implement P1 (use of W-Road exclusively) instead of P2 (use of both W-, and B-Roads). Control & Remedy: Maintaining the access road (W-Road) for the duration of the operational phase, as well as leaving it in a representative or better condition than prior to mining.	Operational Phase	The access road must be managed in accordance with the: ♦ NRTA, 1996 ♦ TIA recommendations.
♦ Processing, stockpiling and transport of material	♦ Traffic impact on the surrounding gravel roads as a result of the mining activity.	Modify: Implement P1 (use of W-Road exclusively) instead of P2 (use of both W-, and B-Roads). Control & Remedy: Implenting the mitigation measures proposed in this document and the TIA.	Operational Phase	All mining related traffic must adhere to the requirements of the: ♦ NRTA, 1996
♦ Processing, stockpiling and transport of material	♦ Potential impact on surrounding area should the SWD's fail.	Control: Implementation of the mitigation measures proposed in this report and the SWMP.	Operational Phase	Mining must take place in accordance with the: ♦ NWA, 1998 ♦ WULA conditions ♦ SWMP
♦ Cumulative impacts	♦ Expansion of mining area negatively affecting safety and security of the surrounding area.	Control: Implementation of the mitigation measures proposed in this report.	Operational Phase	Mining related activities must adhere to the requirements of the: ♦ HBPAA, 1999 ♦ CLAA, 2013 ♦ PHA, 2011

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 Regulation 22 (2) (d) as described in 2.4 herein.

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 quarry area 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 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

This report, the draft EIAR & EMPR, includes all the environmental objectives in relation to closure and will be available for perusal by the landowner, I&AP's and stakeholders over a 30-days commenting period. The comments received on the draft EIAR will be incorporated into the Final EIAR & EMPR.

(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 rehabilitation plan is attached as Appendix E.

(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 Wansley Quarry mining footprint. Final landscaping, levelling and top dressing will be done on all areas to be rehabilitated. The rehabilitation of the mining area as indicated on the rehabilitation map attached as Appendix E will comply with the

minimum closure objectives as prescribed by DMRE and detailed below, and therefore is deemed 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 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.

Rehabilitation of plant/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.

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 mining 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. The following calculation includes both the footprint of the approved Wansley Quarry and the proposed extension area.

Mine type and saleable mineral by-product

According to Tables B.12, B.13 and B.14

Mine type	Gravel
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)	**YES**	-
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	-	**NO**
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 2021 was used.

COMPONENT NO.	MAIN DESCRIPTION	MASTER RATE	MULTIPLICATION FACTOR
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)	18	1.00
2(A)	Demolition of steel buildings and structures	-	-
2(B)	Demolition of reinforced concrete buildings and structures	-	-

COMPONENT NO.	MAIN DESCRIPTION	MASTER RATE	MULTIPLICATION FACTOR
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	268 200	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	-	-
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	18 849	1.00

Determine weighting factors

According to Tables B.7 and B.8

Weighting factor 1: Nature of terrain/accessibility	1.10 (Undulating)
Weighting factor 2: Proximity to urban area where goods and services are to be supplied	1.05 (Peri-Urban)

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:	**Wansley Quarry**			**Location:**	**East London**		
Evaluators:	**C Fouché**			**Date:**	**15 April 2021**		
No	**Description**	**Unit**	**A Quantity**	**B Master rate**	**C Multiplication factor**	**D Weighting factor 1**	**E=A *B*C*D Amount (rands)**
			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^3	900	18	1.00	1.10	R 17 820.00
2(A)	Demolition of steel buildings and structures	m^2	0	256	1.00	1.10	R 0.00
2(B)	Demolition of reinforced concrete buildings and structures	m^2	0	377	1.00	1.10	R 0.00
3	Rehabilitation of access roads	m^2	0	46	1.00	1.10	R 0.00
4(A)	Demolition and rehabilitation of electrified railway lines	m	0	444	1.00	1.10	R 0.00
4(B)	Demolition and rehabilitations of non-electrified railway lines	m	0	242	1.00	1.10	R 0.00
5	Demolition of housing and/or administration facilities	m^2	0	512	1.00	1.10	R 0.00
6	Opencast rehabilitation including final voids and ramps	ha	32	268 200	0.04	1.10	R 377 625.60
7	Sealing of shaft, audits and inclines	m^3	0	137	1.00	1.10	R 0.00
8(A)	Rehabilitation of overburden and spoils	ha	0	178 800	1.00	1.10	R 0.00
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing waste)	ha	0	222 692	1.00	1.10	R 0.00

8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste)	ha	0	646 804	0.51	1.10	R 0.00
9	Rehabilitation of subsided areas	ha	0	149 718	1.00	1.10	R 0.00
10	General surface rehabilitation	ha	0	141 640	1.00	1.10	R 0.00
11	River diversions	ha	0	141 640	1.00	1.10	R 0.00
12	Fencing	m	0	162	1.00	1.10	R 0.00
13	Water Management	ha	0	53 855	0.17	1.10	R 0.00
14	2 to 3 years of maintenance and aftercare	ha	10	18 849	1.00	1.10	R 207 339.00
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 602 784.60
Multiply Sum of 1-15 by Weighting factor 2 (Step 4.4)		1.05		R 602 784.60		**Sub Total 1**	R 632 923.83

1	Preliminary and General	6% of Subtotal 1 if Subtotal 1 <R100 000 000.00	R 37 975.43
		12% of Subtotal 1 if Subtotal 1 >R100 000 000.00	-
2	Contingency	10.0% of Subtotal 1	R 63 292.38
		Sub Total 2 (Subtotal 1 plus management and contingency)	R 734 191.64
		Vat (15%)	R 110 128.75
		GRAND TOTAL (Subtotal 3 plus VAT)	**R 844 320.39**

According to the above calculations, the amount that will be necessary for the rehabilitation of damages caused by the operation, both at sudden closure during the normal operation of the project and at final, planned closure gives a sum total of R 844 320.39. The MR Holder has a financial guarantee to

the value of R 216 242.50 lodged with the DMRE, and upon departmental request the MR Holder will provide for the shortfall associated with the proposed expansion of the mining footprint.

(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 right holder 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 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) Mechanism 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	♦ Visible beacons need to be established at the corners of the mining area. ♦ A 10 m buffer area must be demarcated	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.	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
		around the power line until it is deviated.	Responsibility: ♦ Ensure beacons are in place throughout the life of the mine.	
♦ Site establishment and infrastructure development ♦ Drilling and blasting ♦ Cumulative impacts	Socio-Economic Environment / Land Use: ♦ Alteration of the surrounding agricultural sense of place due to the proposed development. ♦ Disturbance to the surrounding agricultural practices due to the proposed blasting activities. ♦ Potential depreciation of surrounding property values.	♦ Environmental Authorisation. ♦ SPLUMA approval. ♦ Water Use Licence.	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: ♦ Ensure that the SPLUMA application is approved prior to the expansion of the quarry operation. ♦ Comply with the conditions of the SPLUMA approval, once received, for the duration of the mine's lifespan. ♦ Ensure that only the activities applied for as part of this application is operated once approved. Any changes to, or deviations from, the project description set out in this document must be approved, in writing, by the DMRE before such changes or deviations may be effected.	Applicable throughout site establishment- and operational phases. ♦ Daily compliance monitoring by site management. ♦ Annual compliance monitoring of site by an Environmental Control Officer.
♦ Site establishment and infrastructure development ♦ Excavation, loading and hauling to processing area	Visual Characteristics ♦ Visual intrusion due to site establishment. ♦ Visual intrusion associated with the	♦ Minimize the visual impact of the activity on the surrounding environment through proper site management and implementing good	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.	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
	extraction activities.	housekeeping practices.	Responsibility: ♦ Ensure that the site have a neat appearance and is kept in good condition at all times. ♦ Store mining equipment neatly in a dedicated area with a sealed drip tray underneath when not in use. ♦ Limit vegetation removal, and only strip topsoil immediately prior to the mining/use of a specific area. ♦ Contain the excavation within the approved footprint of the mining right. ♦ Manage all riparian areas and watercourses (outside the mining footprint) along with the recommended 100 m buffer area as no-go areas. ♦ Rehabilitate and landscape the site upon closure to ensure that the visual impact on the aesthetic value of the area is kept to a minimum.	
♦ Site establishment and infrastructure development ♦ Stripping and stockpiling of topsoil and/or overburden	Mining, Biodiversity Conservation Areas and Vegetation ♦ Potential impact on vegetation and listed and ptorected plant species. ♦ Potentail impact on vegetation and listed and protected plant species. ♦ Potential impact on the ECBCP-CBA	♦ Visible beacons indicating the boundary of the mineable area (S1). ♦ Pre-commencement walkthrough with botanist. ♦ Removal permit should protected or red data species be relocated.	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: ♦ Clearly demarcate the mining boundaries and contain all operations to the approved mining area. ♦ Adhere to the layout of S1, as proposed in this document. ♦ Arrange a pre-commencement walk-through of the final mining footprint by a suitably qualified botanist, for species of conservation concern that would be affected.	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
	due to site establishment. ♦ Reduced ability to meet conservation obligations and targets. ♦ Potential negative impact on the CBA and broad-scale ecological processes.	♦ Cover crop to seed reinstated areas.	♦ Keep permits for the removal of protected plant species (if required) on-site and in the possession of the flora search and rescue team at all times. ♦ Conduct a pre-commencement environmental induction for all staff on site 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. ♦ Ensure that the on-site ECO provide supervision and oversee vegetation clearing activities and other activities which may cause damage to the environment, especially at the initiation of each new strip, when the majority of vegetation clearing is taking place. ♦ Limit blanket clearing of vegetation to the proposed mining footprint (S1) and associated infrastructure. Prevent clearing outside of the minimum required footprint. ♦ Strip and stockpile topsoil separately during site preparation and replace over disturbed areas on completion. ♦ Keep all vehicles on demarcated roads and prevent unnecessary driving in the veld outside these areas. ♦ Do not translocate plants or otherwise uprooted or disturbed it for rehabilitation or other purposes without express permission from the ECO and without the relevant permits. ♦ Do not allow fires on-site. ♦ After the operation, rehabilitate an acceptable vegetation layer according to rehabilitation recommendations as provided within a site-specific Rehabilitation Plan compiled by a suitably qualified botanist.	

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	Fauna: ♦ Potential impact on fauna within the footprint area.	♦ Toolbox talks to educate employees how to handle fauna that enter the work areas. ♦ Contact number of a snake catcher and/or other faunal specialists.	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: ♦ Ensure no fauna is caught, killed, harmed, sold or played with. ♦ Arrange the ECO or other suitably qualified person to remove any fauna directly threatened by the operational activities to a safe location. ♦ Conduct environmental induction with all personnel 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 (40 km/h) to avoid collisions with susceptible species such as snakes and tortoises. ♦ When possible, prevent activity at the site between sunset and sunrise, except for security personnel guarding the operation (if needed). ♦ Do not handle any dangerous fauna that are encountered. Contact a suitable qualified person to remove the animals to safety. ♦ Prevent litter, food or other foreign material being thrown or left around the site.	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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♦ Site establishment and infrastructure development ♦ Stripping and stockpiling of topsoil and/or overburden ♦ Excavation, loading and hauling to processing area	<u>Cultural and Heritage Environment:</u> ♦ Potential impact on areas of palaeontological concern. ♦ Potential impact on areas of palaeontological concern.	♦ Contact number of an archaeologist & palaeontologist that can be contacted when a discovery is made on site.	<u>Role:</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>Responsibility:</u> ♦ 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 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 SAHRA. ▪ Work may only continue once the go-ahead was issued by SAHRA. ♦ Implement the Fossil Chance Find Procedure, proposed in this document, should fossils be uncovered.	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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♦ Stripping and stockpiling of topsoil and/or overburden	Socio-Economic Environment / Land Use: ♦ Loss of agricutlural land for duration of mining.	♦ Mining schedule	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: ♦ If needed, sign mined-out/rehabilitated areas back to agricultural use once the cover crop stabilised.	Applicable throughout site establishment- and operational phases. ♦ Daily compliance monitoring by site management. ♦ Annual compliance monitoring of site by an Environmental Control Officer.
♦ Stripping and stockpiling of topsoil and/or overburden	Hydrolog and Geohydrology: ♦ Potential loss of riparian vegetation.	♦ Beacons to contain mining to the approved footprint.	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: ♦ Adhere to the proposed mine plan, presented as S1 in this report. ♦ Demarcate the 100 m buffer area as indicated in the EFRSA and manage it as part of the above mentioned no-go area where no mining can take place. ♦ Regard all riparian areas and watercourses (outside the mining footprint) along with the recommended 100 m buffer area as no-go area. ♦ Keep vegetation clearing within the development footprint to a minimum and implement phased development.	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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			♦ Place all material stockpiles outside drainage lines and watercourse areas. ♦ Implement the erosion control mitigation measures described in this document. ♦ Place berms and catchment paddocks around all topsoil- and waste (if any) stockpiles at their toe to contain runoff from the facilities. ♦ Only disturb the vegetation within the identified footprint. ♦ Do not store any equipment within the semi-ephemeral stream or associated riparian fringe. ♦ Ensure only the staff conducting the Invasive Alien Plant monitoring and eradication enters the semi-ephemeral stream. ♦ Implement all the conditions of the WULA for the duration of the site establishment-, operational-, and decommissioning phases.	
♦ Stripping and stockpiling of topsoil and/or overburden ♦ Drilling and Blasting ♦ Excavation, loading and hauling to processing plant ♦ Processing, stockpiling and transport of material	<u>Air Quality and Noise Ambiance:</u> ♦ Dust nuisance as a result of stripping and stockpiling of topsoil/overburden. ♦ Dust nuisance caused by blasting activities. ♦ Dust nuisance due to excavation and from loading and vehicles	♦ Dust suppression equipment such as a water car and sprayers on the crusher plant. ♦ Signage that clearly reduce the speed on the access roads. ♦ Cover crop to re-vegetate denuded areas.	<u>Role:</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>Responsibility:</u> ♦ Control the liberation of dust into the surrounding environment by the use of; inter alia, water spraying and/or other dust-allaying agents. ♦ Use water trucks to moisten the W-Road until it is surfaced. ♦ Ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression.	Applicable throughout site establishment-, operational-, and decommissioning phases. ♦ Daily compliance monitoring by site management. ♦ Monthly compliance monitoring by dust monitoring contractor. ♦ Annual compliance monitoring of site by an Environmental Control Officer.

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	transporting the material. ♦ Dust nuisance generated by the processing plant and transport of material.	♦ Schedule for weekly cleaning of crusher infrastructure. ♦ Dust Management Plan and fallout dust monitoring equipment. ♦ Tarp/liners to cover trucks.	♦ Limit speed on the access roads to 40 km/h to prevent the generation of excess dust. ♦ Minimise areas devoid of vegetation, and only remove vegetation immediately prior to mining. ♦ Add operational water sprayers to the crusher plan to alleviate dust generation from the conveyor belts. ♦ Minimize fines, blowing form 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. ♦ Implement a dust management plan and conduct monthly fall-out dust monitoring on site to accurately determine the site specific dust levels. ♦ Flatten and cover loads to prevent spillage of material during transportation on public roads. ♦ Consider weather conditions upon commencement of daily operations. Limit operations during very windy periods. ♦ 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, loading, and transporting of the mineral from the site to minimize potential dust impacts. ♦ No blasting allowed when high wind conditions are experienced in the area.	
♦ Stripping and stockpiling of topsoil and/or overburden	<u>Air Quality and Noise Ambiance:</u>	♦ Silencers fitted to all project related vehicles, and the use of vehicles that are in road worthy	<u>Role:</u> ♦ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.	Applicable throughout site establishment-, operational-, and decommissioning phases.

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♦ Drilling and blasting ♦ Excavation, loading and hauling to processing plant ♦ Processing, stocpiling and transport of material	♦ Noise nuisance due to stripping and stockpiling of topsoil/overburden. ♦ Noise nuisance as a result of blasting. ♦ Noise as a result of the mining activities. ♦ Noise nuisance stemming from operation of the processing plant and transport of material.	condition in terms of the National Road Traffic Act, 1996. ♦ Vibration- and noise monitoring equipment. ♦ Work schedule to adhere to allowable work hours.	♦ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Responsibility:</u> ♦ Ensure that employee and visitors to the site conduct themselves in an acceptable manner while on site. ♦ Do not permit loud music 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 surrounding landowners in writing prior to each blasting occasion. ♦ No blasting under overcast conditions. ♦ Use vibration- and noise monitoring equipment at every blast. Place a seismograph at strategic points and amend the blasting plan should the vibration/noise results show excessive readings. ♦ Appoint a qualified occupational hygienist to quarterly monitor and report on the personal noise exposure of the employees working at the mine. Monitoring must be done in accordance with the SANS10083:2004 (Edition 5) sampling method as well as NEM:AQA, 2004, SANS 10103:2008. ♦ Implement best practice measures to minimise potential noise impacts. ♦ Limit mining operations, including crushing and screening, to Monday – Friday from 06.00 to 18:00 and Saturdays from 06:00 to 13:00.	♦ Daily compliance monitoring by site management. ♦ Quarterly reporting by a qualified occupation hygienist. ♦ Annual compliance monitoring of site by an Environmental Control Officer.

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			♦ Only do blasting during the week before 15:00, and ensure that the trucks transporting material use the W-Road only from 06:00 to 20:30 during weekdays, and 06:00 to 16:00 on Saturdays.	
♦ Stripping and stockpiling of topsoil and/or overburden ♦ Sloping and landscaping	Geology and Soil: ♦ Loss of stockpiled topsoil.	♦ Earthmoving equipment to strip, stockpile and spread the topsoil. ♦ Designated team to control weeds/invader plant species that may germinate on the topsoil heaps. ♦ Cover crop to vegetate topsoil heaps (when needed) and reinstated soil.	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: ♦ Strip and stockpile the upper 300 mm of the soil before mining. ♦ Carefully manage and conserve the topsoil throughout the stockpiling and rehabilitation process. ♦ 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 heaps on a levelled area within the mining footprint area. Do not stockpile topsoil in undisturbed areas. ♦ Protect topsoil stockpiles against losses by water- and wind erosion. Position stockpiles so as not to be vulnerable to erosion by wind and water. Establish plants (weeds or a cover crop) on the stockpiles to prevent erosion. ♦ Ensure that topsoil heaps do not exceed 2 m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen. ♦ Keep temporary topsoil stockpiles free of invasive plant species.	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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			♦ Vegetate topsoil heaps to be stored longer than 6 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 stockpile area to prevent erosion. ♦ Spread the topsoil evenly, to a depth of 300 m, over the rehabilitated area upon closure of the site. ♦ 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 a cover crop immediately after spreading topsoil to stabilise the soil and protect it from erosion. Fertilise the cover crop for optimum production. Rehabilitation extends until the first cover crop is well established. ♦ 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 ♦ Sloping and landscaping	<u>Hydrology and Geohydrology:</u> ♦ Potential erosion of denuded areas. ♦ Erosion of returned topsoil after rehabilitation.	♦ Stormwater dams and stormwater drains. ♦ Rehabilitation Plan ♦ Cover crop to be established on reinstated areas. ♦ Erosion control infrastructure (if necessary).	<u>Role:</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>Responsibility:</u> ♦ Contain stormwater runoff from the mining area with two SWD's. ♦ Use stormwater drains to channel stormwater toward the SWD's.	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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			♦ Reuse the water from the SWD's for dust suppression within the mining area to ensure sufficient storage capacity during flooding events. ♦ Restrict polluting activities including storage of mining fleet, equipment wash down facilities and vehicle maintenance yards to impermeable hard standing surfaces at the workshop areas that formally drain to a dirty water drainage system at the site. ♦ Contain all fuels and chemicals stored or used on site within fit for purpose containers and store it within designated storage areas. Ensure that the designated storage area is 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. Add a roof to the storage area to prevent inflow of rainwater, which would require the sump to be emptied frequently. ♦ Use existing roads as far as possible. ♦ Prevent activities or movement of any mining vehicles within the downstream semi-ephemeral stream or associated riparian fringe. ♦ Establish a Rehabilitation Plan addressing phase rehabilitation methods where areas that are no longer mined or utilised, are systematically rehabilitated. Rectify any erosion problems within the mining area as a result of the mining activities within 24 hours and monitor the area thereafter to prevent re-occurrence. ♦ Re-vegetate all bare areas resulting from the development, post-operation, with locally occurring species, to bind the soil and limit erosion potential. ♦ Regularly monitor roads and other disturbed areas within the project area for erosion problems and once remediated ensure follow-up monitoring is implemented.	

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			♦ 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. Regularly maintain and clear these sediment/silt barriers to ensure effective drainage of the area. ♦ When deemed necessary, construct gabions and/or other stabilisation features to prevent erosion. ♦ Curtail sheet runoff from cleared areas, paved surfaces and access roads. Slow runoff from paved surfaces down by the strategic placement of berms. ♦ Limit erosion by ensuring that mine vehicles and human movement is limited to project-specific dedicated access ways. ♦ Divert storm water around the topsoil heaps and mining areas to prevent erosion. ♦ Protect stockpiles from erosion, stored it on flat areas, and surround it by appropriate berms where possible. ♦ Conduct activity in terms of the Best Practice Guidelines for small-scale mining as developed by DWS.	
♦ Stripping and stockpiling of topsoil and/or overburden ♦ Sloping and landscaping	<u>Mining, Biodiviersity and Vegetation:</u> ♦ Infestation of the topsoil heaps and mining area with invader plant species. ♦ Infestation of the reinstated area with	♦ Designated team to cut or pull out invasive plant species that germinated on site. ♦ Herbicide application equipment.	<u>Role:</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>Responsibility:</u> ♦ Implement an invasive plant species management plan at the site to ensure the management and control of all species regarded as Category 1a and 1b invasive species in terms of	Throughout the site establishment-, and operational phase. ♦ Daily compliance monitoring by site management. ♦ Annual compliance monitoring of site by an Environmental Control Officer.

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	invader plant species.		NEM:BA, 2004. Do weed/alien clearing on an ongoing basis throughout the life of the mining activities. ♦ Keep all stockpiles (topsoil & overburden) free of invasive plant species. ♦ Regularly monitor the site for alien plants. ♦ Control declared invader or exotic species on the rehabilitated areas. ♦ Keep disturbance to a minimum when clearing. ♦ No planting or importing of any alien species to the site for landscaping, rehabilitation or any other purpose may be allowed. ♦ Implement the management and monitoring of especially C. laevigatum along the semi-ephemeral water course. ♦ Annually monitor and eradicate problem species along the drainage lines and within the annual watercourse.	
♦ Stripping and stockpiling of topsoil and/or overburden ♦ Excavation, loading and hauling to processing area ♦ Processing, stockpiling and transport of material ♦ Sloping and landscaping	<u>General</u> ♦ Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages. ♦ Soil contamination from hydrocarbon spills. ♦ Potential contamination of environment due to	♦ Sealed drip trays. ♦ Formal waste disposal system with waste registers. ♦ Covered refuse bins. ♦ Oil spill kit. ♦	<u>Role:</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>Responsibility:</u> ♦ Ensure regular vehicle maintenance, repairs and services only take place at the off-site 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.	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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	improper waste management. ♦ Potential impact associated with litter/waste left at the mining area.		♦ Ensure that employees make use of the formal ablution facilities at the site offices, alternatively provide them with a chemical toilet that is serviced at least once a week by an accredited liquid waste handling contractor. ♦ Ensure that the use of any temporary, chemical toilet facilities does not cause pollution to water sources or pose a health hazard. In addition, prevent any form of secondary pollution from the disposal of refuse or sewage from the temporary, chemical toilets. Address any pollution problems arising from the above immediately. ♦ If a diesel bowser is used on site, equip it with a drip tray at all times. Ensure that drip trays are used during each and every refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling. ♦ Clean drip trays after use. Do not use dirty drip trays. ♦ Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. ♦ Should spillage occur, such as oil or diesel leaking from a burst pipe, collect the contaminated soil, within the first hour of occurrence, in a suitable receptacle and remove it from the site, either for resale or for appropriate disposal at a recognized facility. File proof. ♦ Place suitable covered receptacles at convenient places for disposal of waste. ♦ Store non-biodegradable refuse in a container with a closable lid at a collecting point to be collected at least once a month and disposed of at a recognised landfill site. Do not allow the dumping of refuse on or in the vicinity of the mine area. ♦ Handle biodegradable refuse as indicated above.	

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			♦ Prevent the burning or burying of waste on site. ♦ Encourage re-use and/or recycling of waste products on site. ♦ Report any significant spillage of chemicals, fuels etc. during the lifespan of the mining activities to the DWS and other relevant authorities.	
♦ Stripping and stockpiling of topsoil and/or overburden ♦ Drilling and blasting ♦ Excavation, loading and hauling to processing area.	Existing Infrastructure: ♦ Potential damage to the power line.	♦ Beacons to demarcate the 10 m buffer zone around the power line.	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: ♦ Demarcate a 10 m no-go buffer area around the power line until the line was deviated. ♦ Inform Eskom (in writing) at least two weeks prior to each blasting event.	Applicable throughout operational-, and decommissioning phases. ♦ Daily compliance monitoring by site management. ♦ Annual compliance monitoring of site by an Environmental Control Officer.
♦ Drilling and blasting ♦ Excavation, loading and hauling to processing area ♦ Sloping and landscaping	General: ♦ Health and safety risk posed by blasting activities. ♦ Unsafe working environment for employees.	♦ Stocked first aid box. ♦ Level 1 certified first aider. ♦ All appointments in terms of the Mine Health and Safety Act, 1996.	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: ♦ Plan the type, duration and timing of the blasting procedures with due cognisance of other land users and structure in the vicinity.	Applicable throughout decommissioning phase. ♦ Daily compliance monitoring by site management. ♦ Annual compliance monitoring of site by an Environmental Control Officer.

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	♦ Safety risk posed by un-sloped areas.		♦ Inform the surrounding landowners and communities in writing ahead of any blasting event. ♦ Take measures to limit flyrock. ♦ Give audible warning of a pending blast at least 3 minutes in advance of the blast. ♦ Ensure each blasting event complies with the USBM ground vibration and airblast levels. ♦ Use a vibro recorder to record all blasts. ♦ Collect and remove all flyrock (of diameter 150 mm and larger) which falls beyond the working area, together with the rock spill. ♦ Ensure adequate ablution facilities and water for human consumption are daily available on site. ♦ Ensure that workers have access to the correct PPE as required by law. ♦ Manage all operations in compliance with the Mine Health and Safety Act, 1996 (Act No 29 of 1996).	
♦ Drilling and blasting	<u>Fauna:</u> ♦ Potential impact of blasting on nearby exotic bird farm.	♦ Breeding season schedule of caged birds. ♦ Possible research project regarding the matter.	<u>Role:</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>Responsibility:</u> ♦ Investigate the possibility of minimising blasting at the quarry as much as possible during the breeding season of the birds in question. ♦ Consider the possibility of a research project whereby the MR Holder and bird farmer collaborate to address the gap in	Throughout the site establishment-, and operational phase. ♦ Daily compliance monitoring by site management. ♦ Annual compliance monitoring of site by an Environmental Control Officer.

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			knowledge regarding the impact of impulse noise on caged birds. ♦ Contain blasting to the smallest possible timeframe to prevent numerous disturbances to the birds on the actual day of blasting. ♦ Request the bird owner to be present in the cages during the blasting event, to distract the bird's attention. ♦ Implement the mitigation measures listed under Noise Handling at all times.	
♦ Drilling and blasting ♦ Cumulative impacts	<u>Existing Infrastructure:</u> ♦ Potential impact on build infrastructure surrounding the quarry. ♦ Impact on existing infrastructure as a direct result of the mining operation.	♦ Written notices to surrounding landowners/users of each blasting event. ♦ Report on the structural integrity of infrastructure within 500 m of the mining footprint. ♦ Seismograph.	<u>Role:</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>Responsibility:</u> ♦ Contain all mining activities inside the approved mining boundary. ♦ Plan the type, duration and timing of the blasting procedures with due cognisance of the other land users and structures in the vicinity of the mining area. ♦ Appoint an appropriately qualified blast to conduct blasting in accordance with the USBM standards and implement measures to limit flyrock. ♦ Determine the structural integrity of the infrastructure near (within 500) the mining footprint prior to the first blast. ♦ Place vibration measuring equipment (seismograph) at strategic points to measure the ground vibrations that extents from the	Applicable throughout 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
			quarry during each blast. Amend the blasting plan should vibration tests indicate excessive high readings. ♦ Repair any structural damage that directly results from the mining at the quarry at the cost of the MR Holder.	
♦ Excavation, loading and hauling to processing area ♦ Cumulative impacts	<u>Hydrology and Geohydrology:</u> ♦ Potential impact on localised surface water quality. ♦ Potential impact on water quality of the Qinira River.	♦ Visible beacons indicating the boundary of the mineable area (S1). ♦ Waste handling receptacles/structures and drip trays. ♦ Oil spill kit. ♦ SWD and stormwater drainage structures.	<u>Role:</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>Responsibility:</u> ♦ Implement appropriate measures to ensure strict use and management of all hazardous materials used on site. ♦ Operate using best practises by storing hazardous substances in an adequately sized bunded area, with appropriate safety equipment at the off-site workshop. ♦ Consider any water that collects within a bunded area as hazardous and dispose as such. ♦ Ensure bunded areas are water tight and frequently inspect for leaks. ♦ Rectify leaks to the bunded areas within 24 hours. ♦ Use drip trays to collect leaks from vehicles and machinery parked for more than an hour. ♦ Ensure all refuelling takes place at the off-site workshop or refuelling area. Refuel machinery that cannot move of site over drip trays.	Throughout the site establishment-, and operational phase. ♦ 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
			♦ Place spill kits on site which are operated by trained staff members for the ad hoc remediation of minor chemical and hydrocarbon spillages. ♦ Do not refuel any vehicles within drainage lines, streams/riparian vegetation. ♦ Restrict vehicular access to the annual stream/Qinira River. ♦ Implement appropriate measures to ensure strict management of potential sources of pollutants (e.g. litter, hydrocarbons from vehicles and machinery, cement during construction etc.). ♦ Handle a spill at the source of the leak and prevent it from transpiring to the downstream semi-ephemeral watercourse. ♦ Conduct routine maintenance on all vehicles as per maintenance schedule and keep records. ♦ Store waste in clearly marked containers in a demarcated area. ♦ Remove all waste material at the end of every work day to the designated waste facilities at the main camp/suitable waste disposal facility. ♦ Treat sewage spills as hazardous waste and handle as such. ♦ Construct diversion drains and containment dams/ponds (SWD dams) around the site timeously prior to operation; and ensure adherence to GNR 704 of the NWA. ♦ Ensure that these diversions of the drainage lines enter the containment SWD dams. ♦ Ensure that the capacity of these dams is sufficient to store all surface ("dirty") without overflowing and subsequently entering the annual stream. ♦ Inspect the integrity of the SWD's monthly as part of site management responsibilities.	

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
♦ Excavation, loading and hauling to processing area	Existing Infrastructure: ♦ Potential impact on the Mn10118 ST / W-Road within the mining boundary.	♦ Provincial road authority approval.	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: ♦ Consult with the relevant provincial authorities prior to the realignment of the W-Road. ♦ Do not realign the road prior to receipt of approval from the provincial road authority.	Applicable throughout operational-, and decommissioning phases. ♦ Daily compliance monitoring by site management. ♦ Annual compliance monitoring of site by an Environmental Control Officer.
♦ Processing, stockpiling and transport of material	Existing Infrastructure: ♦ Overloading of trucks impacting road infrastructure. ♦ Degradation of the access roads. ♦ Traffic impact on the surrounding gravel roads as a result of the mining activity.	♦ Earthmoving equipment to maintain the gravel pavement structure of the road. ♦ Road engineer to advise on the surfacing of the road. ♦ Maintenance schedule for the W-Road. ♦ Road signage to control traffic speed. ♦ Weighing devise to prevent overloading.	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: ♦ Only make use of the W-Road to access the quarry. No mining vehicles may be allowed on the B-Road. ♦ Surface the W-Road from the intersection with the N6 up to the property boundary of the quarry to minimum cross-sectional stands, as required by the provincial authority. Ensure surfacing of the road takes place within at least three (3) years from approval of the Section 102 application.	Applicable throughout 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
			♦ Until the W-Road is paved, maintain the gravel pavement structure of the W-Road by means of regular re-gravelling (once/year), vegetation clearance and side drainage clearance. ♦ Once upgraded, maintain the W-Road according to provincial requirements. ♦ Restrict the speed of all mining equipment/vehicles to 40 km/h on the public access roads and 20 km/h on the internal roads. ♦ Prevent the overloading of the trucks, and file proof of load weights for auditing purposes. ♦ Restrict trucks transporting material on the W-Road to 06:00 – 20:30 during weekdays, and 06:00 – 16:00 on Saturdays.	
♦ Cumulative impacts	<u>Socio-Economic Environment / Land Use:</u> ♦ Expansion of mining area negatively affecting safety and security of the surrounding area.	♦ Signage restricting entry to the mining area. ♦ Toolbox talks regarding safety and security. ♦ Community based discussion forums such as WhatsApp groups.	<u>Role:</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>Responsibility:</u> ♦ Ensure any new employees, or sub-contractors are vetted prior to inception of their contract. ♦ Prohibit entry of unauthorised personnel into mining area. ♦ Educate mining employees, including truck drivers, to report suspicious looking person/s and/or matters within the surrounding area. ♦ Maintain communication between the mine and surrounding landowners for the duration of the site establishment-, operational- and decommissioning phases.	Throughout the site establishment-, and operational phase. ♦ 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
♦ Sloping and landscaping	Topography: ♦ Landscaping of Mining Area	♦ Earthmoving equipment to reinstate mined-out areas.	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: ♦ Place overburden in the excavated area. ♦ Dump rocks and coarse material removed from the excavation into the excavation. ♦ Remove and dump coarse natural material used for the construction of ramps 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 deposit waste 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, return the topsoil previously stored to its original depth over the area. ♦ Fertilise 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 6 months from closure of the site. ♦ If instructed by the Regional Manager analyse the soil and rectify any deleterious effects on the soil arising from the mining operation. Seed the area with a vegetation seed mix to his or her specification.	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
			♦ 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 operations. ♦ On completion of mining operations, scarify the surface of all plant-, and/or stockpiling areas, if compacted due to hauling and dumping operations, to a depth of at least 200 mm and grade it to an even surface condition. Where applicable/possible return the topsoil to its original depth over the area.	

l) Indicate the frequency of the submission of the performance assessment report.

An 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 frequency 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 Section 102 amendment application was approved, a copy of the amended EMPR will be handed to the site manager. An induction meeting will be held with the mining related employees (operator & management) to inform them of the Basic Rules of Conduct with regard to the environment.

ii) Manner in which risks 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 activities 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 preforming 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

- **Waste Management:**
  - Take care of your own waste
  - 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 according to instructions
    - ✓ 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 fire wood
- 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
- 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 MR Holder 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 ☒
b) the inclusion of comments and inputs from stakeholders and I&AP's; ☒
c) the inclusion of inputs and recommendations from the specialist reports where relevant; ☒ and
d) the acceptability of the project in relation to the finding of the assessment and level of mitigation proposed; ☒

Signature of the environmental assessment practitioner:

Greenmined Environmental (Pty) Ltd

Name of Company:

16 July 2021

Date:

UNDERTAKING

I,…..*Jason Russel Coetzer*…….the undersigned and duly authorised thereto by……*Wansley Siyakhula (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 …… this …… day …… 2021

FINAL DOCUMENT TO BE SIGNED BY APPLICANT

_____

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 …… 2021

_____

REGIONAL MANAGER

EASTERN CAPE

Undertaking/eg

-END-

APPENDIX A1

REGULATION 2(2) MINE PLAN

APPENDIX A2

REGULATION 42 MINE PLAN

APPENDIX B

LOCALITY MAP

APPENDIX C

SITE ACTIVITIES MAP

APPENDIX D

SURROUNDING LAND USE MAP

APPENDIX E

REHABLITATION MAP

APPENDIX F1

WANSLEY QUARRY

MINING AUTHORISATION

APPENDIX F2

TOWN PLANNING MOTIVATION

APPENDIX G1

COMMENTS AND RESPONSE REPORT

APPENDIX G2

PROOF OF PUBLIC PARTICIPATION

APPENDIX H1

VEGETATION REPORT, 2007

APPENDIX H2

ECOLOGY AND FRESHWATER RESOURCES STUDY AND ASSESSMENT

APPENDIX I

TRAFFIC IMPACT ASSESSMENT

APPENDIX J

STORMWATER MANAGEMENT PLAN

APPENDIX K

LITERATURE REVIEW BY

DR DJ VAN NIEKERK

APPENDIX L

HERITAGE IMPACT ASSESSMENT

APPENDIX M

PALAEONTOLOGICAL IMPACT ASSESSMENT

APPENDIX N

SOCIAL AND LABOUR PLAN

APPENDIX O

INVASIVE PLANT SPECIES MANAGEMENT PLAN

APPENDIX P

SUPPORTING IMPACT ASSESSMENT

ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, herewith please receive an environmental impact statement that summarises the impact that the proposed extension of the Wansley Quarry operation may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

TYPE OF IMPACT	DURATION	LIKELIHOOD	SIGNIFICANCE
SECTION 102 APPLICATION			
Site Establishment and Infrastructure Development:	**Duration of site establishment phase**		
♦ Alteration of the surrounding agricultural sense of place due to the proposed development.		**Low Possibility**	**Low-Medium Concern (S1)**
♦ Visual intrusion due to site establishment		**Low Possibility**	**Low Concern (S1)**
♦ Potential impact on vegetation and listed and protected plant species.		**Low Possibility**	**Low Concern (S1)**
♦ Potential impact on the ECBCP-CBA due to site establishment.		**Low Possibility**	**Low Concern (S1)**
♦ Potential impact on fauna within the footprint area.		**Low Possibility**	**Low Concern (S1)**
♦ Potential impact on archaeological artefacts or palaeontological finds.		**Low Possibility**	**Low Concern (S1)**
Stripping and Stockpiling of Topsoil and/or Overburden	**Duration of operational phase**		
♦ Loss of agricultural land for duration of mining.		**Definite**	**Medium Concern (S1)**
♦ Potential impact on vegetation and listed and protected plant species.		**Low Possibility**	**Low Concern (S1, T1, T2)**
♦ Potential loss of riparian vegetation.		**Low Possibility**	**Low Concern (S1, T1, T2)**
♦ Dust nuisance as a result of stripping and stockpiling of topsoil/overburden.		**Low Possibility**	**Low Concern (S1, T1, T2)**
♦ Noise nuisance due to stripping and stockpiling of topsoil/overburden.		**Low Possibility**	**Low Concern (S1, T1, T2)**
♦ Potential impact on archaeological artefacts or palaeontological finds.		**Low Possibility**	**Low Concern (S1)**
♦ Loss of stockpiled topsoil.		**Low Possibility**	**Low Concern (S1, T1, T2)**
♦ Potential infestation of the topsoil heaps and mining area with invader plant species.		**Low Possibility**	**Low Concern (S1, T1, T2)**
♦ Potential erosion of denuded areas.		**Low Possibility**	**Low Concern (S1, T1, T2)**
♦ Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages.		**Low Possibility**	**Low Concern (S1, T1, T2)**
♦ Potential damage to the power line.		**Low Possibility**	**Low-Medium Concern (S1, T1, T2)**

TYPE OF IMPACT	DURATION	LIKELIHOOD	SIGNIFICANCE
Drilling and Blasting:	**Duration of operational phase**		
♦ Disturbance to the surrounding agricultural practices due to the proposed blasting activities.		**Low Possibility**	**Low-Medium Concern (S1, T1)**
♦ Health and safety risk posed by blasting activities.		**Low Possibility**	**Low Concern (S1, T1)**
♦ Dust nuisance caused by blasting activities.		**Possible**	**Low-Medium Concern (S1, T1)**
♦ Noise nuisance as a result of blasting.		**Possible**	**Medium Concern (S1, T1)**
♦ Potential damage to the power line.		**Possible**	**Low-Medium Concern (S1, T1)**
♦ Potential impact of blasting on nearby exotic bird farm.		**Possible**	**Low-Medium Concern (S1, T1)**
♦ Potential impact on build infrastructure surrounding the quarry.		**Low Possibility**	**Low Concern (S1, T1)**
♦ Potential impact of blasting on groundwater availability.		**Low Possibility**	**Low Concern (S1, T1)**
Excavation, Loading and Hauling to Processing Area:	**Duration of operational phase**		
♦ Visual intrusion associated with the excavation activities.		**Possible**	**Medium Concern (S1, T1, T2)**
♦ Dust nuisance due to excavation and from loading and vehicles transporting the material.		**Low Possibility**	**Low-Medium Concern (S1, T1, T2)**
♦ Noise nuisance as a result of the mining activities.		**Low Possibility**	**Low-Medium Concern (S1, T1, T2)**
♦ Soil contamination from hydrocarbon spills.		**Low Possibility**	**Low Concern (S1, T1, T2)**
♦ Potential impact on areas of palaeontological concern.		**Low Possibility**	**Low Concern (S1, T1, T2)**
♦ Potential damage to the power line.		**Low Possibility**	**Low-Medium Concern (S1, T1, T2)**
♦ Unsafe working environment for employees.		**Low Possibility**	**Low Concern (S1, T1, T2)**
♦ Mining through the drainage lines in the footprint area.		**Definite**	**Low-Medium Concern (S1, T1, T2)**
♦ Potential impact on localised surface water quality.		**Low Possibility**	**Low Concern (S1, T1, T2)**
♦ Potential impact on the Mn 10118 St / W-Road within the mining boundary.		**Definite**	**Low-Medium Concern (S1, T1, T2)**
Processing, Stockpiling and Transport of Material:	**Duration of operational phase**		
♦ Dust nuisance generated by the processing plant and transport of material.		**Low Possibility**	**Low-Medium Concern (S1, P1, P2, T1, T2)**
♦ Noise nuisance stemming from operation of the processing plant and transport of material.		**Low Possibility**	**Low-Medium Concern (S1, P1, T1, T2)** **Medium Concern (P2)**
♦ Potential contamination of environment due to improper waste management.		**Low Possibility**	**Low Concern (S1, T1, T2)**
♦ Overloading of trucks impacting road infrastructure.		**Low Possibility**	**Low Concern (S1, P1, P2)**
♦ Degradation of the access roads.		**Low Possibility**	**Low-Medium Concern (S1, P1, P2)**
		Possible	**Medium Concern (S1, P1)**

TYPE OF IMPACT	DURATION	LIKELIHOOD	SIGNIFICANCE
♦ Traffic impact on the surrounding gravel roads as a result of the mining activity. ♦ Potential impact on surrounding area should the SWD's fail. ♦ Contribution of mine to local economic development (Positive Impact).		**Low Possibility** **High Possibility (+)**	**Medium-High Concern (P2)** **Low Concern (S1, T1, T2)** **Medium-High (+) (S1, T1, T2)**
Cumulative Impacts: ♦ Potential depreciation of surrounding property values. ♦ Expansion of mining area negatively affecting safety and security of the surrounding area. ♦ Reduced ability to meet conservation obligations and targets. ♦ Potential negative impact on the CBA and broad-scale ecological processes. ♦ Impact on existing infrastructure as a direct result of the mining operation. ♦ Potential impact on water quality of the Qinira River.	**Duration of operational phase**	**Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility**	**Low-Medium Concern (S1, T1, T2)** **Low Concern (S1, P1, P2, T1, T2)** **Low Concern (S1, T1, T2)** **Low Concern (S1, T1, T2)** **Low Concern (S1, T1, T2)** **Low Concern (S1, T1, T2)**
Sloping and Landscaping: ♦ Safety risk posed by un-sloped areas. ♦ Erosion of returned topsoil after rehabilitation. ♦ Infestation of the reinstated area with invader plant species. ♦ Potential impact associated with litter/waste left at the mining area. ♦ Return of the mining area to agricultural use upon closure (Positive Impact)	**Duration of decommissioning phase**	**Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility** **Definite (+)**	**Low Concern (S1, T1, T2)** **Low Concern (S1, T1, T2)** **Low Concern (S1, T1, T2)** **Low Concern (S1, T1, T2)** **Medium-High (+)**

APPENDIX Q

CLOSURE PLAN

APPENDIX R

PHOTOGRAPHS OF THE EXTENSION AREA

PHOTOGRAPHS OF THE PROPOSED EXTENSION AREA	
	
	
	

APPENDIX S

CV AND EXPERIENCE OF EAP