DMI MINERALS SOUTH AFRICA (PTY) LTD.: A SUBSIDIARY OF DIAMCOR MINING INC. KRONE-ENDORA PROJECT

Section 24G Rectification, draft Environmental Impact Assessment Report and Environmental Management Programme Report

Report date: 22 April 2022

Reference: Reference No.: LP30/5/1/3/2/1 (10011) EM

SHANGONI
Management Services (Pty) Ltd

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Executive summary

The DMI Minerals South Africa (Pty) Ltd. ("DMI Minerals"): Krone-Endora Mine is located on a portion of the farm Krone 66 MS and a portion of the farm Endora 104 MS in the Limpopo Province, South Africa. The mining operation is situated directly north of the De Beers Venetia Diamond Mine, approximately 80 km from Musina, and is in the Musina Local Municipality of the Vhembe District.

A Mining Right (LP30/5/1/2/2/10011 MR) was granted to DMI Minerals on 10 September 2014 for the mining of diamonds on a portion of Endora 66 MS and a portion of Krone 104 MS. The mining right is valid for 30 years and measures 657.7111 ha in extent. An area of 110 ha was fenced where the main mining activities are taking place.

An *Environmental Authorisation - Screening Report* was compiled by Shangoni Management Services (Pty) Ltd, dated 17 September 2021. The Screening report undertook an assessment on the adequacy of existing authorisations and licences, and to identify areas where additional authorisations and licences, or amendments thereto are required at the existing Krone - Endora Mine operation.

The Screening report identified inadequacies in terms of the National Environmental Management Act, 1998 (Act 108 of 1998) due to the omission of several listed activities from the existing environmental authorisation ("EA"). Therefore, a rectification application in terms of Section 24 G of the National Environmental Management Act, 1998 (Act 108 of 1998) ("NEMA") is being applied for, for unauthorised listed activities. Table 1 provides a summary of the listed activities applied for as part of this application.

Table 1: Additional listed activities that would be triggered based on the current operations at DMI Minerals - Krone-Endora Mine

Listed activity no.	Description
Listing Notice 1: List of Activities and Competent Authorities Identified in terms of Sections 24(2) and 24D dated 04 December 2014 (GN 983), as amended	
12	The development of— (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; 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 metres 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;

Listed activity no.	Description
	(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
Listing Notice 2: List of Activities and Competent Authorities Identified in terms of Sections 24(2) and 24D dated 04 December 2014 (GN 984), as amended	
6	The development of facilities or infrastructure for any process or activity which requires a permit or licence or an amended permit or licence in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent, excluding— (i) activities which are identified and included in Listing Notice 1 of 2014; (ii) activities which are included in the list of waste management activities published in terms of section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the National Environmental Management: Waste Act, 2008 applies; (iii) the development of facilities or infrastructure for the treatment of effluent, polluted water, wastewater or sewage where such facilities have a daily throughput capacity of 2 000 cubic metres or less; or where the development is directly related to aquaculture facilities or infrastructure where the wastewater discharge capacity will not exceed 50 cubic metres per day.
15	Physical alteration of undeveloped, vacant, or derelict land for residential, retail, commercial, recreational, industrial, or institutional use where the total area to be transformed is 20 hectares or more; except where such physical alteration takes place for 1. linear development activities; or (i) agriculture or afforestation where activity 16 in this Schedule will apply.
Listing Notice 3: List of Activities and Competent Authorities Identified in terms of Sections 24(2) and 24D dated 04 December 2014 (GN 985)	
4	The development of a road wider than 4 metres with a reserve less than 13,5 metres in Limpopo, outside urban areas, in areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed areas.
12	The clearance of an area of 300 square metres 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.
14	The development of— (i) dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square metres: or (ii) infrastructure or structures with a physical footprint of 10 square metres or more.

Listed activity no.	Description
	(iii) where such development occurs— (a) within a watercourse. (b) in front of a development setback; or (c) if no development setback has been adopted, within 32 metres 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.

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PART A

SCOPE OF ASSESSMENT AND ENVIRONMENTAL IMPACT ASSESSMENT REPORT

1. Details of project applicant and environmental assessment practitioner

1.1 Details of the project applicant

For details pertaining to the project applicant refer to **Error! Not a valid bookmark self-reference.** below.

Table 2: Details of the project applicant

Name of operation	DMI Minerals – Krone-Endora Project
Applicant	DMI Minerals South Africa (Pty) Ltd.- a subsidiary of Diamcor Mining Inc ("DMI")
Project title	DMI Minerals - Section 24G Rectification Application, Krone-Endora Project, draft Environmental Impact Assessment Report and Environmental Management Programme Report ("the project")
Postal address	PO Box 755 Kimberley 8300
Responsible person	Kurt Petersen
Telephone no.	0731486961
e-mail address	kurtp@diamcor.com
Company registration no.	2007/004691/07

1.2 Details of the environmental assessment practitioner

Refer to Table 3 below for the details of the environmental assessment practitioner.

Table 3: Environmental assessment practitioner details

EAP	Shangoni Management Services (Pty) Ltd.: Lee-Anne Fellowes
Tel No	(012) 807 7036
Fax No	(012) 807 1014
E-mail Address	leeanne@shangoni.co.za

1.3 Expertise of the environmental assessment practitioner

For details on the expertise of the environmental assessment practitioner refer to Table 4 below.

Table 4: Environmental assessment practitioners expertise

Name and Surname	Qualifications and summary of experience
Lee-Anne Fellowes	Lee-Anne has a B-tech degree in Nature Conservation from the Tshwane University of Technology and holds a National Diploma in Nature Conservation. She gained valuable experience in the conservation and the environmental field through her employment at Gauteng's Department of Agriculture, Conservation and Environment for a period of 5 years. Her areas of expertise include alien invasive surveys, biodiversity action & conservation plans, Environmental Impact Assessments ("EIA"), Environmental Management Programmes ("EMP"), Section 24G Rectification Applications, Basic Assessments, Water Use Licenses and Project Management. Lee-Anne has 16 years' experience at Shangoni Management Services. Lee-Anne has been registered as a Professional Natural Scientist in the field of Conservation Science Registration number: 115574 and is registered as an environmental impact assessment practitioner Registration number: 2019/850. Lee-Anne is currently serving on the Gauteng's Department of Agriculture and Rural Development Appeals Panel Committee for a period of 36 months (2020 – 2023).

2. Description of the property

The description of the mining property is shown in Table 5 below.

Table 5: Description of the properties applicable to the project

Farm name	Portion 1 of farm Krone 104 MS Portion 1 of farm Endora 66 MS
Magisterial district	Mucina Local Municipality within the Vhembe District
Distance and direction from nearest town	35 km Northeast of Alldays
21-digit Surveyor General Code	T0MS00000000010400001 T0MS00000000006600001

3. Locality of the project

3.1 Magisterial district and administrative boundaries

DMI Minerals ("DMI") falls within the administrative boundaries presented in Table 6.

Table 6: Administrative boundaries

Province	Limpopo Province
District municipality	Vhembe District Municipality
Local municipality	Mucina Local Municipality
Department of Mineral and Energy ("DMRE") Local Office and the Competent Authority ("CA")	DMRE (Polokwane)
Department of Water and Sanitation ("DWS") Local Office	DWS (Limpopo)
Catchment zone	Limpopo River Catchment
Sub-catchments	A63
Water Management Area ("CMA")	Limpopo
Quaternary catchment	A63E

3.2 Location of the activities

The existing DMI Minerals - Krone-Endora Mine area is located on a portion of the farm Krone 66 MS and a portion of the farm Endora 104 MS in the Limpopo Province, South Africa. Refer to Figure 1. The site is situated directly north of De Beers Venetia Diamond Mine, approximately 80 km from Musina, and is in the Musina Local Municipality of the Vhembe District. Refer to Figure 2. The Krone and Endora farms comprise an area of approximately 5 888 ha within the De Beers privately owned Venetia Limpopo Nature Reserve ('VLNR') that covers an area of approximately 37 000 ha.

3.3 Unlawful activity and motivation

The *DMI Minerals South Africa (Pty) Ltd: Environmental Impact Assessment and Environmental Management Programme Submitted for an Application for a Mining Right in terms of Section 39 and of Regulations 50 and 51 of the Mineral and Petroleum Resources Development Act, 2002, (Act No. 28 of 2002) (The Act), DMR reference number LP30/5/1/2/2/10011MR* dated November 2012 ("EIA and EMPr"), was approved under the Mineral and Petroleum Resources Development Act, Act 28 of 2002 ("MPRDA") in September 2014. The mine applied for Environmental Authorisation in terms of the National Environmental Management Act, Act 107 of 1998 ("NEMA") and such was granted by the Limpopo Department of Economic Development, Environment and Tourism, ("LEDET") on 7 February 2013 for the following listed activities:

- Activity no 23 (ii) of Government Notice R. 544 of 18 June 2010 (Listing Notice 1): "The transformation of undeveloped, vacant or derelict land to residential, retail, commercial, recreational, industrial or institutional use, outside an urban area and where the total area to be transformed is bigger than 1 hectare but less than 20 hectares, except where such transformation takes place for linear activities."
- Activity no 28 of Government Notice R. 544 of 18 June 2010 (Listing Notice 1): "The expansion of existing facilities for any process or activity where such expansion will result in the need for a new or amendment of an existing permit or licence in terms of national or provincial legislation governing the release of emissions or pollution, excluding where the facility, process or activity is included in the list of waste management activities published in terms of the National Environmental Management: Waste Act, 2008 (Act 59 of 2008) in which case that Act will apply."
- Activity no 14 of Government Notice R. 546 of 18 June 2010 (Listing Notice 3): "The clearance of an area of 5 hectares or more vegetation where 75% or more of the vegetation cover constitutes indigenous vegetation."

Upon completion of the screening report, it was noted that additional listed activities are currently taking place on site, that are not included in the existing EA. As a result, DMI Minerals - Krone-Endora Mine proposed to authorise their current mining activities by applying for the rectification application in terms Section 24G of the NEMA.

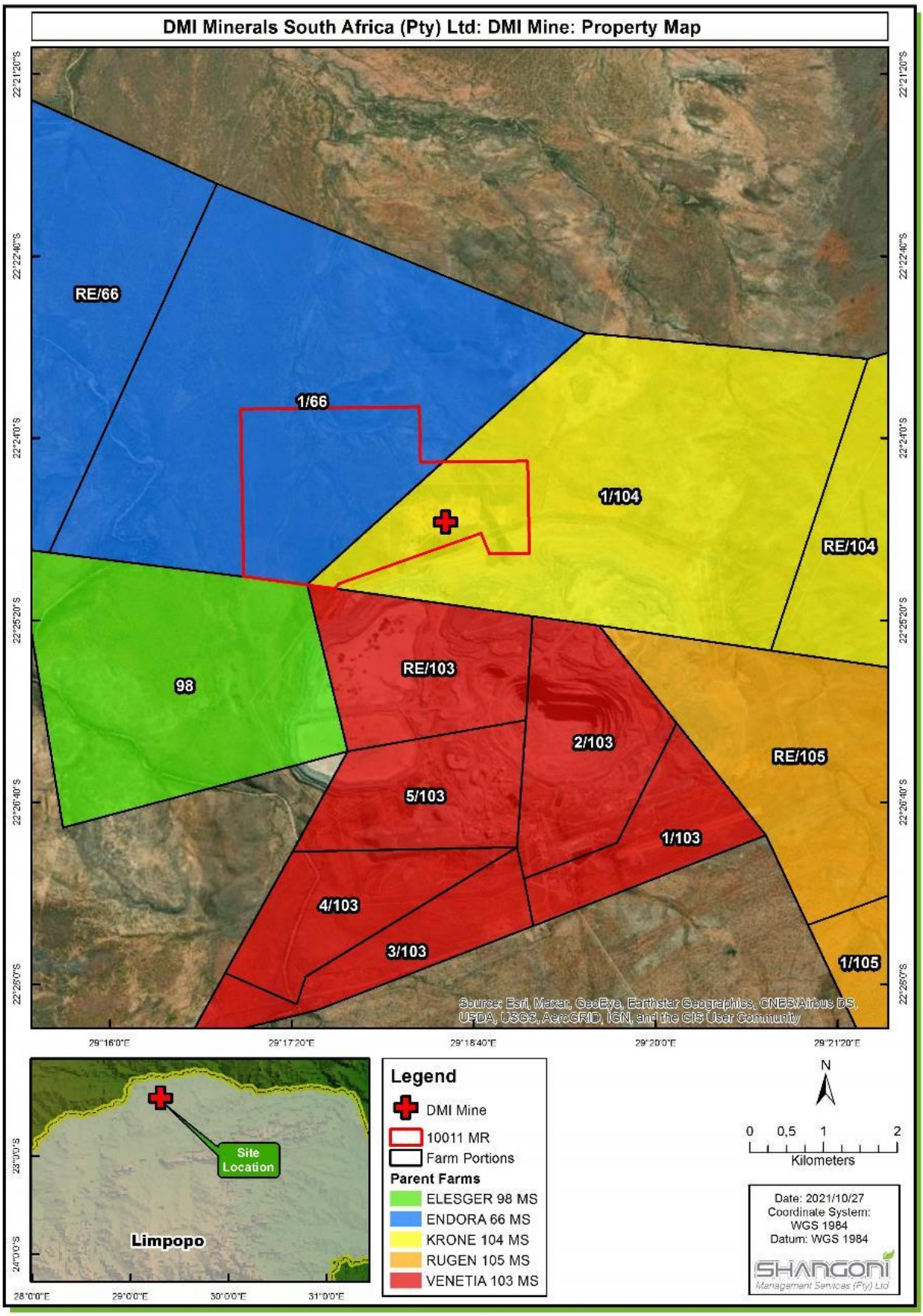

Figure 1: Affected properties associated with the project

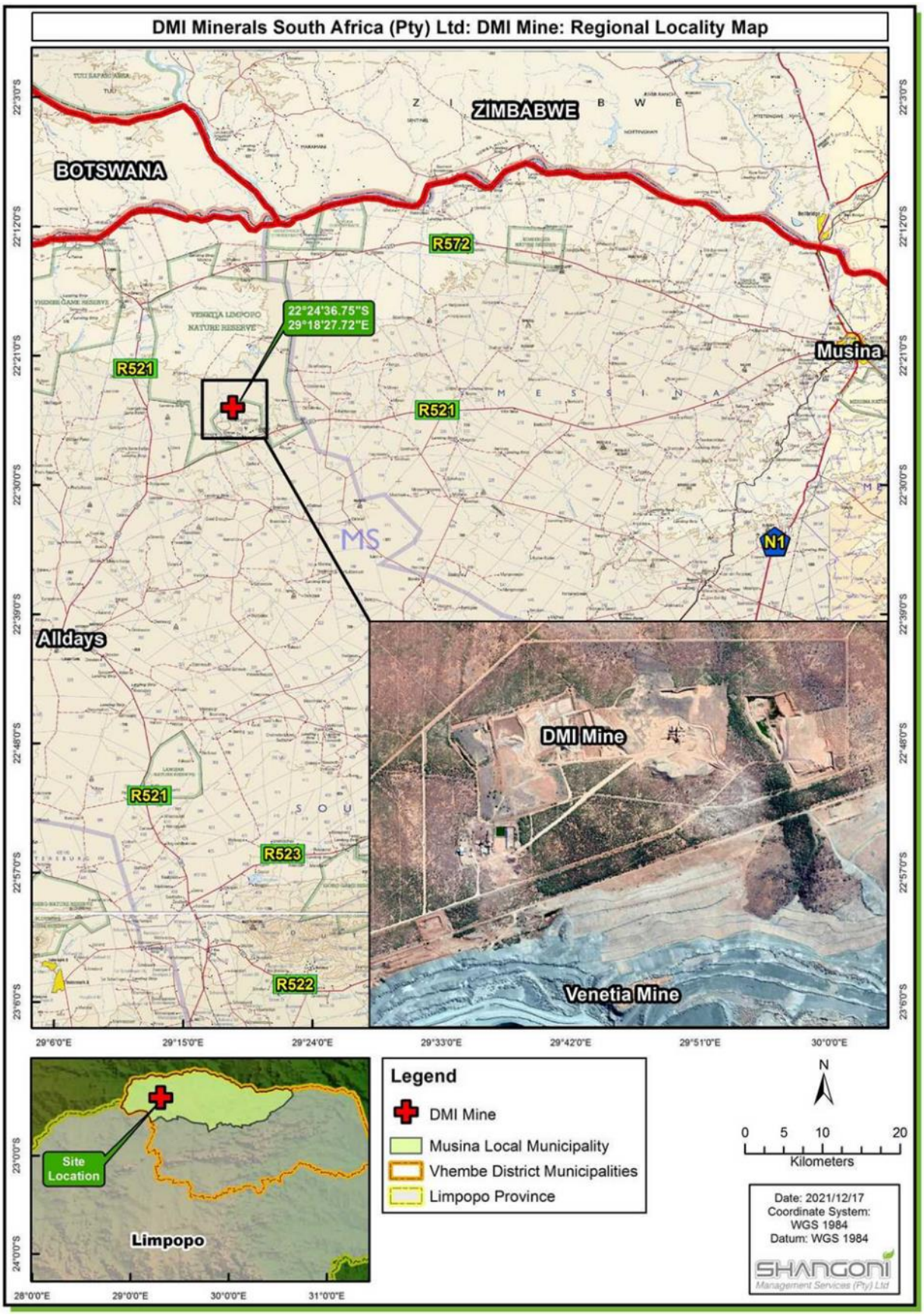

Figure 2: DMI Minerals – existing Krone-Endora Project

4. Description of the scope of the activity

The mining activities at the Krone-Endora mining site consist of the following as can be seen in Figure 3:

- Access & haul roads and fence.
- Site clearing and opencast mining for the existing mining operations up to 28 February 2022.
- Main Treatment Plant.
- Mobile in-field screening plant.
- Stockpiles:
    - Topsoil stockpile.
    - Fines (-1.0mm) & oversized (+28.0mm) rejects.
    - Stockpile of ore/gravel (-28.0mm+1.0mm).
    - Concentrate stockpile.
    - Reject stockpile (-8.0mm+1.0mm); and
    - Test stockpile (-28.mm + 8.0mm).
- Small diameter water pipeline.
- Processing plant.
- Dams (freshwater dam, settling dam & slimes dam).
- Workshops, waste yard & stores and offices
- Stormwater management infrastructure; and
- Rehabilitation activities.

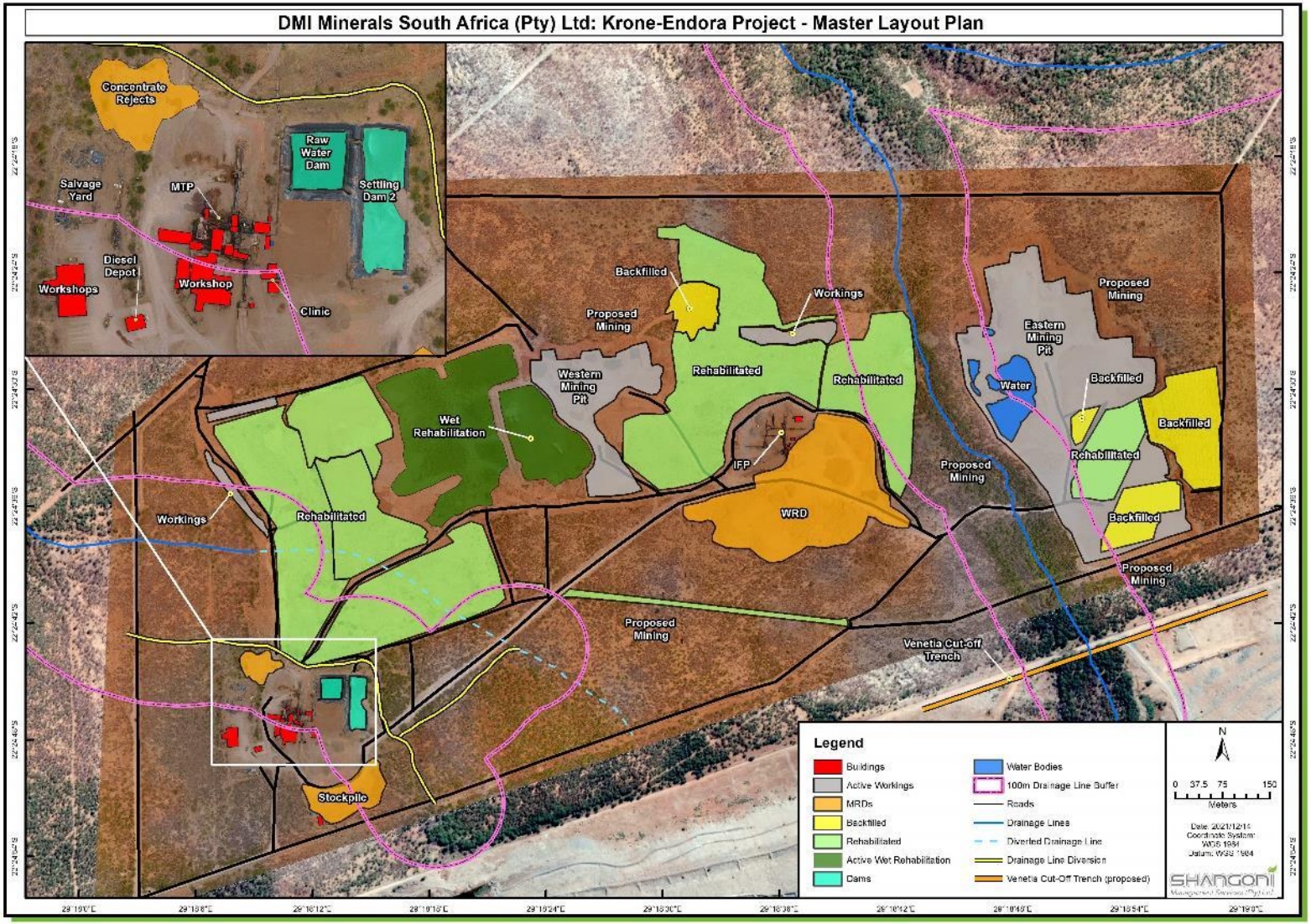

Figure 3: Site layout plan (current activities)

4.1 Listed and specified activities applied for

According to the *DMI Minerals South Africa (Pty) Ltd. Environmental Impact Assessment and Environmental Management Programme* ("EMPr"), dated November 2012 and compiled by Eco-Partners a Basic Assessment Process was conducted in terms of the NEMA, due to three (3) activities listed in GN R. 544 and in GN R. 546 of 18 June 2010 proposed to take place at DMI in 2012. An EA was subsequently issued for these 3 listed activities on 7 February 2013. As discussed in section 3.3 above, the 3 listed activities included in the EA were activity 23 of GN R. 544, activity 28 (GN R. 544), and activity 14 (GN R. 546).

Based on the findings of the *Environmental Authorisations – Screening Report*, dated 17 September 2021, undertaken by Shangoni Management Services (Pty) Ltd., the current activities and operations trigger the following authorisations:

1. The rectification process to be done in terms of Section 24G of the National Environmental Management Act, Act No. 107 of 1998. The rectification process will only be done for current existing activities that require environmental authorisation.
2. A Water Use Licence ("WUL") for Water Use activities listed in terms of section 21 of the National Water Act (Act 36 of 1998) ("NWA").
   The following water use activities will be applied for that require authorisation:
   - Section 21(a) of the Act: Taking of water from a water resource.
   - Section 21(c) of the Act: Impeding or diverting the flow of water in a watercourse and Section 21(i) of the Act: Altering the bed, banks, course, or characteristics of a watercourse.
   - Section 21(g) of the Act: Disposing of waste in a manner which may detrimentally impact on a water resource.
   - Section 21 (j) of the Act: removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people.

Waste management activities will not be triggered due to the waste activities that were included in the EIAR/EMPr (2012). Further thereto, a waste classification and characterisation compiled by Shangoni Management Services (Pty) Ltd (02 February 2022) confirmed "*the acid potential study reveal that the Diamcor mineral waste materials generated by the mining activities are non-acid forming. The rock type is classified as a Type III which is defined as "non-acid" forming. As a result of the low acid forming potential and high neutralisation potential, no net acid can be generated from the mineral waste generated by DMI. The pH is likely to be neutral to slightly alkaline and heavy metal solubilisation will therefore be minimal".*

According to the *Environmental Authorisations – Screening Report* compiled by Shangoni Management Services (Pty) Ltd dated 17 September 2021 an assessment of listed activities in terms of the EIA Regulations, dated 2 August 2010 (GN R. 543) and the EIA Regulations, dated 8 December 2014 (GN R. 982) was conducted on the activities as required at the time of compilation of the EIA and EMPr in 2012 Table 7 and if activities and listed activities commenced after 2014, in Table 8.

Table 7: Activities and listed activities as required at the time of compilation of the EIA and EMPr in 2012

Listed activity no.	Listing Notice	Description of activities
Listed activities authorised as per the environmental authorisation		
Listing Notice 1: List of Activities and Competent Authorities Identified in terms of Sections 24(2) and 24D dated 18 June 2010 (GN 544)		
11	The construction of: 1. canals. 2. channels. 3. bridges. 4. dams. 5. weirs. 6. bulk storm water outlet structures. 7. marinas. 8. jetties exceeding 50 square metres in size. 9. slipways exceeding 50 square metres in size. 10. buildings exceeding 50 square metres in size; or 11. infrastructure or structures covering 50 square metres or more where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.	Infrastructure, including: • Haul roads, slimes dam, raw water dam, settling dams, workshop, waste yard, offices, clinic, MPT, IFS, that were constructed within 32 m of a watercourse.
22	The construction of a road, outside urban areas, 1. with a reserve wider than 13,5 meters or, 2. where no reserve exists where the road is wider than 8 metres, or 3. for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Notice 545 of 2010.	Construction of a haul roads wider than 8 m.

Listed activity no.	Listing Notice	Description of activities
Listing Notice 2: List of Activities and Competent Authorities Identified in terms of Sections 24(2) and 24D dated 18 June 2010 (GN 545)		
5	The construction of facilities or infrastructure for any process or activity which requires a permit or license in terms of national or provincial legislation governing the generation or release of emissions, pollution, or effluent and which is not identified in Notice No. 544 of 2010 or included in the list of waste management activities published in terms of Section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case that Act will apply.	Water use activities (in terms of Section 21 (g) of the NWA) that required a Water Use Licence.
15	Physical alteration of undeveloped, vacant, or derelict land for residential, retail, commercial, recreational, industrial, or institutional use where the total area to be transformed is 20 hectares or more; except where such physical alteration takes place for 4. linear development activities; or 5. agriculture or afforestation where activity 16 in this Schedule will apply.	Clearance of vegetation for mining and mining related activities, including: • Construction of haul roads. • Excavations as part of mining / quarrying activities. • Construction of the slimes dam, raw water dam, settling dams, • Construction of the workshop, offices, waste yard, clinic, ablution facilities etc.
Listing Notice 3: List of Activities and Competent Authorities Identified in terms of Sections 24(2) and 24D dated 18 June 2010 (GN 546)		
16	The construction of: 1. jetties exceeding 10 square metres in size. 2. slipways exceeding 10 square metres in size. 3. buildings with a footprint exceeding 10 square metres in size; or 4. infrastructure covering 10 square metres or more where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line	Infrastructure, including: • Haul roads, slimes dam, raw water dam, settling dams, workshop, waste yard, offices, clinic, MPT, IFS, that were constructed within 32 m of a watercourse.

Table 8: Activities and listed activities as required where these activities commenced after 2014

Listed activity no.	Description	Description of activities
Listing Notice 1: List of Activities and Competent Authorities Identified in terms of Sections 24(2) and 24D dated 04 December 2014 (GN 983), as amended		
12	The development of— (iii) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or (iv) 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 metres 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	Construction of dams and infrastructure including the MTP, channels and stockpiles within 32 m of a watercourse. Mining within 32 m of a watercourse.
Listing Notice 2: List of Activities and Competent Authorities Identified in terms of Sections 24(2) and 24D dated 04 December 2014 (GN 984)		
6	The development of facilities or infrastructure for any process or activity which requires a permit or licence or an amended permit or licence in terms of national	Water use activities (in terms of Section 21 (g) of the NWA) that required a Water Use Licence.

Listed activity no.	Description	Description of activities
	or provincial legislation governing the generation or release of emissions, pollution or effluent, excluding— (iv) activities which are identified and included in Listing Notice 1 of 2014; (v) activities which are included in the list of waste management activities published in terms of section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the National Environmental Management: Waste Act, 2008 applies; (vi) the development of facilities or infrastructure for the treatment of effluent, polluted water, wastewater or sewage where such facilities have a daily throughput capacity of 2 000 cubic metres or less; or where the development is directly related to aquaculture facilities or infrastructure where the wastewater discharge capacity will not exceed 50 cubic metres per day.	
15	The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for— 1. the undertaking of a linear activity; or 2. maintenance purposes undertaken in accordance with a maintenance management plan.	To date an area of 47 hectares of indigenous vegetation within the buffer of the Mapungubwe reserve has been cleared for various mining and mining related activities . (27 ha currently exposed and 20 ha rehabilitated).
Listing Notice 3: List of Activities and Competent Authorities Identified in terms of Sections 24(2) and 24D dated 04 December 2014 (GN 985)		
4	The development of a road wider than 4 metres with a reserve less than 13,5 metres in Limpopo, outside urban areas, in areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed areas.	The site is approximately 20 km from the Mapungubwe National Park.
12	The clearance of an area of 300 square metres 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.	Clearance of 47 ha of indigenous vegetation within the ecological support area.

Listed activity no.	Description	Description of activities
14	The development of— 1. dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square metres: or 2. infrastructure or structures with a physical footprint of 10 square metres or more. 3. where such development occurs— (a) within a watercourse. (b) in front of a development setback; or (c) if no development setback has been adopted, within 32 metres 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.	Infrastructure, including: • Haul roads, slimes dam, raw water dam, settling dams, workshop, waste yard, offices, clinic, MPT, IFS, that were constructed within 32 m of a watercourse.

4.2 Description of the existing activities

The project includes the following main activities and facilities and is discussed in more detail below:

4.2.1 Access & haul roads and fence

DMI Minerals upgraded an existing ~9 km access road to the mine site which runs adjacent to the outer De Beers Venetia Mine security fence. An area of 110 ha was fenced by DMI Minerals where mining is taking place. Existing internal haul roads are located within the 110 ha fenced area.

4.2.2 Site clearing and opencast mining

The following information was extracted from the *DMI Minerals South Africa (Pty) Ltd. Environmental Impact Assessment and Environmental Management Programme* ("EMPr"), dated November 2012, and compiled by Eco-Partners. The current opencast mining method includes the following steps::

- Removal and Storage of Topsoil - The topsoil is 40-80 cm thick and only varies slightly across the property. Removal of topsoil is done after the identification of potentially sensitive species are cleared from site by hand (for relocation – also called 'pick and transport', (a permit to be obtained in the event that a protected species must be removed). The depth the topsoil will be determined based on the effective root growth in the area. At Krone-Endora this is typically in the range of 40-60 cm.
- Bush clearing will take place with a team who are trained in the removal of identified species. The species will first be removed to a site close by and kept available for replanting. The remaining bush clearance can then occur by hand and with a dozer clearing the area where a mine block will be opened. The topsoil removal then commences with the dozer making several passes across the area where the mine block will be, each time placing the topsoil on an area cleared to form a topsoil pile. The topsoil pile is then covered with organic material.
- Removal of Remaining Overburden – A thin (0.5-3 m) barren soil layer that grades into the topsoil zone. The remaining overburden, until approximately 30 cm above the top layer of gravels, is then removed with an excavator and dozer. This layer of barren overburden is loaded into a tipper and hauled to an overburden pile located close to the mine block, in a downwind direction.
- Removal of Intermediate gravel horizons (the 'Upper Gravels') – A layer or multiple layers of gravel, which are more sparsely distributed than the Basal Gravel but has also been found to contain diamonds. Intermediate or Upper gravel zones are then removed. During the prospecting phase it was identified that this is made up of several thin gravel horizons, ranging from 20 cm to 120 cm in thickness. They are largely disaggregated but in areas can be slightly calcretized (calcrete acts as a cement binder in these areas). The gravel is then removed and fed through an in-pit screening unit (in-field screening plant ("IFS") to separate out the diamond bearing gravel and remove much of the fine material to reduce water consumption. The stripping and screening fleet will continue to remove the gravel and a haul fleet will take the freed-up gravel to a stockpile area at the processing plant.

- Removal of Basal Gravels – The Basal gravels are expected to contain the highest diamond grades and highest diamond values. The 'Basal gravel zone' is then removed. During the prospecting phase it has been identified that this is a thick zone and ranges from 100 cm to 400 cm thickness. Just like the 'Upper Zone Gravels' it is largely disaggregated but, in some areas, cemented (calcretized) gravels were found. The cemented areas will require ripping / scarifying to loosen it and make processing through the plant easier. These 'Basal gravels' are then removed and screened as well to remove certain size fractions which are not expected to contain diamonds and remove much of the fine material to reduce water consumption. The stripping and screening fleet will continue to remove the gravel and a haul fleet will take the freed-up gravel to a stockpile area at the processing plant.
- There are currently two open pits: the Eastern Pit and the Western Pit where mining is taking place. Refer to Figure 4.

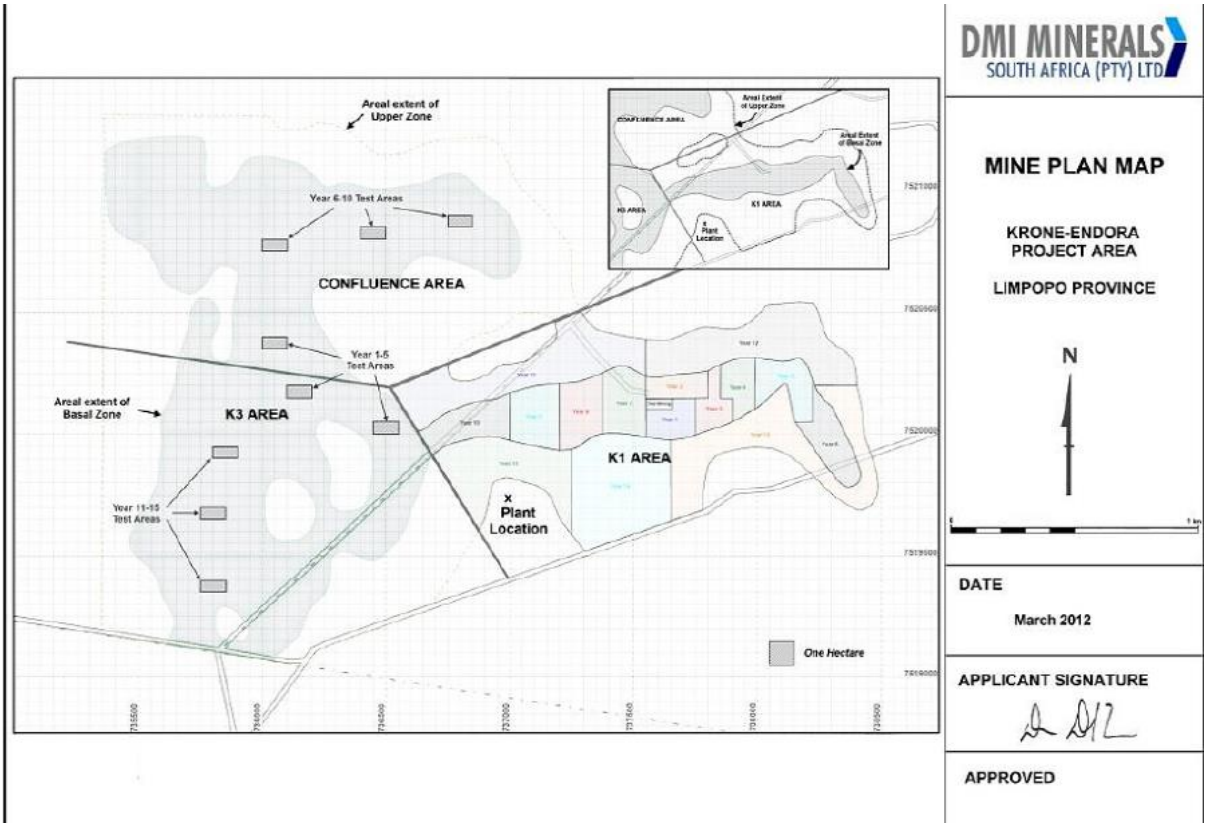

Figure 4: Mine plan (sourced from the Mining Works Programme, 2013)

4.2.3 Main treatment plant

Activities at the main treatment plant ('MTP") include the following processes:

- Disaggregation of Pebbles/Conglomerates - At the processing plant the ore piles are prepared in several ways. To liberate any diamonds that may be locked in the calcretized material and further reduce water consumption with the calcrete holds onto, a crushing plant is installed in the process plant so as to break down calcretized gravels.

- Washing and Concentration of Dense Material (Including Diamonds) - at the DMI Minerals - Krone-Endora Mine, the decision was made during the prospecting stages already that only the most important gravel size fractions will be washed. Washing involves the mixing of gravel into a water slurry or 'puddle' in rotary pans. This puddle is thickened by the addition of fine sand and becomes denser, so separating the high-density diamonds and heavy minerals (garnets and magnetite) from the lower density sand and pebbles.
- Recovery of Diamonds - Once further concentrated in the Dense Medium Separator "DMS" plant, the remaining concentrate then goes to a Final Recovery unit in which diamonds will be recovered using a double pass system. The remaining concentrate will first be run through X-ray analyzers which identify and separate the diamonds from the concentrate after which the concentrate will be passed over a grease table to make sure that any remaining diamonds are captured. The diamonds will be hand sorted using a glove box from which they will then be placed in a drop safe before being taken from site for valuation and sales.
- Stockpiling of Concentrate - The concentrate is stockpiled close to the plant. Diamond recovery is never 100% effective so during times when there is a problem in the mining of ore the plant can continue to retreat and process the stockpiled concentrate. This can occur at least once more in its lifetime before being returned to the overburden stockpiles.

4.2.4 Mobile in-field screening plant

The Mobile in-field screening plant uses a wet screening method, washing the sand to produce sized diamond products. The figure below shows a view of the Mobile in-field screening plant, which includes the following features:

- The physical plant portion is at the top of the area and slightly to the left-hand side.
- The pad that holds all the mined material is to the right of the physical plant.
- There is a service road that runs West to East through the middle of the complex, which connects roads to the Western and Eastern pits.
- To the bottom half of the picture, there is a large stockpile that holds gravels from historical operations. In particular, +15 mm material is stored here, based on the fact that at some point in the past, the top size of the MTP was 15 mm. Therefore, this material was stockpiled for later processing.

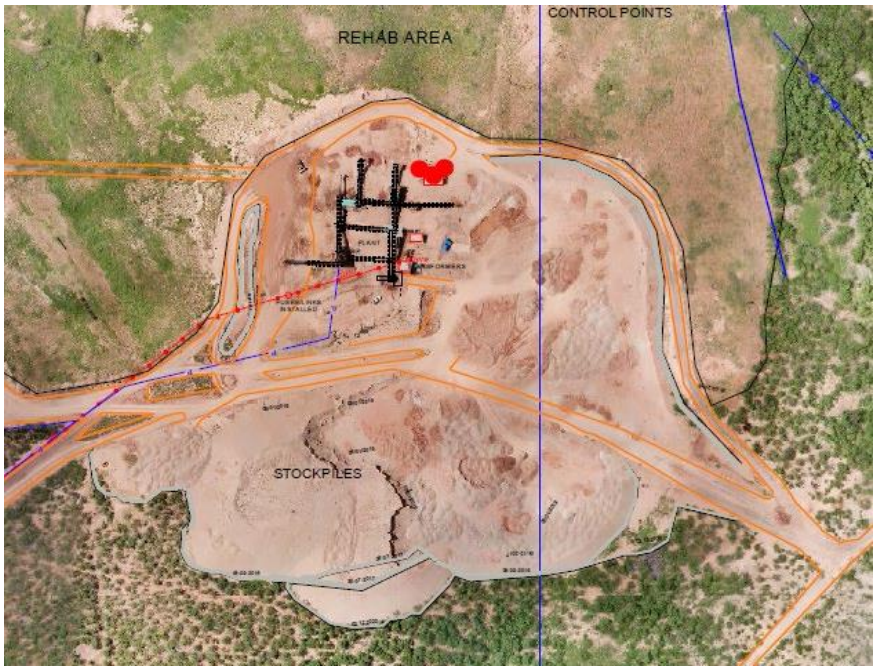

Figure 5: Mobile in-field screening plant

4.2.5 Stockpiles:

The following stockpiles are located on the mine:

- Topsoil stockpile.
- Fines (-1.0 mm) & oversized (+28.0 mm) rejects.
- Stockpile of ore/gravel (-28.0 mm+1.0 mm).
- Concentrate stockpile.
- Reject stockpile (-8.0 mm+1.0 mm); and
- Test stockpile (-28.0 mm + 8.0 mm).

4.2.6 Small diameter water pipeline

Water is sourced from registered boreholes in the area. The one borehole is located on the farm Lizzulea 62 MS. The other 2 boreholes are located on the farm Krone 104 MS. The 3 boreholes combined were tested providing yield rates in excess of 27 ℓ/s. DMI Minerals has applied for 6.7 ℓ/s draw rate or less than 25% of the actual yield rate.

This water is piped to the processing plant. DMI Minerals – Krone Endora Mine uses small diameter pipelines from the boreholes to convey the water to the processing plant. The processing plant is a focused user of water.

4.2.7 Dams (raw water dam, settling dam & slimes dam)

Fresh water is stored in a raw water storage dam (30 m x 30 m x 3 m). Provision is also made for a settling dam (15 m x 60 m x 4 m) and a slimes dam.).

Should water accumulate in the mine quarry the water will be pumped to the raw water dam. This water will be reused in the process. There should be no discharge of water from the dams other than through evaporation or that which is lost to tailings and cannot be extracted through the dewatering system that DMI Minerals will have in place.

4.2.8 Workshops & stores and offices Stormwater management infrastructure

DMI Minerals – Krone-Endora is utilizing portable containerized buildings on site for offices, storage, workshops, etc. Stormwater management infrastructure on site consists of the following:

- Boreholes
    - Zadoeka.
    - KLM4.
    - H18-0697.
    - H18-0772.
    - H18-0774.
    - H18-0775; and
    - H18-0776.
- Dams - The following existing dams are on site:
    - Settling dam 1 (no longer in use, closed and rehabilitated).
    - Settling dam 2. (currently empty)
    - Raw water dam.

Additional infrastructure proposed as part of the new Water Use Licence Application and Integrated Wastewater Management Plan include clean - and dirty water channels and additional trenches, and a sump.

4.2.9 Rehabilitation activities

According to the *Krone-Endora: Mining Description May 2019 to May 2021*, compiled by Dr Kurt Petersen (DMI Operations Manager), concurrent rehabilitation is done in three phases:

- Dry Rehabilitation: From all the material extracted from the pit, only a +1.5-30 mm size fraction is retained for concentration and recovery processes. The other smaller and larger sizes are screened out and discarded. Excluding any presence of rain, this discarded material is dry and is returned immediately to the excavated areas as backfill, (i.e., replacing mined out voids with discarded material).
- Wet Rehabilitation: The +1-30 mm material is further processed, which necessitates that water is added to wash the gravel, concentrate it, and perform diamond recovery. There is still a considerable amount of -1.5 mm sand and soil as part of the gravel package. The washed +1.5 mm gravel after processing remains wet (about 10% by mass) and can be transported by truck back to the pit as damp backfill. The washed out -1.5 mm sand and soil is pumped back to the pit at a

density of about 1.3 rd. This is also part of the backfill scheme, however, further settling of slime and sand from water occurs in the pit, which then leads to returning clean water back to the plant.

- Topsoil Rehabilitation: This occurs for both dry and wet scenarios.

4.2.10 Waste classification and characterisation

The following information pertaining to waste classification and characterisation was extracted from the *Diamcor Mining Inc. DMI Minerals South Africa (Pty) Ltd: Krone - Endora Mine Geohydrological Impact Assessment Draft Report* dated 02 February 2022 and prepared by Shangoni AquiScience (Pty) Ltd. Attached as Annexure D5.

"Although several metals, such as Al, Fe Mn Ba, Cr, Cu and F recorded in relatively raised concentrations (total concentrations; aqua regia digestion) concentrations, the distilled water leach tests performed on the mineral waste indicate that none of these metals leached in any substantial concentrations, mostly being undetected. Given that the mineral waste does not pose an acidifying risk, the risk for trace metals to become soluble and pollute the groundwater resources are very low. The paste pH of the residue deposits all recorded > 8.5 confirming the alkaline nature of the geological formations at the mine".

Anionic salts did, however, leach in relatively raised concentrations, which include SO_4 and Cl and should be viewed as contaminants of concern.

5. Policy and legislative context

The following table is a summary of the policy and legislative context applicable to the project.

Table 9: Policy and legislative context

Applicable Legislation and Guidelines used to compile the Report	**Compliance and response of the project.**
The Constitution of the Republic of South Africa, 1996.	The Constitution of the Republic of South Africa was considered and applied to throughout the Section 24G EIAR/EMPr as the Constitution states that everyone has the right: (a) To an environment that is not harmful to their health or well-being; and (b) To have the environment protected, for the benefit of present and future generations.
The Mineral and Petroleum Resources Development Act (Act No. 28 of 2002, as amended).	The Section 24G EIAR/EMPr has been compiled to comply to the requirements of the Mineral and Petroleum Resources Development Regulations (GN R527 dated 2004).
The National Environmental Management Act (Act No. 107 of 1998 as amended).	The 24G EIAR/EMPr has been compiled in terms of GN R982, as amended and promulgated in terms of sections 24(5) and 44 of the National Environmental Management Act, Act No. 107 of 1998 ("NEMA").

Applicable Legislation and Guidelines used to compile the Report	**Compliance and response of the project.**
The Environmental Impact Assessment Regulations (GN R982 dated 2014, as amended).	The 24G EIAR/EMPr was compiled in terms of the requirements of Appendix 3 and 4 of the Environmental Impact Assessment ("EIA") Regulations (GN R.982 dated 2014, as amended).
The Environmental Impact Assessment Regulation. Listing Notice 2. (GN R984 dated 2014, as amended).	Activity15 of Listing Notice 2 are applied for as part of the project.
The Environmental Impact Assessment Regulation. Listing Notice 3. (GN R985 dated 2014, as amended).	Activity 12 and 14 of Listing Notice 3 are applied for as part of the project.
Integrated Environmental Management Guideline: Guideline on Need and Desirability (2017).	The need and desirability were assessed for the existing project. Refer to section 6 below of Part A.
The National Water Act (Act No. 36 of 1998, as amended).	DMI Minerals – Krone-Endora Mine received their first Water Use Licence for prospecting in March 2012 - lapsed in March 2013. The licensed activities included abstraction of water - section 21(a) and disposal of waste in a manner that may detrimentally impact a water source section 21(g). The Department of Water & Sanitation ("DWS") granted the new Water Use Licence on 17 March 2016 (01/A63E/ACG/4499) – valid until 2032 2031. The existing Water Use Licence includes the following activities: • Section 21(a) – Taking water from a water resource. • Section 21(c) – Impeding of diverting the flow of water in a watercourse. • Section 21(g) – Discharging waste of water containing waste into a water resource through a pipe, canal, sewer sea outfall or other conduit. • Section 21(i) – Altering the bed, banks course of characteristics of a watercourse. However, due to the new water use activities that have been identified a new Water Use Licence will be applied for.
Regulations on use of water for mining and related activities aimed at the protection of water resources published in terms of the National Water Act under Government Notice 704 of 4 June 1999 (GN R704).	Stormwater management measures will be implemented at the project area. Additional infrastructure proposed as part of the WULA and IWWMP include clean- and dirty water channels and additional trenches, and sumps.

Applicable Legislation and Guidelines used to compile the Report	**Compliance and response of the project.**
The National Environmental Management: Biodiversity (Act 10 of 2004, as amended).	Biodiversity and ecological sensitive areas will be considered and assessed by activities that have already taken place. The project area overlaps with Ecological Support Area 1 ("ESA") and Other Natural Area ("ONA") classified areas.
Alien and Invasive Species Regulations (GN R598 dated 2014).	The mine is recommended to continue to implement an alien and invasive species eradication programme within the Mining Rights boundary throughout the operational phase of the project.
Conservation of Agricultural Resources (Act 43 of 1983).	Erosion potential will be assessed and mitigated (in accordance with this act) during the operational phase of the project.
The National Environmental Management: Air Quality (Act 39 of 2004, as amended).	No Atmospheric Emissions Licence is required for the project.
National Environmental Management: Waste Act (Act No. 59 of 2008, as amended).	Waste management activities will not be triggered due to the waste activities that were included in the EIAR/EMPr (2012). Further thereto, a waste classification and characterisation compiled by Shangoni Management Services (Pty) Ltd (02 February 2022) revealed "t*he acid potential study reveal that the Diamcor mineral waste materials generated by the mining activities are non-acid forming".*
National Heritage Resources Act (Act No. 25 of 1999, as amended).	According to the *Heritage Impact Assessment Report* compiled by G & A Heritage Management Consultants, dated 2012. Although research by Mr Thomas Huffman did not cover the farms Krone 104 MS and Endora 66 MS in detail (pers. comm., 2012), it should be noted that the Krone-Endora mining area does not exhibit these characteristics and there is currently no site of cultural significance reported on the area.
DMRE Guideline for Consultation with communities and Interested and Affected Parties. As required in terms of sections 16(4)(b) or 27(5)(b) of the MPRDA, and in accordance with the standard directive for the compilation thereof as published on the official website of the Department of Mineral Resources.	The public participation process is done in accordance with the DMRE guideline for consultation with communities and interested and affected parties.
GN R93, Mine Health and Safety Regulations published under the Mine Health and Safety Act 29 of 1996.	Regulation 4.16(2) of the GN R 93, Mine Health and Safety Regulations should be noted and adhered to as part of this project.

6. Need and desirability of the activities

6.1 Need and desirability in terms of the Guideline on Need and Desirability, 2017

In 2017, the Department of Environmental Affairs published an Integrated Environmental Management Guideline, the Guideline on Need and Desirability.

The guideline indicates that the "Need" for a project should be determined not only from the developer's perspective, but also from the benefits the existing project would have on the local, regional, and even where applicable, the national community. It is, therefore, important to compare the need for the project with the Integrated Development Plans ("IDPs") and Environmental Management Frameworks ("EMFs") of local and provincial government.

The guideline further describes the "Desirability" of a project as whether the project is desirable and why, particularly with reference to its location, as well as its service to the area. In the case of the project, the location of the project has already been established as the mine is an existing mining operation.

The guideline poses a series of questions that should be considered to demonstrate the need and desirability of the project. These questions have been answered through the following points (note that this section should be read together with the relevant guideline to ensure context):

Securing ecological sustainable development and use of natural resources:

- The ecological integrity of the site has been investigated through the compilation of new specialist studies (Wetland delineation and GN 509 Risk Assessment, Surface water Assessment and Ecological Studies) as well as the consultation of previous specialist studies undertaken for the mine.
- The terrestrial biodiversity theme sensitivity as indicated in the screening report was derived to be Very High, due to the project area being within an ESA1 area, in the Mapungubwe Cultural Landscape, and part of the NPAES expansion areas. The animal theme sensitivity was derived to be high, while the plant sensitivity was Low. The animal sensitivity was rated as High based on the predicted/known presence of the species listed.
- The site was superimposed on the Terrestrial Critical Biodiversity Area map. The project area overlaps with ESA1 and ONA classified areas.

Promoting Justifiable economic and social development:

- Municipal context:
    - The Musina Local Economic Development Strategy depicts that, the Municipality's economic growth potential is in Agriculture, Tourism and Mining.
    - Gross Value Added ("GVA") by broad economic sector- Vhembe District Municipality, 2018. Mining's national total is 350.9 billion.

- Mining is very important to the Vhembe District Municipality Area, with a location quotient far above the national average, but not like the predominant mining areas such as Rustenburg and Sishen areas.

- Socio-economic aspects:
  - By continuing mining at DMI Minerals – Krone-Endora Project will allow the mine to continue contributing to the local, regional, and national Gross Domestic Product ("GDP"), and also on the local communities through continued employment of employees and local contractors, as well as other influences that the mine has in the community (community upliftment programmes that are undertaken by the mine through the mine's Social and Labour Plan ("SLP")).
  - The SLP reflects that the mine is actively involved in the social upliftment of the community in the form of internships, bursaries, learnership and skills programmes, internal training, and mentorship. However, the Covid pandemic had a negative effect on the mine and only a single internship was completed in 2020.
  - All measures that can be taken by DMI to improve on any identified positive impacts have been included in the EMPr section 1.4 below.

- Public consultation process:
  - The public participation process (that will still be) undertaken as part of the Section 24G Rectification Application aims to ensure that all I&APs are provided with an opportunity to gain an understanding of the project, to ensure openness and transparency about the existing activities and what will require authorisation, and to ensure access to relevant information regarding the manner in which they may be interested or affected by the project. Further details pertaining to the public participation process are provided in section 7.1 of this report.

- Existing employees:
  - DMI Minerals – Krone-Endora has standard operating procedures that are implemented to ensure that environmental health and safety consequences are addressed throughout the life of mine.
  - In line with the mine's Standard Operating Procedures, workers are educated on a regular basis as to the environmental risks that may occur within their work environment, through the presentation of the mine's Environmental Awareness plan. Adequate measures have been taken to ensure that the appropriate personal protective equipment is issued to workers based on the areas that they work and the requirements of their job.

7. Motivation for the development footprint

7.1 Details of the Public Participation Process followed

7.1.1 Identification and registration of I&APs and key stakeholders

The table below lists the landowners, adjacent landowners and organs of state identified and notified (by means of e-mail, telephone, fax and/or post) of the project. All organs of state that may have jurisdiction in respect of the project are registered I&APs.

Table 10: List of landowners and adjacent landowners identified and notified

Organs of state and stakeholders
National Departments
South African Heritage Resource Agency (“SAHRA”)
Provincial Departments
Department of Mineral Resources and Energy – Limpopo Region (“DMRE”)
Department of Water and Sanitation – Limpopo Regional Office (“DWS”)
Limpopo Department of Economic Development Environment and Tourism (“LEDET”)
Limpopo Department of Agriculture, Land Reform and Rural Development (“LDALRD”)
Musina Local Municipality
Musina Local Municipality Ward 1 Councillor
Icon 95MS/0 Trinick Beleggings CC
Eskom
Other interested and affected parties
Tranquil Nest 7 Pty Ltd
AngloAmerican
Shamfuti Family Trust
Linton boerevereniging
Soutpansberg Distrik Landbou Unie
Caltex Fuel Station - Alldays
Casper Hester Boerdery CC
Northern Tuli Game Reserve
Mapungubwe Action Group
Peace Parks
ASAPA
WESSA
Birdlife SA
WWF - SA
The Endangered Wildlife Trust
Limpopo Citrus
Association of Southern African Professional Archaeologists
Vhembe Biosphere Reserve committee

Organs of state and stakeholders
VBR Committee Chair
South African National Parks
International Coordinator Greater Mapungubwe TFCA
Mapungubwe National Park
Landowners
DMI Minerals South Africa (Pty) Ltd.- a subsidiary of Diamcor Mining Inc (“DMI”)
Adjacent landowners
De Beers – Venetia Mine
DBCM VLNR

7.1.2 Methods of notification

7.1.2.1 Notification phase

A detailed public participation process will be undertaken as part of the initial application for the project. The following actions were implemented:

4. Advertisements.
    - A Newspaper advertisement will be placed in the Zoutpansberger that is the local newspaper of the area on the 22 April 2022.
5. Site notices.
    - Site notices were placed around the project site as well as at the existing mine.
6. Written notices.
    - Written notices (including BIDs) were distributed to Interested and Affected Parties (I&APs), where contact details were available.
7. Availability of draft Section 24G Rectification Impact Assessment Report and Enviromental Management Programme Report for public review.
    - The draft Section 24G Rectification, draft Impact Assessment Report and Environmental Management Programme Report will be made available for public and stakeholder review for a period of 30 days (from 22 April to 27 May 2022). Notices providing the detail of the public viewing station and review period, were sent to registered I&APs via e-mail/ SMS. This notification also forms part of the above-mentioned advertisement and site notices.
    - The document was also uploaded onto the Shangoni website (www.shangoni.co.za) for public viewing.
8. A public meeting will be held on the 6 May 2022 at Evangelina Game Lodge, located on the R521.

7.1.3 I&APs register

Once all landowners, adjacent landowners, organs of state and the public are notified of the project, an I&AP register is kept and will be updated during the process. Refer to the table above for a list of organs of states, stakeholders and landowners notified during the project.

7.1.4 Access and opportunity to comment on written submissions

The draft Section 24G Rectification, draft Impact Assessment Report and Environmental Management Programme Report will be made available to the public for review for a period of thirty (30) days, from 22 April 2022 to 27 May 2022. A copy of the mentioned document will be made available at the Musina Local Municipality and on the Shangoni's website (www. shangoni.co.za) for the I&APs to view. All the registered I&APs will be notified of the availability of the draft Section 24G Rectification, draft Impact Assessment Report and Environmental Management Programme Report for public review by 22 April 2022.

7.1.5 Consultation with the relevant Authorities

7.1.5.1 Application form in terms of the NEMA

The application for environmental authorisation (Section 24G Rectification) was submitted to the DMRE on 28 March 2022. A copy of the application for environmental authorisation form is attached hereto in Annexure C1. Acknowledgement of Section 24 Rectification application form is attached hereto as Annexure C2.

7.1.5.2 Further consultation with relevant Authorities

Further consultation will be done with the DMRE during this project.

7.2 Summary of issues raised by I&APs

This is the draft Section 24G EIAR/EMPr and no comments have been received to date. The comments received as part of the public participation 30-day review period will be captured in the Final EIAR/EMPr. The summary of issues raised by I&APs will be finalised once the public participation process is complete.

Table 11: Summary of the issues raised by the I&APs

Interested and Affected Parties	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 responses were incorporated.
To be completed upon completion of the public participation process.				

For the full public participation report refer to Annexure E.

7.3 Description on the baseline environment

7.3.1 The type of environment affected by the activities

A baseline description or “status quo” of the present environmental situation is provided in this part of the document. The following attributes / aspects have been described in detail, in the following respective chapters:

Chapter A: Geology
Chapter B: Climate
Chapter C: Topography
Chapter D: Soils, and Land Use
Chapter E: Vegetation
Chapter F: Fauna
Chapter G: Surface water
Chapter H: Groundwater
Chapter I: Air Quality
Chapter J: Noise
Chapter K: Archaeology, Cultural History and Palaeontological
Chapter L: Sensitive landscapes
Chapter M: Visual aspects
Chapter N: Regional socio-economic structure

Information pertaining to background information for this section was obtained from various specialist reports as referenced and the *DMI Minerals South Africa (Pty) Ltd: Environmental Impact Assessment and Environmental Management Programme Submitted for an Application for a Mining Right in terms of Section 39 and of Regulations 50 and 51 of the Mineral and Petroleum Resources Development Act, 2002, (Act No. 28 of 2002) (The Act), DMR reference number LP30/5/1/2/2/10011MR* dated November 2012.

Chapter A: Geology

The following information pertaining to geology was extracted from the *Diamcor Mining Inc. DMI Minerals South Africa (Pty) Ltd: Krone - Endora Mine Geohydrological Impact Assessment Draft Report* dated January 2022 and prepared by Shangoni AquiScience (Pty) Ltd. Attached as Annexure D5.

Regional geology - The regional geology is dominated by the Limpopo Belt, which is located between the Kaapvaal and Zimbabwe Cratons. The Limpopo Belt comprises three zones i.e. Northern Marginal, Central and Southern Marginal and is a very complex geological province shaped by many tectono-metamorphic events.

The Limpopo Belt in the area is believed to be 10 km thick and contains an ensemble of rocks known as the Beit Bridge Complex that comprises rocks of the Gumbu, Malala Drift and Mount Dowe Groups.

This country rock comprises mainly quartzofeldspathic gneisses, marbles, gneisses, shists and other metasediments. These rocks have undergone numerous phases of shearing and folding.

The Krone-Endora Alluvial Diamond Project is located immediately north of De Beers Venetia mine area and consists of unconsolidated to semi-consolidated sands with localized lenses of laterally discontinuous gravel.

Outliers of Karoo rocks are present in the area. Diabase in the form of dolerite dykes and sills are also commonly found.

Local geology - The properties' location directly adjacent to the Venetia mine plays a significant role in the resulting alluvial deposit which has been identified on the properties, as it is proposed to have been formed as a direct result of the erosion of a significant quantity of material from the higher ground of the Venetia kimberlite clusters onto the lower grounds of Krone and Endora. The northwest and northern portion of the region from north of Lephalale to east of Musina and is mostly underlain by the NE – SW trending metamorphic rock assemblages known as the Limpopo Mobile Belt. Much of the solid geology is covered by a thin cover of recent deposits (EMP, 2012).

Grobbelaar and Hawkins (2015) interpreted the Krone-Endora deposit as not only an alluvial fan-type body, but one that has undergone both alluvial (stream deposited) and eluvial (direct shift of source material) deposition. Their review concluded there are two principal paleo-drainage systems, termed the K1 and K3 (after the Venetia Mine's kimberlite pipes of that name), which are the two areas which are believed to be the sources of the material transported by the associated paleo-drainages. These paleo-drainages sourced sediment from a raised plateau to the south where the diamondiferous Venetia kimberlites are located and where, as noted, it is estimated that approximately 1 vertical km of the material from the higher areas of the Venetia kimberlite pipes was displaced and eroded onto the lower grounds including those areas of Krone and Endora.

Dykes, sills, and faults - Various dolerite sills have intruded the above formations at different depths prior to emplacement of the kimberlite pipes. One of the sills, approximately 25 to 60 m thick, intrudes at a depth of 250 m below ground (mbg). The sills show strong evidence of hydrothermal alteration, especially along joints. Dolerite dykes occasionally extend from the sill upwards.

Also exposed are faults that vary in strike from east-west to north-west southeast and could be related to the Dowe-Tokwe fault system extending from Musina to the north of Alldays.

Refer to Figure 6 below for a map of the geology.

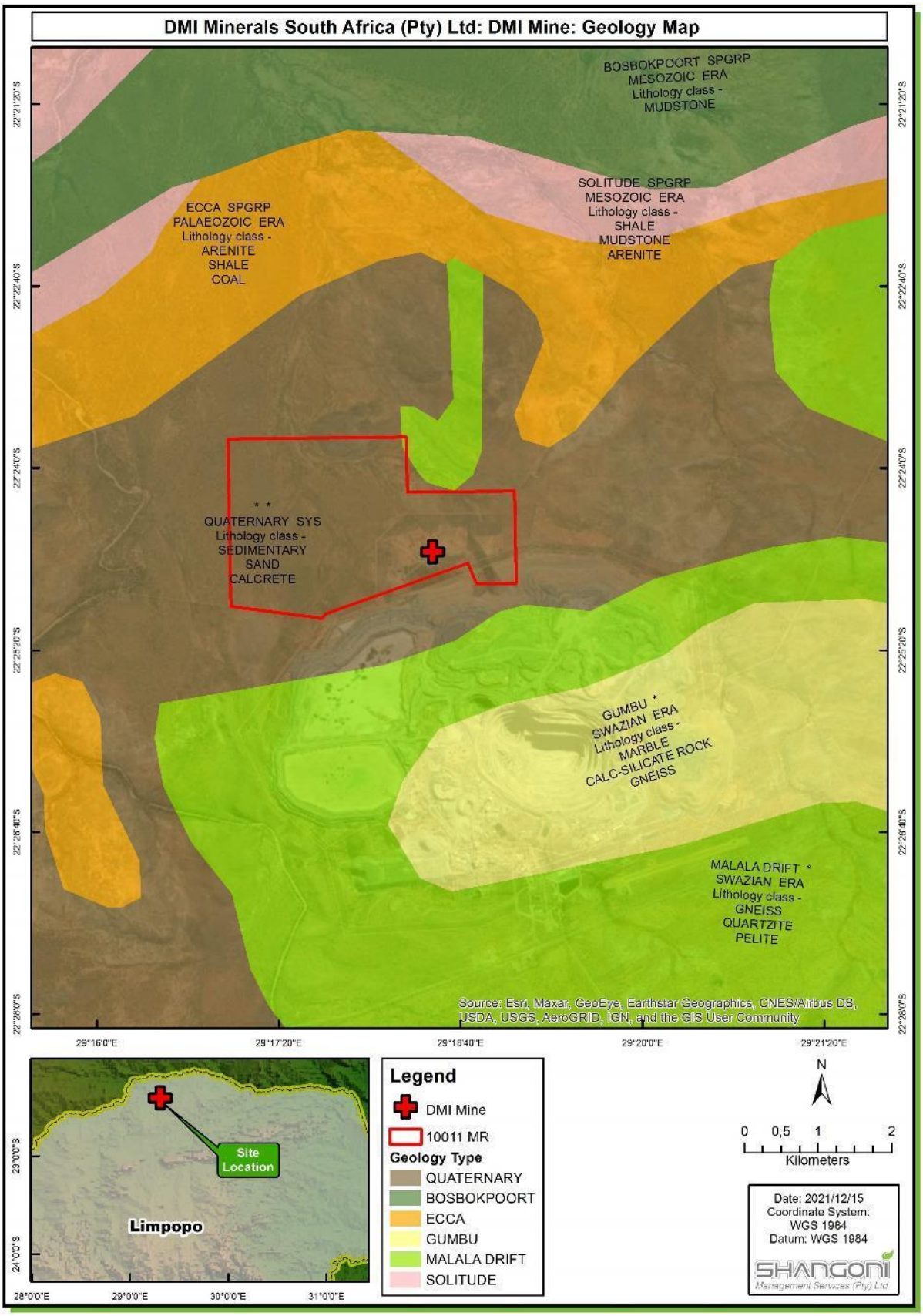

Figure 6: Geology map

Chapter B: Climate

The following information pertaining to climate was extracted from the *Diamcor Mining Inc. DMI Minerals South Africa (Pty) Ltd: Krone - Endora Mine Geohydrological Impact Assessment Draft Report* dated January 2022 and prepared by Shangoni AquiScience (Pty) Ltd. Attached as Annexure D5.

The site is located in a hot semi-arid region of the Limpopo Province of South Africa. The area is characterised by high average temperatures with low rainfall and high evaporation rates. The Mean Annual Precipitation ("MAP") in this area varies between 300-400 mm, while the mean annual evaporation ("MAE") is approximately 2050 mm.

Monthly rainfall figures from 1999 to current as recorded from a rainfall station (received from Venetia) is shown in the table below. The data shows the majority of rainfall periods occur between the months of October to April.

Table 12: Monthly rainfall data as received and recorded (received from Venetia Mine)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1999	75.0	36.0	14.0	38.0	12.0	0.0	2.0	0.0	0.0	21.0	64.0	86.0	**348.0**
2000	191.0	158.0	331.0	4.0	0.0	9.0	32.0	0.0	0.0	5.0	32.2	63.0	**825.2**
2001	28.0	80.8	24.2	28.8	10.2	11.2	0.0	0.0	2.8	10.0	34.2	69.0	**299.2**
2002	46.4	17.2	3.8	11.8	0.0	4.0	1.0	1.8	11.8	34.0	12.8	6.0	**150.6**
2003	40.4	97.0	37.0	0.0	0.0	16.4	0.0	0.0	0.0	28.4	58.0	143.0	**420.2**
2004	11.0	28.0	182.0	8.0	0.0	0.0	0.0	0.0	0.0	30.0	36.0	71.0	**366.0**
2005	67.0	33.5	21.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0	44.5	31.4	**203.4**
2006	77.5	68.0	68.0	0.0	0.0	0.0	0.0	0.3	0.0	10.9	81.0	0.0	**305.7**
2007	5.2	3.1	73.9	2.1	0.3	0.6	0.3	0.0	108.0	41.3	118.0	126.6	**479.4**
2008	75.8	3.0	13.7	73.0	0.8	0.2	0.0	0.0	0.0	0.0	60.4	83.2	**310.1**
2009	250.1	26.1	111.7	0.3	17.5	2.5	0.8	0.0	20.0	8.3	121.6	12.6	**571.5**
2010	124.9	8.0	34.9	262.1	0.5	0.0	0.7	0.0	0.0	0.0	99.0	78.2	**608.3**
2011	165.0	11.8	10.8	32.5	0.0	0.0	1.2	0.0	0.0	50.5	127.9	31.0	**430.7**
2012	46.2	10.7	1.1	0.0	0.0	0.0	0.0	0.0	12.4	26.7	41.1	41.0	**179.2**
2013	452.0	21.8	15.4	24.1	0.0	0.0	2.0	3.8	0.0	40.6	45.2	76.8	**681.7**
2014	109.5	60.4	122.4	3.1	0.0	0.0	0.0	0.0	0.0	2.4	63.1	126.5	**487.4**
2015	3.3	35.9	54.6	37.8	0.0	0.6	0.0	0.0	45.0	12.5	28.5	44.5	**262.7**
2016	92.8	33.4	94.0	1.5	9.0	1.5	2.9	0.0	0.0	21.9	38.5	113.8	**409.3**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
2017	116.9	48.4	14.0	5.0	0.6	0.0	0.0	0.0	0.0	57.5	61.3	4.9	**308.6**
2018	10.4	143.3	9.8	1.8	13.6	0.0	0.1	0.0	2.0	9.3	36.1	83.6	**310.0**
2019	102.4	139.1	0.6	46.9	0.0	0.0	0.0	0.0	0.0	0.0	99.4	43.6	**432.0**
2020	8.1	86.7	11.2	3.0	0.0	0.6	0.0	6.7	0.3	28.7	32.7	116.8	**294.8**
2021	231.0	161.2	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**395.9**
Avg	**101.3**	**57.0**	**54.5**	**25.6**	**2.8**	**2.0**	**1.9**	**0.5**	**8.8**	**19.1**	**58.1**	**63.2**	394.8

Chapter C: Topography

The following information pertaining to topography was extracted from the *Diamcor Mining Inc. DMI Minerals South Africa (Pty) Ltd: Krone - Endora Mine Geohydrological Impact Assessment Draft Report* dated January 2022 and prepared by Shangoni AquiScience (Pty) Ltd. Attached as Annexure D5.

The regional area is almost completely flat with higher lying areas situated on the northern boundary. The flat areas have their origin due to the deposition of sediments by fluvial processes. The higher areas, mostly hills and smaller kopjes, are bedrock outcrops that form low ridges consisting mainly of gneisses left behind after continental glaciation processes. These higher areas are also a controlling factor in the sedimentation by paleo and present streams. The average elevation is in the range of 630 m to 640 m above mean sea level (“mamsl”).

The local topography has been altered by various mine residue deposits such as fine residue deposits (“FRDs”), coarse residue deposits (“CRDs”), waste rock dumps (“WRDs”) and the open pits at De Beers Venetia Mine and DMI Minerals. On a regional scale, surface water flow is from south-east to north north-west.

Refer to Figure 7 below for the topography of the area.

Chapter D: Soils, and land use

The following information was obtained from the *DMI Minerals South Africa (Pty) Ltd: Environmental Impact Assessment and Environmental Management Programme Submitted for an Application for a Mining Right in terms of Section 39 and of Regulations 50 and 51 of the Mineral and Petroleum Resources Development Act, 2002, (Act No. 28 of 2002) (The Act), DMR reference number LP30/5/1/2/2/10011MR* dated November 2012.

The soils of Venetia Limpopo Nature Reserve (“VLNR”) include loosely structured sands derived from Cave sandstone, structured sandy loam soils derived from granite-gneisses and commonly referred to as sandveld, lithosols (thin soils) on a wide range of geological substrates including calcrete and dolerite, clay and silt rich (40 % combined) palaeo-alluvial soils occupying the vast basin covered by dense mopane, and semivertic (shrink-swell) soils of the former hydromorphic grasslands occurring adjacent to the Kolope and Setonki rivers. The non-sandy soils are all extremely fertile and offer

excellent grazing when it is available. However, the clay and silt rich nature of the fertile soils renders them prone to erosion because the small clay or silt particles are easily transported away by runoff once detached. The soils on the mining area are predominantly loosely structured sands. Refer to Figure 8 and Figure 9 below for maps of the soil type and soil classes.

The current land use of the 110 ha fenced off area is mining. This is within the greater 665.8 ha area where conservation activities take place.

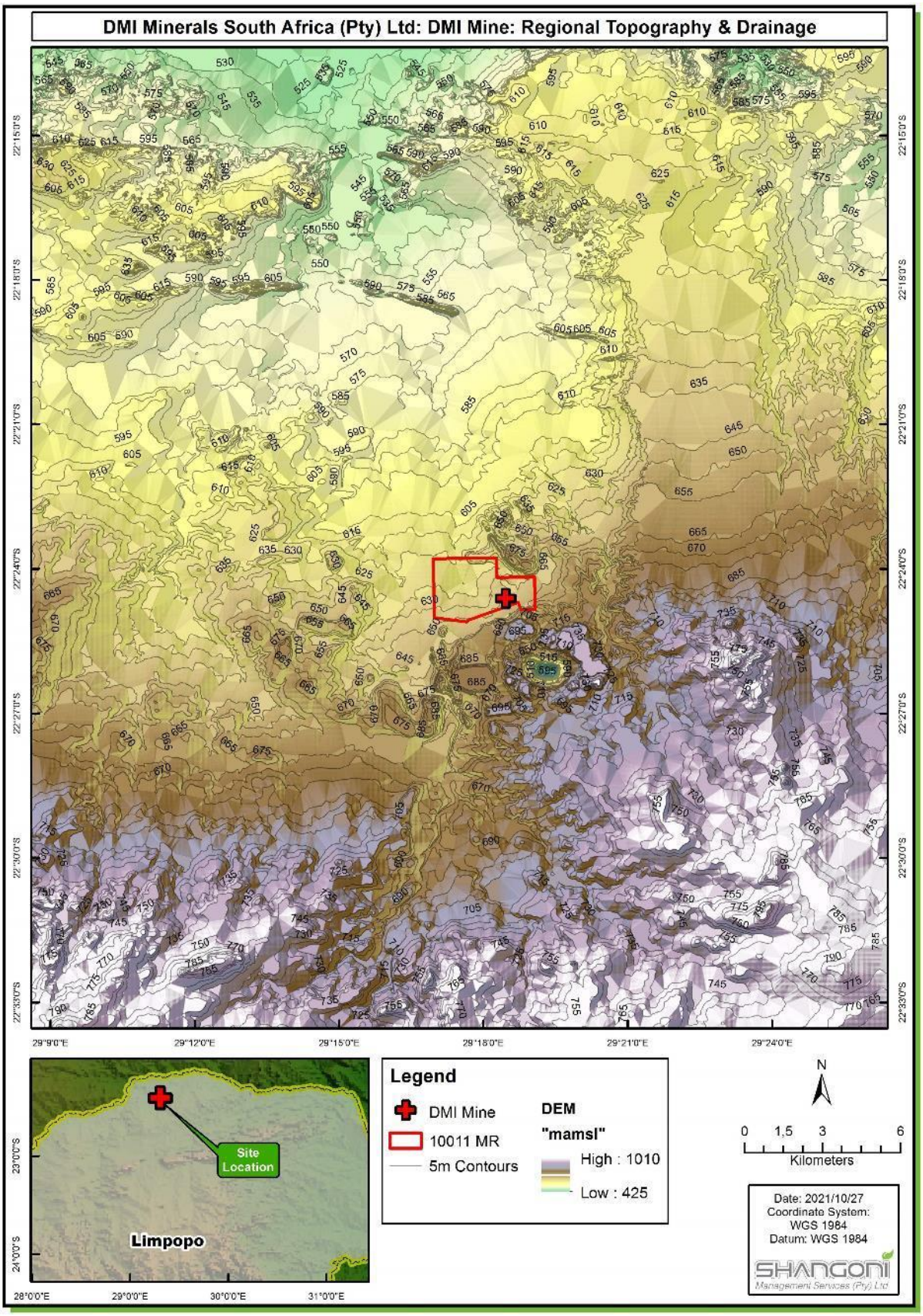

Figure 7: Topography and drainage map

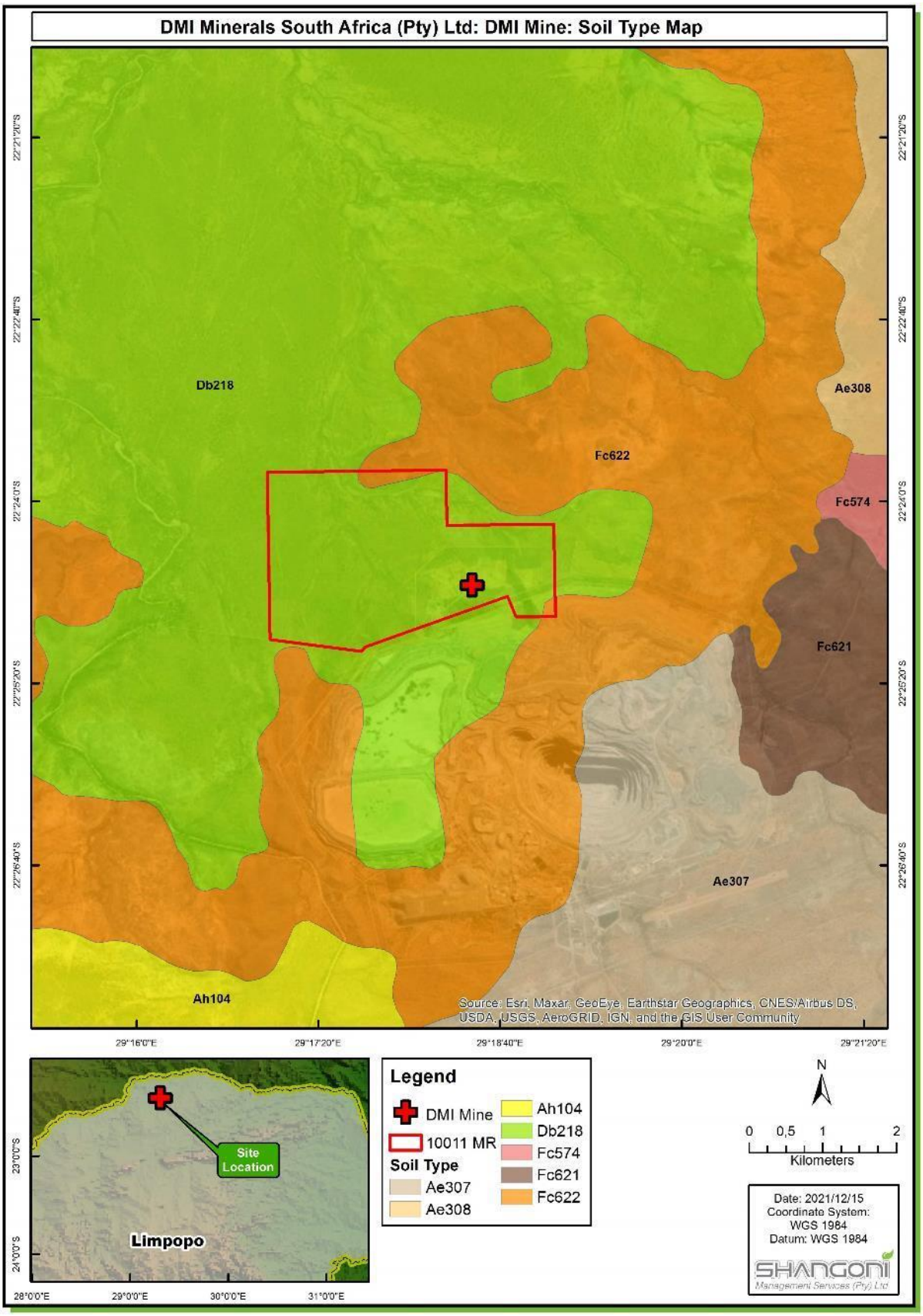

Figure 8: Soil map

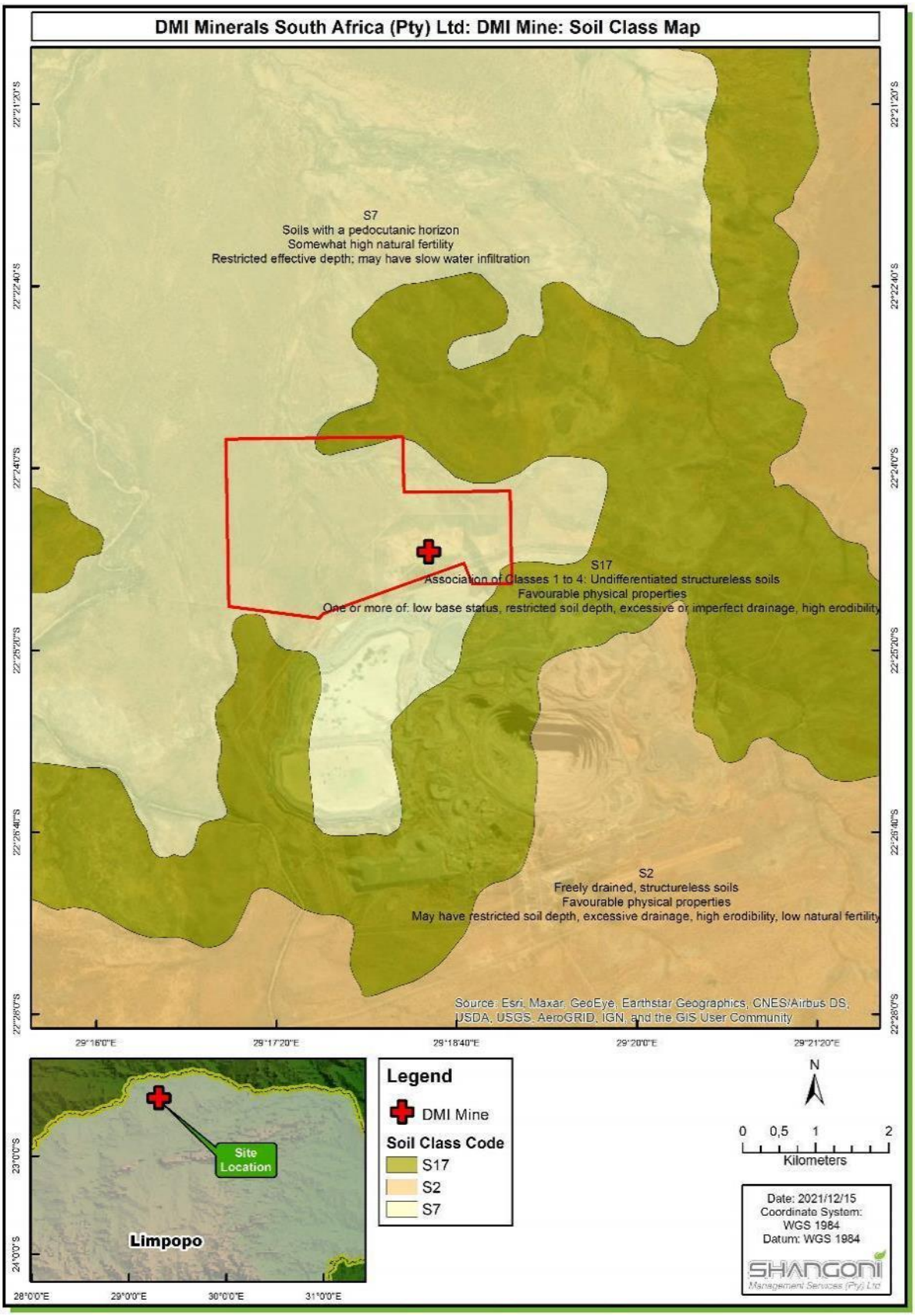

Figure 9: Soil class map

Chapter E: Vegetation

The following information pertaining to the vegetation was extracted from the *Terrestrial Impact Assessment for the proposed Diamcor Diamond Mine Project Bridgewater, Limpopo Province* compiled by the Biodiversity Company dated February 2022. Attached as Annexure D3.

The project area of DMI Minerals - Krone-Endora Mine is situated within the Savanna biome. The savanna vegetation of South Africa represents the southernmost extension of the most widespread biome in Africa (Mucina & Rutherford, 2006). Major macroclimatic traits that characterise the Savanna biome include:

- Seasonal precipitation; and
- (Sub) tropical thermal regime with no or usually low incidence of frost (Mucina & Rutherford, 2006).

Most savanna vegetation communities are characterised by an herbaceous layer dominated by grasses and a discontinuous to sometimes very open tree layer (Mucina & Rutherford, 2006).

The savanna biome is the largest biome in South Africa, extending throughout the east and north-eastern areas of the country. Savannas are characterised by a dominant grass layer, over-topped by a discontinuous, but distinct woody plant layer. At a structural level, Africa's savannas can be broadly categorised as either fine-leaved (microphyllous) savannas or broad-leaved savannas. Fine-leaved savannas typically occur on nutrient rich soils and are dominated by microphyllous woody plants of the Mimosaceae family (Common genera include Vachellia, Senegalia and Albizia) and a generally dense herbaceous layer (Scholes & Walker, 1993).

On a fine-scale vegetation type, the project area overlaps with the Limpopo Ridge Bushveld and the Musina Mopane Bushveld vegetation type.

Musina Mopane Bushveld - This vegetation type can be found in the Limpopo Province on undulating to very irregular plains, with some hills. In the western section, open woodland to moderately closed shrubveld dominated by *Colophospermum mopane* and *Combretum apiculatum* can be found. While in the Eastern section *Colophospermum mopane* and *Terminalia prunioides* dominates open shrubland. Refer to Figure 10.

Important Taxa (d = dominant species)

Tall Trees: *Senegalia nigrescens, Adansonia digitata, Sclerocarya birrea subsp. caffra.*

Small Trees: *Colophospermum mopane (d), Combretum apiculatum (d), Senegalia senegal var. leiorhachis, S. tortilis subsp. heteracantha, Boscia albitrunca, B. foetida subsp. rehmanniana, Commiphora glandulosa, C. tenuipetiolata, C. viminea, Sterculia rogersii, Terminalia prunioides, T. sericea, Ximenia americana.*

Tall Shrubs: *Grewia flava (d), Sesamothamnus lugardii (d), Commiphora pyracanthoides, Gardenia volkensii, Grewia bicolor, Maerua parvifolia, Rhigozum zambesiacum, Tephrosia polystachya. Low Shrubs: Acalypha indica, Aptosimum lineare, Barleria senensis, Dicoma tomentosa, Felicia clavipilosa subsp. transvaalensis, Gossypium herbaceum subsp. africanum, Hermannia glanduligera,*

Neuracanthus africanus, Pechuel-Loeschea leubnitziae, Ptycholobium contortum, Seddera suffruticosa. Succulent Shrub: Hoodia currorii subsp. lugardii.

Herbaceous Climber: *Momordica balsamina. Graminoids: Schmidtia pappophoroides (d), Aristida adscensionis, A. congesta, Bothriochloa insculpta, Brachiaria deflexa, Cenchrus ciliaris, Digitaria eriantha subsp. eriantha, Enneapogon cenchroides, Eragrostis lehmanniana, E. pallens, Fingerhuthia africana, Heteropogon contortus, Sporobolus nitens, Stipagrostis hirtigluma subsp. patula, S. uniplumis, Tetrapogon tenellus, Urochloa mosambicensis.*

Herbs: *Acrotome inflata, Becium filamentosum, Harpagophytum procumbens subsp. transvaalense, Heliotropium steudneri, Hermbstaedtia odorata, Oxygonum delagoense. Succulent Herbs: Stapelia gettliffei, S. kwebensis.*

Conservation Status - This vegetation type is classed as Least Concerned, with only 3 % statutorily conserved in the Mapungubwe National Park, Nwanedi and Honnet Nature Reserves and the Baobab Tree Reserve. The conservation target is 19 % (Mucina & Rutherford, 2006).

Limpopo Ridge Bushveld - This vegetation type is found solely in the Limpopo Province at an altitude of 300 m to 1000 m. It consists of extremely irregular plains with ridges and hills. The ground layer is poorly developed while the canopy is dominated by Kirkia acuminata and Adansonia digitata.

Important plant taxa are those species that have a high abundance, a frequent occurrence or are prominent in the landscape within a particular vegetation type (Mucina & Rutherford, 2006). The following species are important in the Limpopo Ridge Bushveld (D = dominant species):

Tall Trees: *Adansonia digitata (d), Senegalia nigrescens, Sclerocarya birrea subsp. caffra.*

Small Trees: *Colophospermum mopane (d), Commiphora glandulosa (d), C. tenuipetiolata (d), Terminalia prunioides (d), Senegalia senegal var. leiorhachis, S. tortilis subsp. heteracantha, Boscia albitrunca, Combretum apiculatum, C. imberbe, Commiphora mollis, Ficus abutilifolia, F. tettensis, Kirkia acuminata, Sterculia rogersii, Ximenia americana.*

Tall Shrubs: *Catophractes alexandri, Commiphora pyracanthoides, Gardenia resiniflua, Grewia bicolor, G. villosa, Hibiscus calyphyllus, H. micranthus.*

Low Shrubs: *Barleria affinis, Blepharis diversispina, Neuracanthus africanus, Plinthus rehmannii, Ptycholobium contortum.*

Woody Climber: *Cissus cornifolia.*

Graminoids: *Aristida adscensionis, A. stipitata subsp. graciliflora, Digitaria eriantha subsp. eriantha, Enneapogon cenchroides, Panicum maximum, Schmidtia pappophoroides, Stipagrostis uniplumis.*

Succulent Herb: *Tavaresia barklyi.*

Endemic Taxa

Low Shrub: *Pavonia dentata.*

Herb: *Cleome oxyphylla var. robusta.*

Conservation Status - This vegetation type is listed as Least Concerned, with approximately 18 % being statutorily conserved. The conservation target is 19 %.

Expected Flora Species - The Plants of Southern Africa ("POSA") database indicates that 556 species of indigenous plants are expected to occur within the project area. Appendix A provides the list of species and their respective conservation status and endemism. No IUCN listed species are expected in the project area, but six nationally protected trees (National Forests Act, 1998 (Act No. 84)) are expected in the table below.

Table 13: Protected flora species that may occur within the project area

Family	Taxon	Author	IUCN	Ecology	National Protected Tree
Malvaceae	*Adansonia digitata*	L.	LC	Indigenous	P
Celastraceae	*Catha edulis*	(Vahl) Forssk. ex Endl.	LC	Indigenous	P
Combretaceae	*Combretum imberbe*	Wawra	LC	Indigenous	P
Podocarpaceae	*Podocarpus latifolius*	(Thunb.) R.Br. ex Mirb.	LC	Indigenous	P
Anacardiaceae	*Sclerocarya birrea subsp. caffra*	(A.Rich.) Hochst.	LC	Indigenous	P
Fabaceae	*Vachellia erioloba*	(E.Mey.) P.J.H.Hurter	LC	Indigenous	P

Indigenous Flora – In the Table 14 below **t**he vegetation assessment done by the Biodiversity Company identified a total of 28 tree, shrub, herbaceous and graminoid plant species.

Table 14: Trees, shrub and herbaceous plant species recorded in the project area

Scientific Name	Common Name	Threat Status (SANBI, 2017)	SA Endemic	Alien Category
Adansonia digitata	Baobab	Least Concern (LC) Nationally Protected Tree	Not Endemic	
Asparagus cooperi	Haakdoring	LC	Not Endemic	
Boscia albitrunca	Shepherds Tree	LC-Nationally Protected Tree	Not Endemic	
Boscia foetida subsp. minima	Stink Shepherds-tree	LC-Schedule 12 Protected	Not Endemic	
Calotropis procera	Calotropis			Weed
Colophospermum mopane	Mopane	LC	Not Endemic	
Combretum apiculatum	Red Bush Willow	LC	Not Endemic	
Combretum imberbe	Leadwood	LC-Nationally Protected Tree	Not Endemic	
Cyperus alternifolius				
Cynodon dactylon	Couch Grass	LC	Not Endemic	

Scientific Name	Common Name	Threat Status (SANBI, 2017)	SA Endemic	Alien Category
Dichrostachys cinerea	Sickle Bush	LC	Not Endemic	
Ehretia rigida	Puzzle Bush	LC	Endemic	
Flaveria bidentis	Smeltersbossie			NEMBA 1b
Grewia tenax	Small-leaved White Raisin	LC	Not Endemic	
Grewia flava	Wild current			
Gymnosporia buxifolia	Common Spike-thorn	LC	Not Endemic	
Heliotropium nelsonii	Common String-of-stars	LC	Not Endemic	
Heteropogon contortus	Spear Grass	LC	Not Endemic	
Kirkia acuminata	White Seringa	LC	Not Endemic	
Lycium schizocalyx	Savanna Honey-thorn	LC	Not Endemic	
Melinis repens	Natal Red Top	LC	Not Endemic	
Phragmites mauritianus	Lowveld Reed	LC	Not Endemic	
Rhynchosia minima		LC	Not Endemic	
Sansevieria aethiopica	Bowstring Hemp	LC	Not Endemic	
Senegalia mellifera	Black Thorn	LC	Not Endemic	
Sida cordifolia	Flannel Weed	LC	Not Endemic	
Solanum panduriforme	Poison apple			
Tagetes minuta	Khaki Bush			Naturalized exotic weed

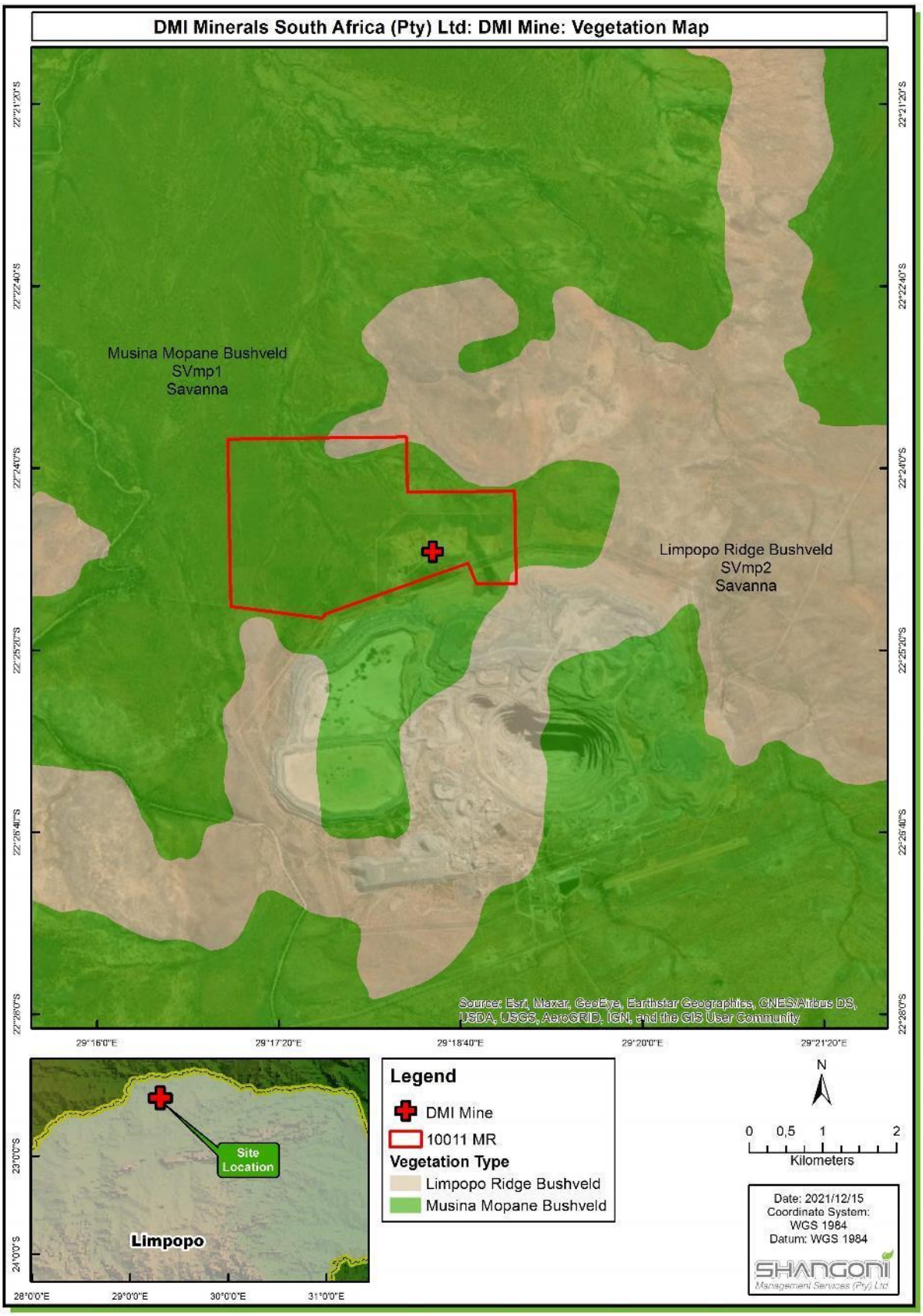

Figure 10: Vegetation map

Chapter F: Fauna

The following information pertaining to the vegetation was extracted from the *Terrestrial Impact Assessment for the proposed Diamcor Diamond Mine Project Bridgewater, Limpopo Province* compiled by the Biodiversity Company dated February 2022. Attached as Annexure D3.

Amphibians - Based on the IUCN Red List Spatial Data and Amphibian Map, 34 amphibian species are expected to occur within the area. Two of the expected species are species of conservation concern ("SCC"). The likelihood of occurrences is based on literature describing their habitat preferences and the level of adaptability to disturbed areas.

Table 15: Amphibians Species of conservation concern observed in the project area

Species	Common Name	Conservation Status		Likelihood of Occurrence
		Regional (SANBI, 2016)	IUCN (2021)	
Breviceps sylvestris	*Northern Forest Rain Frog*	*VU*	*NT*	*Moderate*
Pyxicephalus adspersus	*Giant Bullfrog*	*NT*	*LC*	*High*

Breviceps sylvestris (Northern Forest Rain Frog) is endemic to the Limpopo Province, where they can be found in temperate forests, temperate grassland, and rural gardens. This species is threatened mainly by habitat loss. This species has a moderate likelihood of occurrence as some patches of suitable habitat can be found in the project area.

The Giant Bull Frog (*Pyxicephalus adspersus*) is a species of conservation concern that will possibly occur in the project area. The Giant Bull Frog is listed as near threatened on a regional scale. It is a species of drier savannahs. It is fossorial for most of the year, remaining buried in cocoons. They emerge at the start of the rains, and breed in shallow, temporary waters in pools, pans, and ditches (IUCN, 2017). This species has a high likelihood of occurrence as the African Bull Frog was observed in the project area and these species have similar habitat requirements.

Reptiles - Based on the IUCN Red List Spatial Data and the ReptileMAP database, 130 reptile species are expected to occur within the area. Six (6) are regarded as threatened.

Table 16: Threatened reptile species that are expected to occur within the project area

Species	Common Name	Conservation Status		Likelihood of Occurrence
		Regional (SANBI, 2016)	IUCN (2021)	
Chamaesaura macrolepis	*Large-scaled Grass Lizard*	*NT*	*LC*	*High*
Chirindia langi occidentalis	*Soutpansberg Worm Lizard*	*VU*	*Unlisted*	*Low*
Crocodylus niloticus	*Nile Crocodile*	*VU*	*LC*	*High*
Homopholis mulleri	*Muller's Velvet Gecko*	*VU*	*LC*	*High*
Scelotes limpopoensis albiventris	*White-bellied Dwarf Burrowing Skink*	*NT*	*Unlisted*	*High*

Species	Common Name	Conservation Status		Likelihood of Occurrence
		Regional (SANBI, 2016)	IUCN (2021)	
Vhembelacerta rupicola	*Soutpansberg Rock Lizard*	*NT*	*LC*	*Moderate*

Chamaesaura macrolepis (Large-scaled Grass Lizard) is categorised as near-threatened on a regional scale. Endemic to South Africa (KwaZulu-Natal, Mpumalanga, and Limpopo), Swaziland and Zimbabwe. They occur in the Savanna, Indian Ocean Coastal Belt and Grassland biomes where they are found in the grassland, especially on rocky, grassy hillsides. Threatened by transformation of land for crop farming and plantations, overgrazing by livestock, infrastructural development, frequent anthropogenic fires, and use of pesticides. The likelihood of occurrence in the project area is rated as high as suitable habitat can be found in the project area.

Chirindia langi occidentalis (Soutpansberg Worm Lizard) is found in South Africa, Mozambique, and Zimbabwe, where they occur in the savanna habitats. They are more specifically found under rocks on the soil surface, in burrows or in rotting logs. The main threats to this species are agriculture and changes in game stocking levels. Even though there are suitable habitat for this species in the project area, it is outside its known range, therefore the species was given a low likelihood of occurrence.

Crocodylus niloticus (Nile Crocodile) is listed as VU on a regional basis. The Nile crocodile is quite widespread throughout sub-Saharan Africa, in different types of aquatic environments such as lakes, rivers, and marshlands. The species would normally have a low likelihood of occurrence based on the absence of large perennial rivers in the project area, however it was confirmed by a manager at the mine that a Nile Crocodile was seen on one occasion in the drainage line within the project area.

Homopholis mulleri (Muller's Velvet Gecko) is a nocturnal species that can be found sheltering in the holes in the trunks of tree species such as Marula and Knob-thorn trees. Their range is threatened mainly by clearance of habitat for agricultural use, extraction of mature trees for firewood, wood carving and charcoal production. Suitable habitat and trees are present in the project area and as such the likelihood of occurrence is high.

Scelotes limpopoensis albiventris (White-bellied Dwarf Burrowing Skink) is a species that is found in the Limpopo River valley. This fossorial species, inhabiting deep aeolian sand in woodland and mesic savanna. Sandy soil woodlands can be found in the project area as such the likelihood of occurrence is high.

Vhembelacerta rupicola (Soutpansberg Rock Lizard) occur on rocky outcrops, scree slopes and bedrock in wooded savanna and forest fringes. Large-scale timber plantations are the main threat to the quality and extent of this species habitat. This species ideal habitat cannot be found in the project area as such the likelihood of occurrence is rated as moderate.

Mammals - The IUCN Red List Spatial Data lists 106 mammal species that could be expected to occur within the area. This list includes large mammal species that are normally limited to protected areas, as these species might be found in the reserve portion of the project area. The SCCs restricted to protected

areas were excluded from the SCC list below. Fourteen (14) of these expected species are regarded as threatened.

Table 17: Threatened mammal species that are expected to occur within the project area

Species	Common Name	Conservation Status		Likelihood of Occurrence
		Regional (SANBI, 2016)	IUCN (2021)	
Aonyx capensis	*Cape Clawless Otter*	*NT*	*NT*	*Moderate*
Atelerix frontalis	*South Africa Hedgehog*	*NT*	*LC*	*High*
Cloeotis percivali	*Short-eared Trident Bat*	*EN*	*LC*	*High*
Crocidura maquassiensis	*Makwassie musk shrew*	*VU*	*LC*	*Low*
Crocuta	*Spotted Hyaena*	*NT*	*LC*	*High*
Dasymys incomtus	*African Marsh rat*	*NT*	*LC*	*Moderate*
Eidolon helvum	*African Straw-colored Fruit Bat*	*LC*	*NT*	*Low*
Felis nigripes	*Black-footed Cat*	*VU*	*VU*	*Moderate*
Leptailurus serval	*Serval*	*NT*	*LC*	*High*
Nycteris woodi	*Wood's Slit Faced Bat*	*NT*	*LC*	*High*
Panthera pardus	*Leopard*	*VU*	*VU*	*Confirmed*
Parahyaena brunnea	*Brown Hyaena*	*NT*	*NT*	*High*
Poecilogale albinucha	*African Striped Weasel*	*NT*	*LC*	*High*
Smutsia temminckii	*Temminck's Ground Pangolin*	*VU*	*VU*	*Moderate*

Aonyx capensis (Cape Clawless Otter) is the most widely distributed otter species in Africa (IUCN, 2017). This species is predominantly aquatic, and it is seldom found far from water. This species has a moderate likelihood of occurrence based on the presence of the streams in the project area.

Atelerix frontalis (South African Hedgehog) has a tolerance to a degree for habitat modification and occurs in a wide variety of semi-arid and sub-temperate habitats (IUCN, 2017). Based on the Red List of Mammals of South Africa, Lesotho, and Swaziland (2016), A. frontalis populations are decreasing due to the threats of electrocution, veld fires, road collisions, predation from domestic pets and illegal harvesting. Suitable grasslands occur in the project area and therefore the likelihood of occurrence is high.

Cloeotis percivali (Short-eared Trident Bat) occurs in savanna areas where there is sufficient cover in the form of caves and mine tunnels for day roosting (IUCN, 2017). It feeds exclusively on moths and appears to be very sensitive to disturbance. Suitable habitat and roosting area can be found around the project area and therefore the likelihood of finding this species is rated as high.

Crocidura maquassiensis (Maquassie Musk Shrew) is listed as VU on a regional basis and is known to be found in rocky, mountain habitats. It may tolerate a wider range of habitats and individuals have been collected in Kwa-Zulu Natal from a garden, and in mixed bracken and grassland alongside a river at 1,500 m (IUCN, 2017). This species has a low likelihood of occurring based lack of ridge habitat found in the project area.

Crocuta (Spotted Hyaena) is classified as NT on a national scale. This species mainly occurs in protected areas but in Limpopo and the North-west Provinces they can still be found outside of protected areas. This species is predominantly found in savanna habitats, where they can occur in close association with humans. The likelihood of occurrence in this project area is high due to the presence of suitable prey species in the nature reserve.

Dasymys incomtus (African Marsh Rat) is listed as NT on a regional scale and LC on a global scale. This species has a wide distributional range that includes Central Africa, East Africa, and parts of Southern Africa. This species has been recorded from a wide variety of habitats, including forest and savanna habitats, wetlands, and grasslands (IUCN, 2017). The stream in the project area provides suitable although not ideal habitat for this species therefore the likelihood of occurrence is rated as moderate.

Eidolon helvum (African Straw-coloured Fruit Bat) is listed as LC on a regional scale and NT on a global scale. This species has been recorded from a very wide range of habitats across the lowland rainforest and savanna zones of Africa (IUCN, 2017). Although considered to be widespread and abundant across its range, certain populations are decreasing due to severe deforestation, hunting for food and medicinal use (IUCN, 2017). This species is known to form large roosts and colonies numbering in the thousands to even millions of individuals (IUCN, 2017). These species might occasionally be found in the area but is unlikely to be residents.

Felis nigripes (Black-footed cat) is endemic to the arid regions of southern Africa. This species is naturally rare, has cryptic colouring is small in size and is nocturnal. These factors have contributed to a lack of information on this species. Given that the highest densities of this species have been recorded in the more arid Karoo region of South Africa, the habitat in the project area can be considered to be sub-optimal for the species and the likelihood of occurrence is rated as moderate.

Leptailurus serval (Serval) occurs widely through sub-Saharan Africa and is commonly recorded from most major national parks and reserves (IUCN, 2017). The Serval's status outside reserves is not certain, but they are inconspicuous and may be common in suitable habitat as they are tolerant of farming practices provided there are cover and food available. In sub-Saharan Africa, they are found in habitat with well-watered savanna long-grass environments and are particularly associated with reedbeds and other riparian vegetation types. Suitable habitat is present for this species in the project area, as such the likelihood of occurrence is rated as high.

Nycteris woodi (Wood's Slit-faced Bat) occurs in semi-arid and moist woodland savannahs (including miombo and mopane woodlands) where suitable day-roosts are available. It roosts in hollow trees (particularly Baobabs Adansonia digitata and Sausage Trees Kigelia africana), sandstone caves, rock

fissures, mine adits and buildings. Suitable foraging and roosting habitat are present for this species as such it has a high likelihood of occurrence.

Panthera pardus (Leopard) has a wide distributional range across Africa and Asia, but populations have become reduced and isolated, and they are now extirpated from large portions of their historic range (IUCN, 2017). Impacts that have contributed to the decline in populations of this species include continued persecution by farmers, habitat fragmentation, increased illegal wildlife trade, excessive harvesting for ceremonial use of skins, prey base declines and poorly managed trophy hunting (IUCN, 2017). Although known to occur and persist outside of formally protected areas, the densities in these areas are considered to be low. The presence of this species was confirmed with tracks found during the assessment.

Parahyaena brunnea (Brown Hyaena) is endemic to southern Africa. This species occurs in dry areas, generally with annual rainfall less than 100 mm, particularly along the coast, semi-desert, open scrub, and open woodland savanna. Given its known ability to persist outside of formally protected areas the likelihood of occurrence of this species in the project area is moderate to good. The presence of moderate to large herbivores on the reserve portion of the project area increases the likelihood of occurrence of this species.

Poecilogale albinucha (African Striped Weasel) is usually associated with savanna habitats, although it probably has a wider habitat tolerance (IUCN, 2017). Due to its secretive nature, it is often overlooked in many areas where it does occur. There is sufficient habitat for this species in the project area and the likelihood of occurrence of this species is therefore considered to be high.

Smutsia temminckii (Temminck's Ground Pangolin) is a predominantly solitary, terrestrial species that inhabits mainly savanna woodland in low-lying regions with moderate to dense scrub where average annual rainfall is between 250 mm and 1,400 mm (IUCN, 2017). The species is eaten as bushmeat to various extents across its range (e.g., South Africa, Zimbabwe, Namibia, Mozambique, Tanzania). Of greater threat is overexploitation for body parts and scales which have superstitious value and are used for medicinal purposes (IUCN, 2017). The likelihood of occurrence of this species in the project area is moderate due the fact that the adjacent mining activity and associated disturbance would typically force sensitive species such as this to other areas.

Avifauna - The SABAP2 dataset lists 245 avifauna species that could be expected to occur within the area. Sixteen (16) of these expected species are regarded as threatened.

Table 18: List of bird species of regional or global conservation importance that are expected to occur in the project area (SABAP2, 2021, ESKOM, 2015; IUCN, 2021)

Species	Common Name	Conservation Status		Likelihood of occurrence
		Regional (SANBI, 2016)	IUCN (2021)	
Aquila nipalensis	*Eagle, Steppe*	*LC*	*EN*	*Low*
Aquila rapax	*Eagle, Tawny*	*EN*	*VU*	*High*
Aquila verreauxii	*Eagle, Verreaux's*	*VU*	*LC*	*Moderate*

Species	Common Name	Conservation Status		Likelihood of occurrence
		Regional (SANBI, 2016)	IUCN (2021)	
Ardeotis kori	*Bustard, Kori*	*NT*	*NT*	*High*
Calidris ferruginea	*Sandpiper, Curlew*	*LC*	*NT*	*Moderate*
Ciconia nigra	*Stork, Black*	*VU*	*LC*	*Moderate*
Coracias garrulus	*Roller, European*	*NT*	*LC*	*High*
Ephippiorhynchus senegalensis	*Stork, Saddle-billed*	*EN*	*LC*	*High*
Falco biarmicus	*Falcon, Lanner*	*VU*	*LC*	*High*
Gyps africanus	*Vulture, White-backed*	*CR*	*CR*	*High*
Gyps coprotheres	*Vulture, Cape*	*EN*	*EN*	*High*
Mycteria ibis	*Stork, Yellow-billed*	*EN*	*LC*	*High*
Polemaetus bellicosus	*Eagle, Martial*	*EN*	*EN*	*High*
Rostratula benghalensis	*Painted-snipe, Greater*	*NT*	*LC*	*High*
Sagittarius serpentarius	*Secretarybird*	*VU*	*EN*	*High*
Terathopius ecaudatus	*Bateleur, Bateleur*	*EN*	*EN*	*High*

Aquila nipalensis (Steppe Eagle) is listed as Lc regionally but as EN on a global scale. It is a migrant bird species that over-winters in South Africa and has undergone extremely rapid population declines within its range. Mountainous habitat is not present in the project are as such the species has a low likelihood of occurrence.

Aquila rapax (Tawny Eagle) is listed as EN on a regional scale and VU on an international one. They occupy dry open habitats from sea level to 3000 m. It will occupy both woodland and wooded savannah (IUCN, 2017). Due to its large distributional range, combined with the presence of suitable prey species the likelihood of occurrence of this species is rated as high.

Aquila verreauxii (Verreaux's Eagle) is listed as VU on a regional scale and LC on a global scale. This species is locally persecuted in southern Africa where it coincides with livestock farms, but because the species does not take carrion, is little threatened by poisoned carcasses. Where hyraxes are hunted for food and skins, eagle populations have declined (IUCN, 2017). Suitable prey species can be found in the project area, but mountainous habitat is not resent for nesting, it can thus be said the species could use the habitat for hunting but will not be a resident.

Ardeotis kori (Kori Bustard) is listed as NT both on a regional and global scale. It occurs in flat, arid, mostly open country such as grassland, karoo, bushveld, thornveld, scrubland and savanna but also including modified habitats such as wheat fields and firebreaks. Collisions with high voltage power lines are a major threat to this species in the Karoo of South Africa (IUCN, 2007). The project area is suitable habitat for this species, and they therefore have a high likelihood of occurrence.

Calidris ferruginea (Curlew Sandpiper) is migratory species that breeds on slightly elevated areas in the lowlands of the high Arctic and may be seen in parts of South Africa during winter. During winter, the

species occurs at the coast, but also inland on the muddy edges of marshes, large rivers, and lakes (both saline and freshwater), irrigated land, flooded areas, dams and saltpans (IUCN, 2017). The streams and wetlands in the project area could provide suitable habitat for this species.

Ciconia nigra (Black Stork) is native to South Africa, and inhabits old, undisturbed, open forests. They are known to forage in shallow streams, pools, marshes swampy patches, damp meadows, floodplains, pools in dry riverbeds and occasionally grasslands, especially where there are stands of reeds or long grass (IUCN, 2017). It is unlikely that this species would breed in the project area due to the lack of forested areas, however some suitable foraging habitat remains in the form of the streams and wetland areas, and as such the likelihood of occurrence is rated as moderate.

Coracias garrulous (European Roller) is a winter migrant from most of South-central Europe and Asia occurring throughout sub-Saharan Africa (IUCN, 2017). The European Roller has a preference for bushy plains and dry savannah areas (IUCN, 2017). There is a high chance of this species occurring in the project area as they prefer to forage in open areas.

Ephippiorhynchus senegalensis (Saddle-billed Stork) is listed as EN on a local basis and is known to inhabit extensive fresh, brackish, or alkaline wetlands in open, semi-arid areas and savanna, with relatively high abundances of fish and with large trees nearby for nesting and roosting (IUCN, 2017). Suitable habitats include shallow freshwater marshes, wet grasslands, the margins of large or small rivers, lake shores pans and floodplains. The wetlands in the project area provide suitable foraging habitat for this species as such the likelihood of occurrence is high.

Falco biarmicus (Lanner Falcon) is native to South Africa and inhabits a wide variety of habitats, from lowland deserts to forested mountains (IUCN, 2017). They may occur in groups up to 20 individuals but have also been observed solitary. Their diet is mainly composed of small birds such as pigeons and francolins. The likelihood of incidental records of this species in the project area is rated as high due to the natural veld condition and the presence of many bird species on which Lanner Falcons may predate.

Gyps africanus (White-backed Vulture) has a large range and only occurs throughout sub-Saharan Africa. Primarily a lowland species of open wooded savanna, particularly areas of Acacia (Vachellia). It requires tall trees for nesting. According to the IUCN (2017) this species faces similar threats to other African vultures, being susceptible to habitat conversion to agro-pastoral systems, loss of wild ungulates leading to a reduced availability of carrion, hunting for trade, persecution, and poisoning. The likelihood of suitably large trees for nesting for this species is high at the project area, combined with the nature reserve habitat the likelihood of occurrence is rated as high.

Gyps coprotheres (Cape Vulture) is listed as EN on both a regional and global scale. Cape Vultures are long-lived carrion-feeders specialising on large carcasses, they fly long distances over open country, although they are usually found near steep terrain, where they breed and roost on cliffs (IUCN, 2017). This species has a high likelihood of occurrence based on the known population in the nearby Mapungubwe National Park.

Mycteria ibis (Yellow-billed Stork) is listed as EN on a regional scale and LC on a global scale. This species is migratory and has a large distributional range which includes much of sub-Saharan Africa. It is typically associated with freshwater ecosystems, especially wetlands and the margins of lakes and dams (IUCN, 2017). The presence of water bodies within the project area creates a high possibility that this species may occur there.

Polemaetus bellicosus (Martial Eagle) is listed as EN on a regional scale and on a global scale. This species has an extensive range across much of sub-Saharan Africa, but populations are declining due to deliberate and incidental poisoning, habitat loss, reduction in available prey, pollution, and collisions with power lines (IUCN, 2017). It inhabits open woodland, wooded savanna, bushy grassland, thornbush and, in southern Africa, more open country and even sub-desert (IUCN, 2017). With the presence of good grassland habitat in the project area combined with the presence of large trees for roosting and nesting this species were appointed a high likelihood of occurring.

Rostratula benghalensis (Greater Painted snipe) shows a preference for recently flooded areas in shallow lowland freshwater temporary or permanent wetland, it has a wide range of these freshwater habitats which they occur in, in this case, sewage pools, reservoirs, mudflats overgrown with marsh grass of which some exist within the project area, thus the likelihood of occurrence is high.

Sagittarius serpentarius (Secretarybird) occurs in sub-Saharan Africa and inhabits grasslands, open plains, and lightly wooded savanna. It is also found in agricultural areas and sub-desert (IUCN, 2017). The likelihood of occurrence is rated as high due to the grasslands and wetland areas present in the project area.

Terathopius ecaudatus (Bateleur) is categorised as EN on a regional scale and NT on an international scale. This species prefers open grassland and savanna, it is not found in thick forested areas. The likelihood of finding this predatory bird in the project area is rated as high due to the natural state of the habitat specifically in the nature reserve portion.

Important Bird & Biodiversity Areas

Important Bird & Biodiversity Areas (“IBA”s) are the sites of international significance for the conservation of the world's birds and other conservation significant species as identified by BirdLife International. These sites are also all Key Biodiversity Areas; sites that contribute significantly to the global persistence of biodiversity (Birdlife, 2017).

According to Birdlife International (2017), the selection of IBAs is achieved through the application of quantitative ornithological criteria, grounded in up-to-date knowledge of the sizes and trends of bird populations. The criteria ensure that the sites selected as IBAs have true significance for the international conservation of bird populations and provide a common currency that all IBAs adhere to, thus creating consistency among, and enabling comparability between, sites at national, continental and global levels. The project area is 13 km from the Mapungubwe IBA.

The Mapungubwe IBA falls within the boundaries of the Vhembe Biosphere Reserve. This IBA is home to species such as Pel’s Fishing Owl *Scotopelia peli*, White-backed Vulture *Gyps africanus*, Black Stork

Ciconia nigra, Woolly-necked Stork *C. episcopus,* Saddle-billed Stork *Ephippiorhynchus senegalensis,* White-crowned Lapwing *Vanellus albiceps*, Great White Pelican *Pelecanus onocrotalus,* Lesser Moorhen *Gallinula angulata* and Allen's Gallinule *Porphyrio alleni.* Species with a wider range found here include, Marabou Stork *Leptoptilos crumeniferus*, White-backed Vulture, Martial Eagle *Polemaetus bellicosus,* Bateleur *Terathopius ecaudatus,* Tawny Eagle *Aquila rapax*, Red-crested Korhaan *Eupodotis ruficrista,* White-throated Robin-Chat *Cossypha humeralis* and Burnt-necked *Eremomela Eremomela usticollis* (Birdlife South Africa, 2015).

Apart from birdlife this IBA is also important for other biodiversity. The Eastern Purple-glossed Snake *Amblyodipsas microphthalma,* Transvaal quill-snouted snake *Xenocalamus transvaalensis,* Limpopo dwarf burrowing skink *Scelotes limpopoensis*, Transvaal flat gecko *Afroedura transvaalica*, tiger thick-toed gecko *Pachydactylus tigrinus,* two-striped shovel-snout *Prosymna bivittate* and Nile crocodile *Crocodylus niloticus* all can be found within this IBA (Birdlife South Africa, 2015).

Chapter G: Surface water

Refer to the Surface Water Assessment attached as Annexure D1. The site is located predominantly in the Matotwane River catchment, with the river located to the east of the mine. The Kolope River runs to the west of the mine. An unnamed tributary of the Matotwane River flows from south to north through the Venetia Mine and daylights again on the south-eastern boundary of DMI Minerals - Krone-Endora Mine (at borehole KLM04). This tributary is still thought to play an important role in the surface water and groundwater dynamics Venetia, especially downstream from their WRDs.

The Kolope and Matotwane rivers, including all their tributaries are intermittent and flows are only recorded during extreme rain events. Refer to Figure 11.

The mine is located within quaternary catchment A63E of the Limpopo Primary Drainage Region and in rainfall zone A6F. Refer to Figure 13. Relevant water management information as gathered and updated by the Water Resources of South Africa (2012) and in the Groundwater Resources Directed Measures database for catchment A63E is displayed in Table 19 below.

Table 19: Quaternary catchment information

Attribute	A63E
Area (km^2)	1992
Mean annual rainfall (mm/a)	358
Mean annual runoff (mm/a)	24
Baseflow (mm/a)	0
Mean annual evaporation (mm/a)	2000 - 2200
Groundwater region	Limpopo
Total groundwater use Mm^3/a	20.7
Water Management Area	Limpopo
Ecoregion	Limpopo Plain
Present Eco Status Category	B - Largely natural with few modifications. A small change in natural habitats and biota may have taken

	place but the ecosystem functions are essentially unchanged (Kleynhans and Louw, 2007).
Recharge	~7 mm/a
	~2%
Exploitation potential Mm^3/a	6
Vegetation type	Mopane Bushveld
Soils	Sand Sandy-loam (Sa-SaLm)
Land use	Mining, agriculture
Groundwater General Authorization	0 $m^3/ha/a$

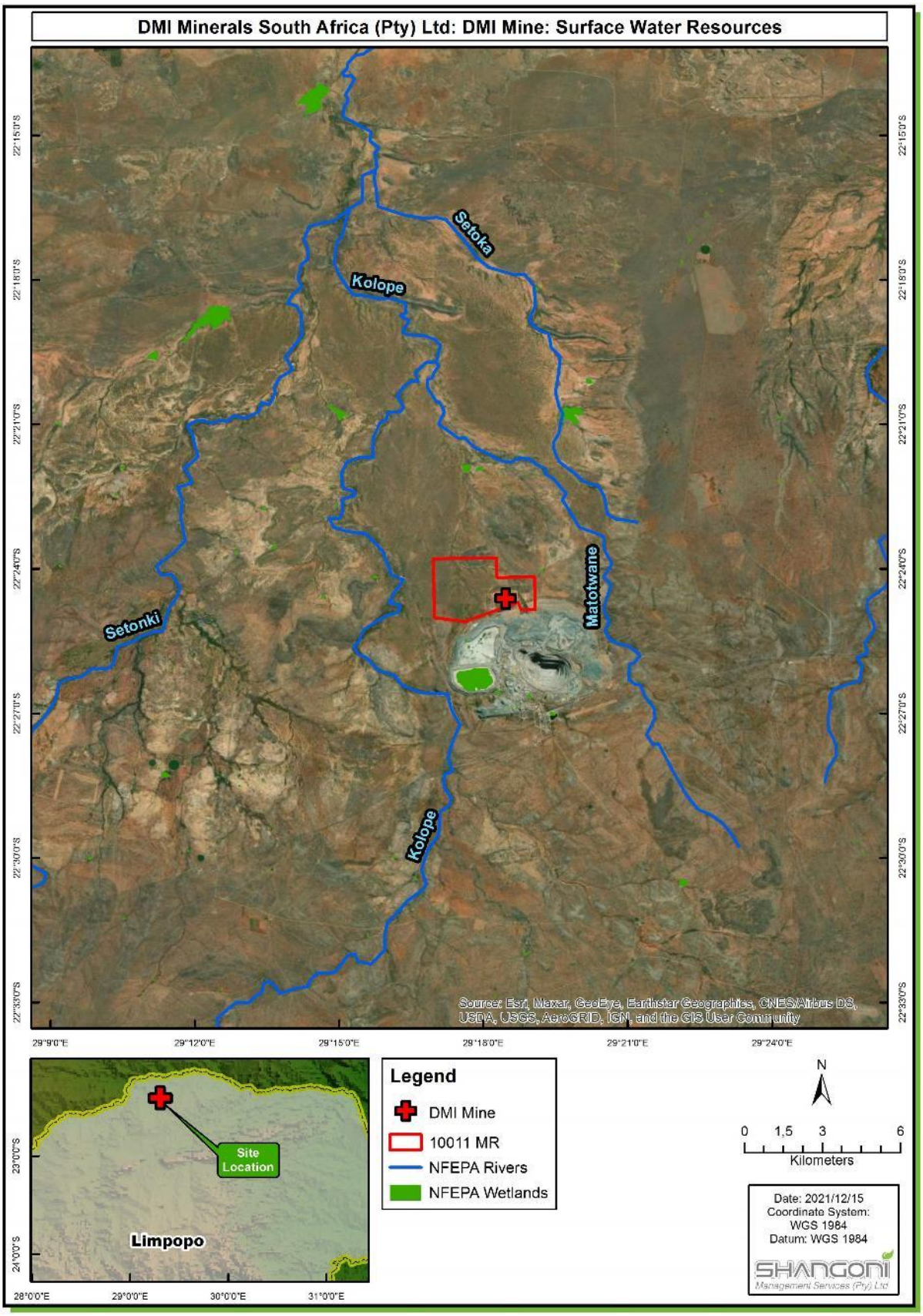

Figure 11: Surface water resources

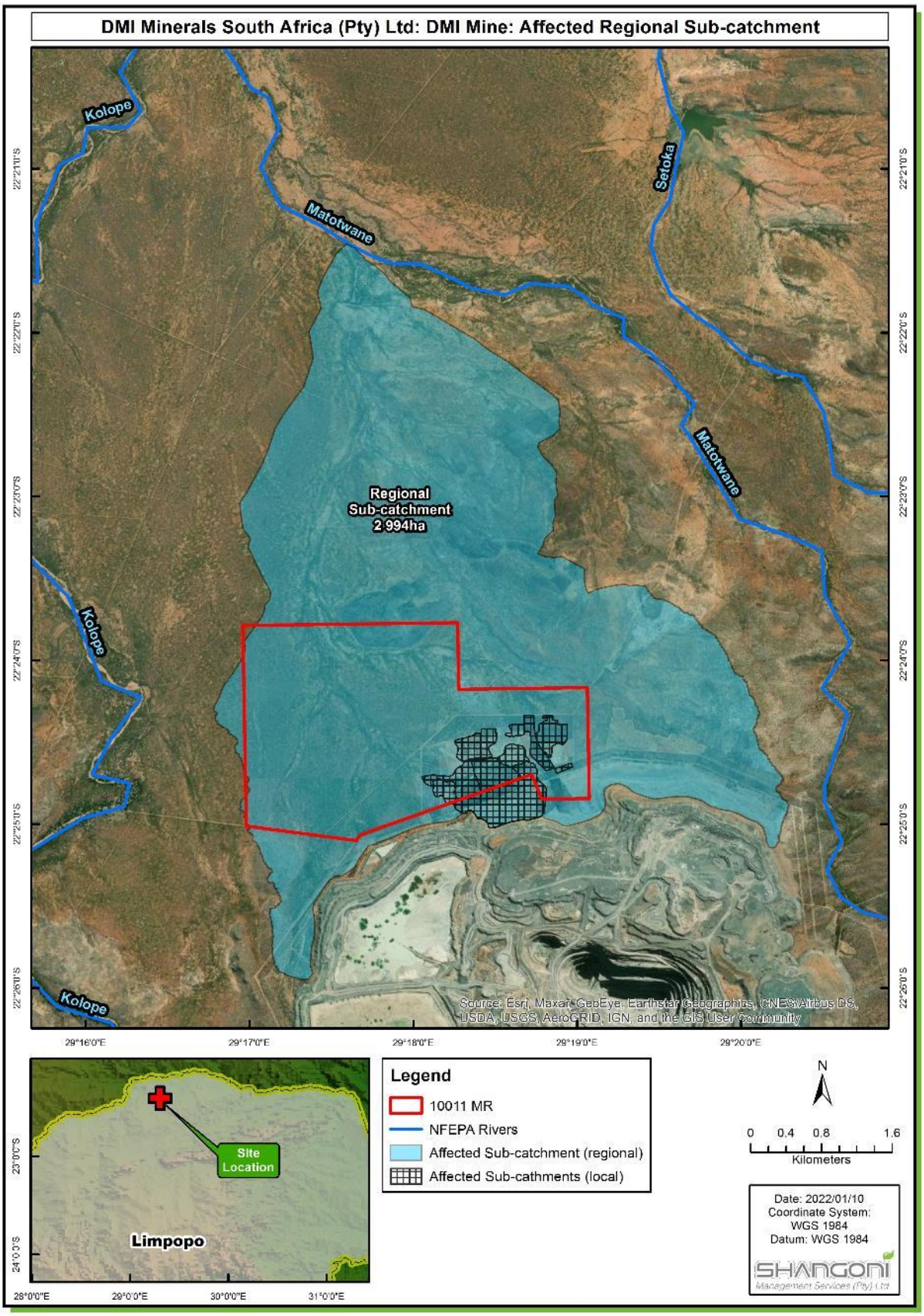

Figure 12: Affected regional sub catchment

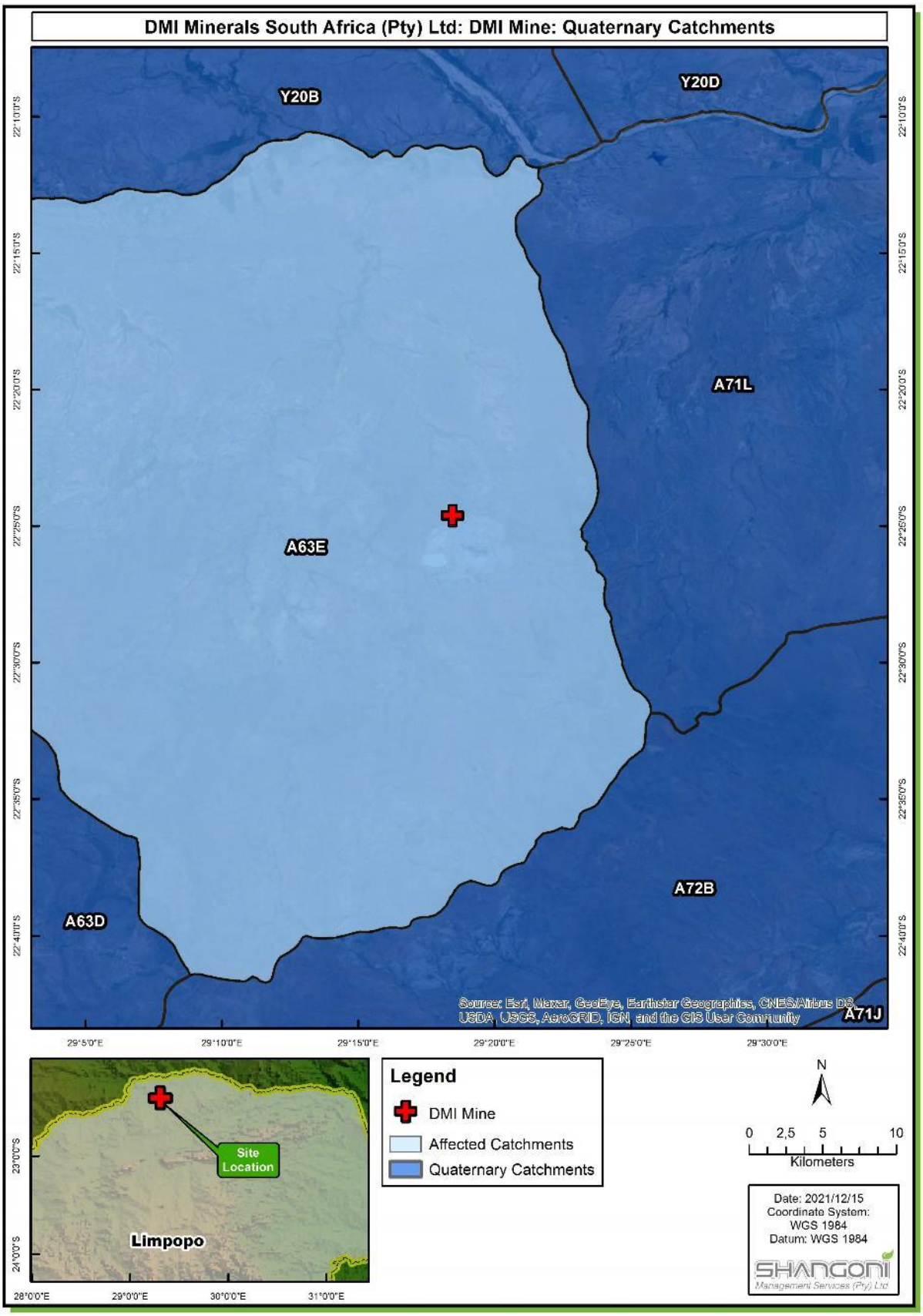

Figure 13: Quaternary catchment map

Chapter H: Groundwater

The following information pertaining to groundwater was extracted from the *Diamcor Mining Inc. DMI Minerals South Africa (Pty) Ltd: Krone - Endora Mine Geohydrological Impact Assessment Draft Report* dated January 2022 and prepared by Shangoni AquiScience (Pty) Ltd. Attached as Annexure D5.

Aquifer characterisation

Aquifer vulnerability

The table below summarizes the aquifer classification vulnerability scores for the aquifer/s in vicinity of the project area. The final DRASTIC score of 94 indicates that the fractured aquifer in the region has a medium susceptibility to pollution.

Table 20: *DRASTIC vulnerability scores (fractured aquifer)*

Factor	Range/Type	Weight	Rating	Total
D	5 - 15 m	5	7	35
R	0 - 5 mm	4	1	4
A	Fractured and weathered	3	3	18
S	Sandy loam	2	6	12
T	0-2%	1	10	10
I	Gneiss	5	3	15
C	-	3	-	-
DRASTIC SCORE = 94				

Aquifer classification

DMI Minerals - Krone-Endora is underlain by a d3 aquifer class region with the geology listed as mostly undifferentiated rocks of mixed lithologies (shale with hornfels and carbonate layers in places) and pyroclastic rock such as tuff and agglomerate.

The groundwater yield potential is classed as moderate on the basis that most of the boreholes on record for the study area produce between 0.5 and 2.0 ℓ/s. The different modes of undisturbed/natural groundwater occurrences associated with the study area include:

- Saturated unconsolidated alluvial deposits along some river systems.
- The fractured transitional zone occurring between weathered and unweathered crystalline and metamorphic bedrock.
- Fractures that occur along the contact zone between dykes / sills and the host rocks. The fractures developed due to the heating and cooling of the rocks involved in these intrusions.

According to the regional aquifer classification map of South Africa, the fractured aquifer has been identified as a minor aquifer with highly variable groundwater quality a medium vulnerability and a medium to high susceptibility towards contamination. The study area is underlain by two types of aquifers. Based on the 'undisturbed' underlying hydrogeology of the project area, the aquifers can be classified as follows according to the Parsons (1995) classification system:

1. Weathered unconfined aquifer:
   1.1 Poor/non- aquifer.
2. Fractured confined or semi-confined aquifer:
   2.1 minor- aquifer.

The occurring aquifer, in terms of the above definitions, is classified as a non-aquifer system. The vulnerability, or the tendency or likelihood for contamination to reach a specified position in the groundwater system after introduction at some location above the uppermost aquifer is classified as medium. The level of groundwater protection based on the Groundwater Quality Management Classification is shown in in the tables below.

Table 21: Ratings for the Aquifer System Management and Second Variable Classifications

Aquifer System Management Classification		
Class	**Points**	**Study Area**
Sole Source Aquifer System	6	
Major Aquifer System	4	
Minor Aquifer System	2	2
Non-Aquifer System	0	
Special Aquifer System	0-6	
Second Variable Classification (fractured)		
High	3	
Medium	2	2
Low	1	

Table 22: Ratings for the Groundwater Quality Management (GQM) Classification System

Aquifer System Management Classification		
Class	**Points**	**Study Area**
Sole Source Aquifer System	6	
Major Aquifer System	4	
Minor Aquifer System	2	1
Non-Aquifer System	0	
Special Aquifer System	0-6	
Aquifer Vulnerability Classification		
High	3	
Medium	2	2

Aquifer System Management Classification		
Low	1	

GQM Index = Aquifer System Management x Aquifer Vulnerability:

2 X 2 = 4

Table 23: GQM index for the study area

GQM Index	Level of Protection	Study Area
<1	Limited	
1-3	Low level	2
3-6	Medium level	4
6-10	High level	
>10	Strictly non-degradation	

The ratings for the Aquifer System Management Classification and Aquifer Vulnerability Classification yield a GQM index of 4 for the study area, indicating that medium level groundwater protection is required to adhere to DWS's water quality objectives. However, reasonable and sound groundwater protection measures are nevertheless recommended to ensure that no cumulative pollution affects the aquifer, during short- and long-term. DWS's water quality management objectives are to protect human health and the environment. Therefore, the significance of this aquifer classification is that if any potential risk exists, measures must be taken to limit the risk to the environment, which in this case is the protection of the underlying aquifer.

Groundwater quality / Hydrocensus

Eight (8) groundwater samples were taken during the hydrocensus in November 2021. Of these, five (5) are located upgradient and three (downgradient) from DMI.

Upgradient groundwater display average groundwater EC values of between 111 mS/m and 319 mS/m with only the latter, recorded at H/BH01 (borehole at Abend Rhue Guest House), exceeding the SANS 241 standards. The pH is generally circum-neutral and nutrients (NO_3, NH_4, PO_4) are generally low. Nitrate (NO3) is slightly raised in boreholes H/BH01 and H/BH03 but remain within drinking water standards. Fluoride and the trace metals, Al, Fe and Mn recorded in low to undetected levels.

The Stiff diagrams in Figure 14 show generally fresh, clean, relatively young groundwater which is of a Mg(Na)-HCO_3 groundwater type. Borehole H/BH01 has a different signature and is of a Mg-Cl(HCO_3) type, typically of old saline groundwater.

The general downgradient quality compares well with upgradient sources as displayed in Table 24. Two boreholes, H18-0774 and H18-0695 are also typical of groundwater for the region displaying either Na-HCO_3 or Ca-HCO_3 types. These boreholes are located in excess of 3 km from the mine, which is too

far to show any mining related impact. The other borehole, H18-0697, located approximately 600 m of DMI show a profile similar to the mine water at DMI with high to elevated levels of salinity, Na, Cl, SO_4 and F. The Stiff diagram for H18-0697 as shown in Figure 15 also compare well with the profiles of the mine water. However, it must be stressed that borehole H18-0697 is located within an old paleo-channel that also directly underlies Venetia. An upstream borehole, KLM04, also located within this paleo-channel Figure 16, displays similar results and chemical profiles. It is believed that these old paleochannels play a big role in subsurface water movement especially within the high permeable shallow alluvial material.

Table 24: Groundwater quality

Locality / Guideline	Unit	Domestic use SANS 241(1)[a]		BH 01	H \ BH 01	H \ BH 02	H \ BH 03	H \ BH 04		H18-0774	H18 - 0695	H18-0697
Parameter												
pH	-	5 - 9.7	Upstream	7.68	7.41	7.83	7.64	7.63	Downstream	7.81	7.52	7.48
EC	mS/m	≤170		122	**319**	119	121	111		18.3	118	**822**
TDS	mg/l	1200		642	**1800**	667	699	614		87.8	673	**5371**
Calcium (Ca)	mg/l			59.7	206	20.5	62.6	53.2		12.1	44.1	74.2
Magnesium (Mg)	mg/l	-		106	179	56.7	46.5	52.7		4.21	34.3	333
Sodium (Na)	mg/l	200		26.5	183	152	135	107		5.37	157	**1464**
Potassium (K)	mg/l	-		7.85	15.9	9.48	8.16	2.39		3.46	12.6	60.7
Total alkalinity (MALK)	mg/l	-		572	600	453	475	449		57.6	471	901
Chloride (Cl)	mg/l	300		65.9	696	125	96.6	85.7		19.1	79.4	**2146**
Sulphate (SO_4)	mg/l	500		25.2	122	27.0	27.2	42.1		2.08	41.1	**738**
Nitrate as N (NO_3-N)	mg/l	11		1.25	8.06	0.63	8.26	<0.35		<0.35	4.33	<0.35
Total ammonia (NH_3-N + NH_4-N)	mg/l	1.5		<0.45	<0.45	<0.45	<0.45	<0.45		**5.22**	<0.45	0.73
Orthophosphate (PO_4)	mg/l	-		<0.03	<0.03	<0.03	<0.03	<0.03		<0.03	<0.03	<0.03
Fluoride (F)	mg/l	1.5		0.95	0.14	0.48	0.37	0.53		<0.09	0.47	1.43
Aluminium (Al)	mg/l	0.3		<0.01	<0.01	<0.01	<0.01	<0.01		0.09	<0.01	<0.01
Iron (Fe)	mg/l	2		0.06	<0.01	<0.01	<0.01	0.01		<0.01	<0.01	0.13
Manganese (Mn)	mg/l	0.5		0.02	<0.01	<0.01	<0.01	<0.01		<0.01	<0.01	<0.01
Total Hardness	mg/l	-		586	1252	285	348	350		47.6	251	1557
[a] SANS 241: 2011												

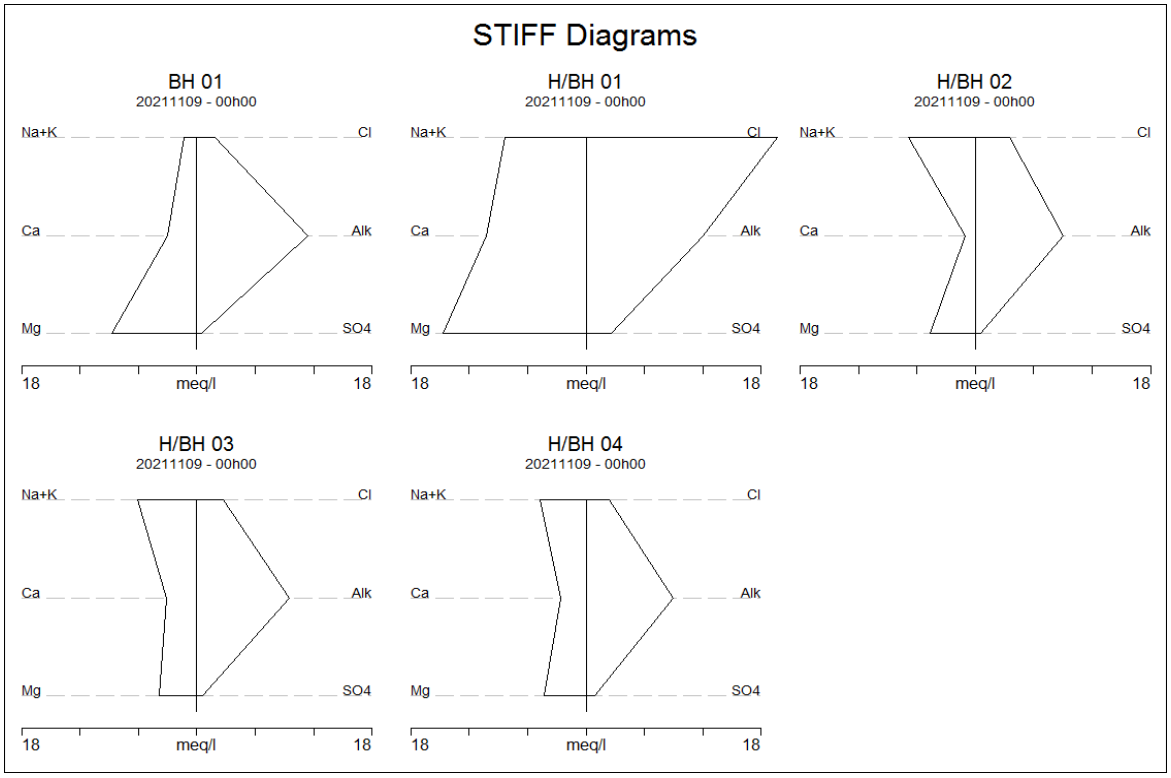

Figure 14: Stiff diagrams showing major cation and anion concentrations in meq/l of upgradient groundwater sources

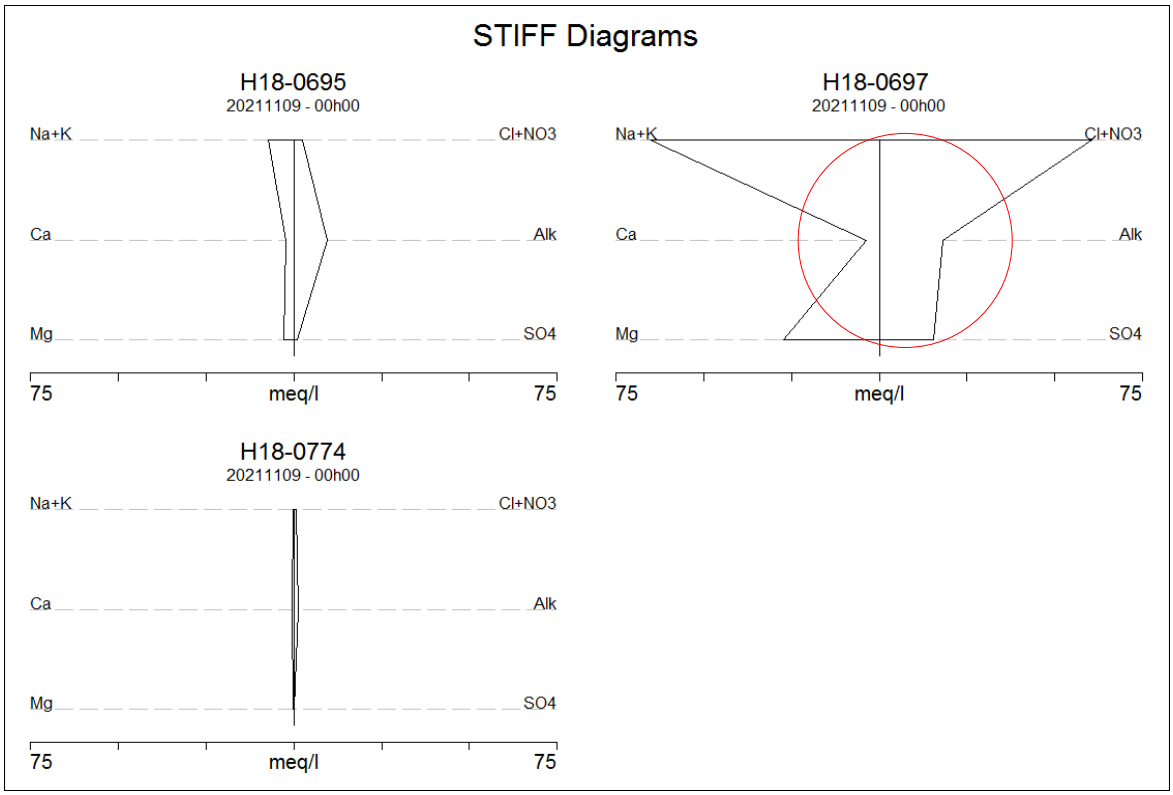

Figure 15: Stiff diagrams showing major cation and anion concentrations in meq/l of downgradient groundwater sources

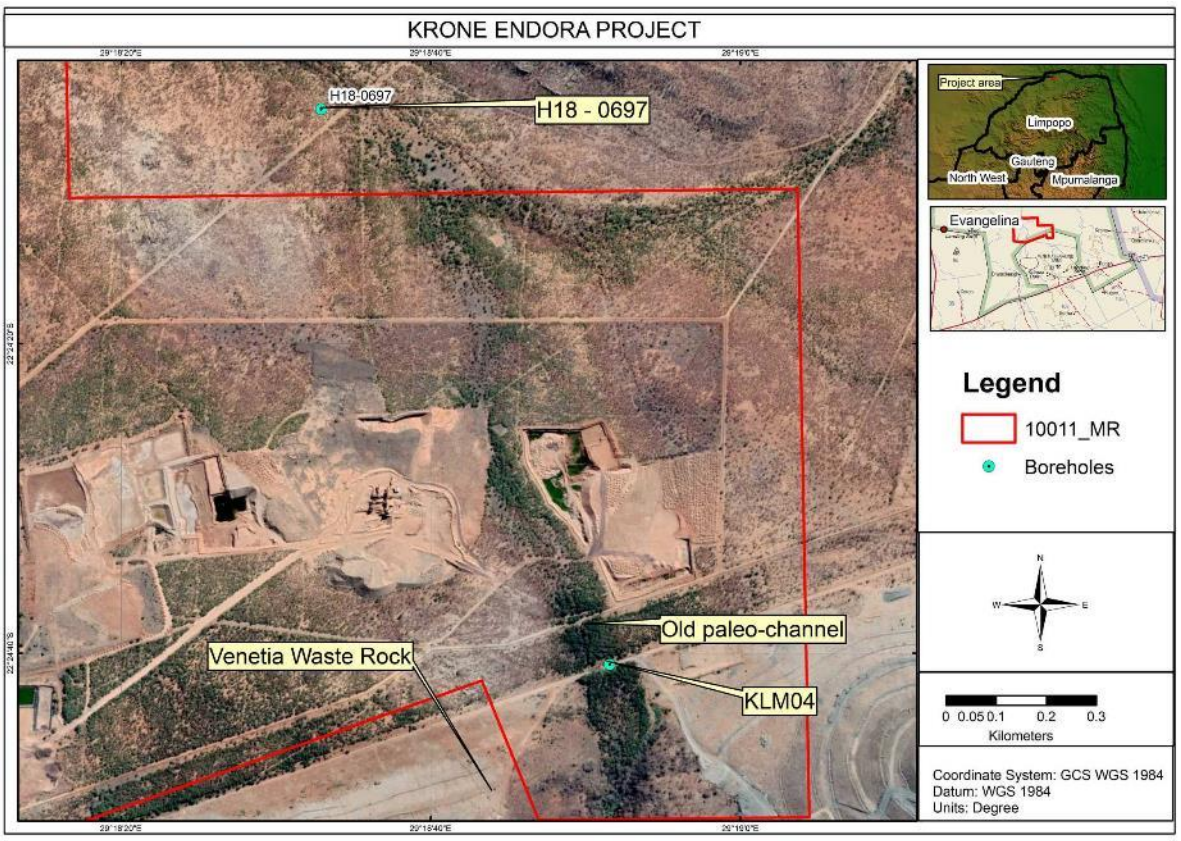

Figure 16: Location of borehole H18-0697 relative to the old paleo-channel and borehole KLM04 downgradient from Venetia

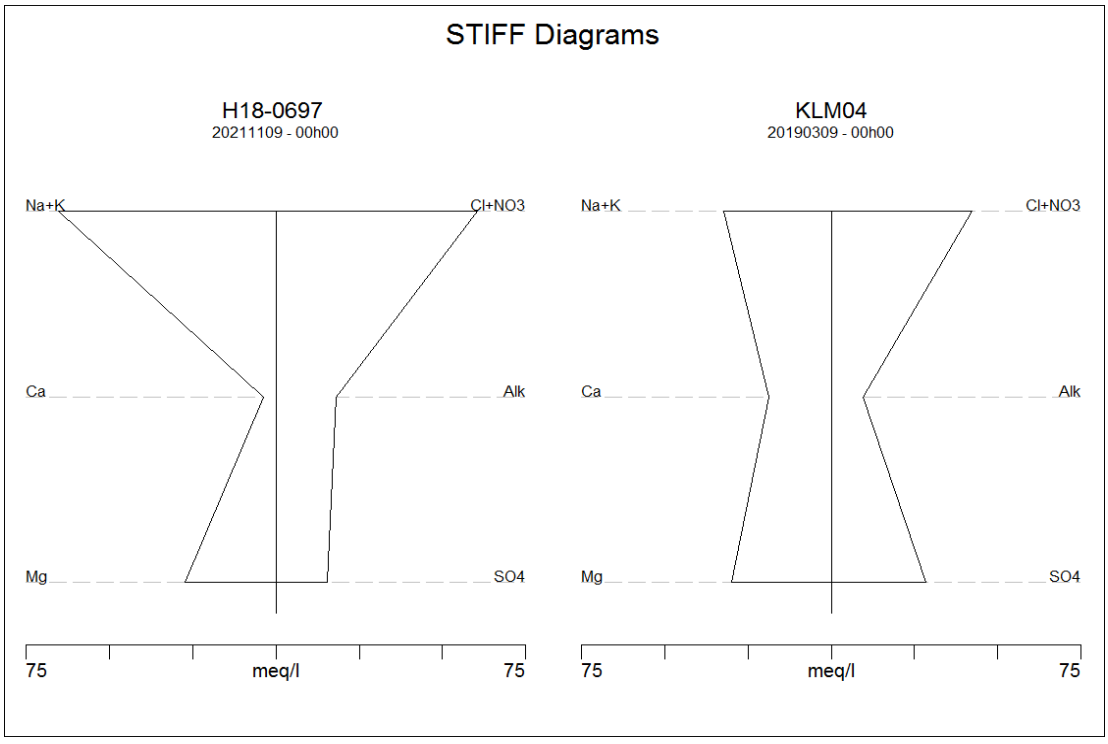

Figure 17: Stiff diagrams showing similar chemical profiles of upgradient borehole KLM04 and downgradient borehole H18 – 0697

Groundwater Model

Initially, an aquifer delineation will indicate the lateral extent of the aquifer(s) in the area. An aquifer can be delineated by means of the following:

1. Mapping structures such as intrusive dykes, progressive sills or displacement faults that act as groundwater flow barriers to form aquifer compartments, and
2. Using high or low topographical areas over which flow is not possible.

Method (i) is probably the most accurate for delineating aquifer boundaries but intricate detail is needed to map the structures of an area, and these are seldom available. Therefore, the modelling area was selected based on method (ii) – the use of natural groundwater barriers and flow boundaries, such as topographical highs and drainage features. The rationale for using topographical highs as groundwater boundaries is the fact that a good Bayesian correlation exist between hydraulic heads and topography for the study area. It can therefore be assumed with confidence that groundwater flow mimics surface water flow with topographical highs and lows functioning as groundwater barriers or discharge areas.

The model boundary with generated mesh is displayed in the Figure 18 below.

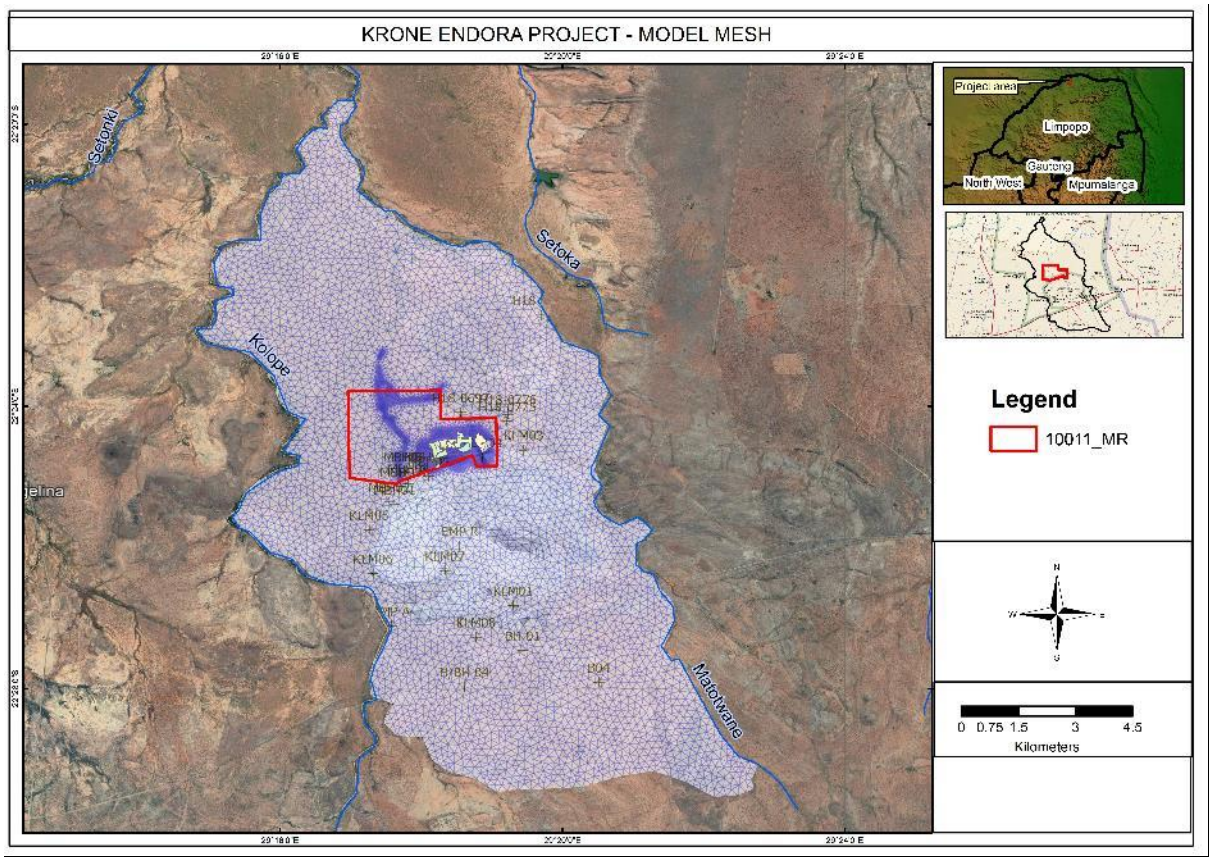

Figure 18: Model Domain and Model Boundary Conditions (from Jones and Wagener, 2020)

In part, the boundary was delineated along drainage features, which are assumed to behave as gaining type river systems. These boundaries are specified as Dirichlet type boundaries where the fixed head elevation is equated to surface elevation at each specified node but with a maximum constraint. If the

water table reaches the assigned elevation, it will be removed from the system otherwise it is self-regulating. The remainder of the boundaries were delineated along surface water catchment divides and are inferred to behave as groundwater catchment divides. These boundaries are assigned what is typically referred to as a no-flow boundary condition (zero specified flux Neumann Type II boundary condition) and was assumed to behave as groundwater divides due to the good correlation that exist between hydraulic heads and topography.

Chapter I: Air Quality

DMI Minerals Krone-Endora Mine and the surrounding land have no other large-scale industrial or mining activity in the area, except for the current mining operations at Venetia Mine. The area is characterised as an area that is sparsely populated with the closest town being Musina (± 75 km east) and Alldays (± 40 km west). The following sources of air emissions have been identified in the area:

- Mining activities in the region.
- Road network.
- Windblown dust.
- Vehicle tailpipe emissions.
- Agricultural activities.

Chapter J: Noise

DMI Minerals Krone-Endora Mine is located directly adjacent to the Venetia Mine and the impacts associated with noise, dust and aesthetics are greatly masked by the existing impacts of the Venetia Mine.

Chapter K: Archaeology, Cultural History and Palaeontological

Archaeology, Cultural History

The following information was obtained from the *DMI Minerals South Africa (Pty) Ltd: Environmental Impact Assessment and Environmental Management Programme Submitted for an Application for a Mining Right in terms of Section 39 and of Regulations 50 and 51 of the Mineral and Petroleum Resources Development Act, 2002, (Act No. 28 of 2002)* (The Act), DMR reference number LP30/5/1/2/2/10011MR dated November 2012.

According to the *Heritage Impact Assessment Report* compiled by G & A Heritage Management Consultants, dated 2012, attached as Annexure D2 the most prominent cultural landscape of the region is the Mapungubwe World Heritage Site and Cultural Landscape.

One thousand years ago, Mapungubwe was the centre of the largest kingdom in the subcontinent, where a highly sophisticated people traded gold and ivory with China, India, and Egypt.

Mapungubwe is an area of open savannah at the confluence of the Limpopo and Shashe Rivers and abutting the northern border of South Africa and the borders of Zimbabwe and Botswana. It thrived as a sophisticated trading centre from around 1220 to 1300. It was home to an advanced culture of people for the time – the ancestors of the Shona people of Zimbabwe. “People were prosperous, and kept

domesticated cattle, sheep, goats and dogs. The charred remains of storage huts have also been found, showing that millet, sorghum and cotton were cultivated".

Mapungubwe's fortune only lasted until about 1300, after which time climate changes, resulting in the area becoming colder and drier, led to migrations further north to Great Zimbabwe (http://www.southafrica.info/about/history/mapungubwe.htm).

Note that the boundaries of the Mapungubwe Cultural Node (as defined in the World Heritage Site application) are around 20 km away from the Krone-Endora Mining Area. O'Connor & Kiker (2004) reported that other homesteads related to the Mapungubwe capital were spread 30 km into the hinterland, including the area of the present-day Venetia-Limpopo Nature Reserve ("VLNR"). They reference maps generated by Huffman (2000) as evidence to this fact. Documented sites were clustered along riverbeds or other sources of water or around elevated areas (Gaigher, 2012). Although research by Mr Thomas Huffman did not cover the farms Krone 104 MS and Endora 66 MS in detail (pers. comm., 2012), it should be noted that the Krone-Endora mining area does not exhibit these characteristics and there is currently no site of cultural significance reported on the area.

The farms Krone 104 MS and Endora 66 MS was bought by Europeans in the 1870's – presumably for private hunting purposes (http://www.diamondroute.co.za/history.htm). The farms were acquired by De Beers Consolidated Mines Limited (DBCM) between 1981 and 1995 and currently forms part of the VLNR- an amalgamation of 21 livestock farms (MacGregor & O'Connor, 2004).

DMI Minerals – Krone-Endora Mine is situated approximately 20 km south of the Mapungubwe National Park, which represents the nearest declared conservation area. In Government Notice No. 71 Government Gazette 31832 of 30 January 2009 the then Minister of Environmental Affairs and Tourism, announced the Mapungubwe Cultural Landscape as a world heritage site in terms of the World Heritage Convention Act, 1999 (Act No. 49 of 1999). In 2014, a new proposed buffer was assessed and approved by UNESCO at the 38th session of the World Heritage Committee (Doha, Qatar 2014) with such also accepted and welcomed in the Statement on the Cabinet Meeting of 25 June 2014 (dated 26 June 2014): "*2.3. Cabinet welcomes the approval of a new buffer zone for the Mapungubwe World Heritage Site by the World Heritage Committee of UNESCO which held its 38th Session in Doha, Qatar, from 15 to 25 June 2014. The new buffer zone is the result of a long consultation process involving landowners, community representatives, non-governmental organisations, mining companies and various government stakeholders. The approval of this new buffer zone is a welcome development for South Africa's efforts to improve the management and protection of its world heritage sites while allowing for responsible and sustainable development.*"

Palaeontological

The following information was extracted from the *Desktop Palaeontological Impact Assessment DMI Minerals South Africa (Pty) Ltd Mine Expansion Development* compiled by Bruce. Rubidge dated 17 December 2021. Attached as Annexure D2.

The underlying Precambrian rocks of the Beit Bridge Complex do not host fossils and no fossils have been reported from the overlying Quaternary sediments. The mudrocks of the Madzaringwe and Mikambeni formations of the Ecca Group are known to host impressions of fossil plants of the famous glossopterid flora. Available literature shows that there are several palaeontological sites in the Tuli Basin in South Africa and Zimbabwe as well as the Tshipise Basin. There is thus potential that the Madzaringwe and Mikambeni formations could host fossils, but Karoo rock exposures in the study area are rare.

Chapter L: Sensitive Landscapes

According to the *Terrestrial Impact Assessment for the proposed Diamcor Diamond Mine Project Bridgewater, Limpopo Province* compiled by the Biodiversity Company dated February 2022 the Water resources (Drainage features/Water courses) are deemed to be sensitive. Attached as Annexure D4.

“Formed in low-lying areas and these are typified by dense stands of tall shrubs together with a high cover of grasses. There were drainage features found within the assessment area that are regarded as non-perennial and possess surface flow only briefly during and following a period of rainfall within the local catchment, which is a feature of semi-arid/arid regions. These seasonal systems nevertheless create an imperative link between the perennial system and its surrounding terrestrial landscape. The drainage lines or watercourses with higher plant biomass also provide cover and a more hospitable habitat for small mammals and birds, compared with the more open, exposed bushveld. For these reasons this habitat is ecologically sensitive and should be observed as ‘No Go’ areas”.

According to *the DMI Minerals Krone-Endora Mining Expansion Project, Limpopo Province River and Wetland Ecosystem Specialist Report* compiled by CES dated February 2022, the ephemeral streams were assessed using the Riverine Ecological Importance and Sensitivity (“EIS”) EIS tool, whereas the wetlands and dams were assessed using the Wetland EIS tool. Ephemeral streams (W2, W3, W6 and W7) all scored low integrated EIS ratings due to their generally marginal to low importance and sensitivity in terms of instream and riparian biota and habitats. Of these, the units with larger alluvial flood-out / wash-out areas (W3 and W7) scored slightly better than those with smaller areas. However, the Riverine EIS rating does not take into account the importance of localised ecosystem services, such sediment trapping within the alluvial flood-outs / washouts. The Wetland EIS tool was therefore also used to take this into account for the alluvial areas of the ephemeral streams. Refer to Figure 19.

Watercourse units W1 scored moderate and units W4 and W5 scored moderately low in terms of their EIS ratings. These ratings were attributed to the moderately-low to moderate regulating ecosystem services (namely sediment trapping) provided by these wetlands, compared to their relatively low respective ecological sensitivities. The ephemeral streams with larger flood-out / wash-out areas (W3 and W7) scored a moderately-low EIS for their moderately-low sediment trapping ecosystem services. Units W2 and W6, with their smaller flood-out / wash-out areas, scored a low EIS rating.

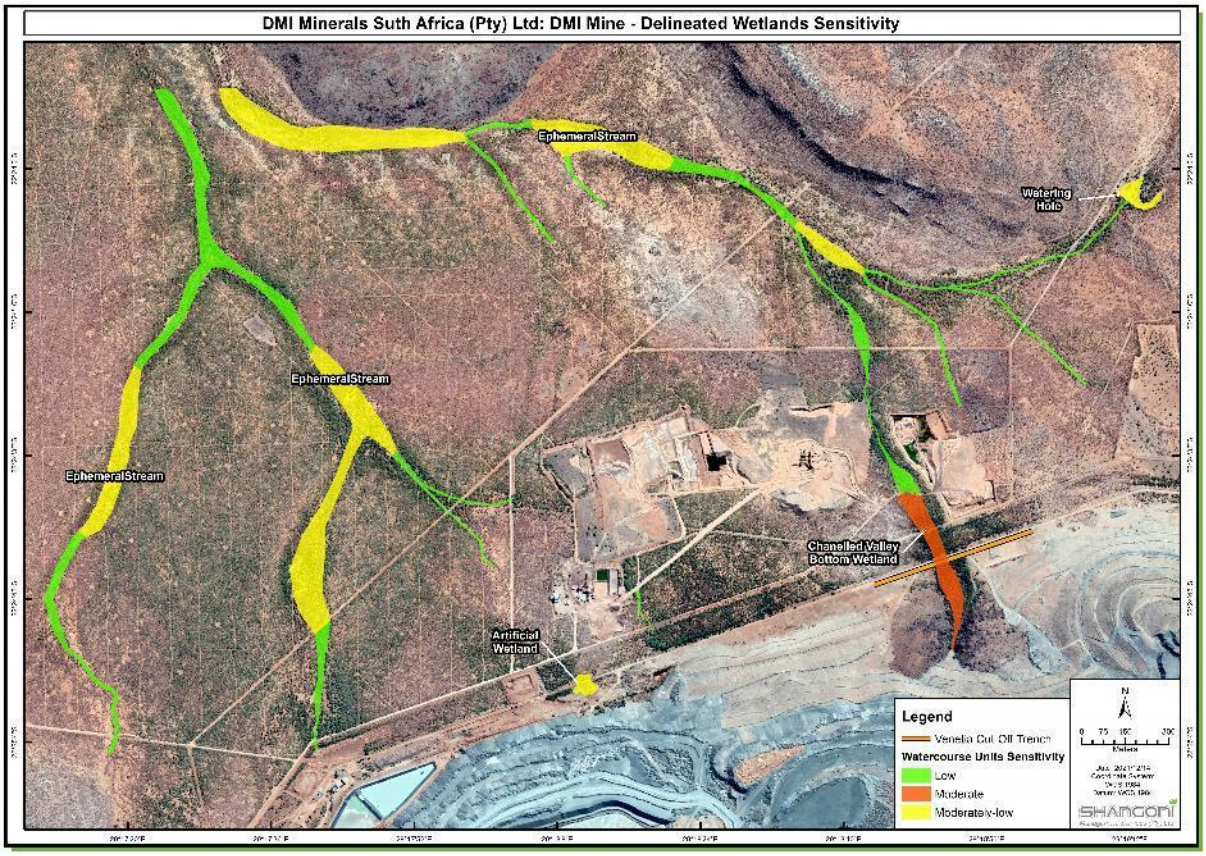

Figure 19: Delineated wetland sensitivity

Ecosystem Threat Status

The Ecosystem Threat Status is an indicator of an ecosystem's wellbeing, based on the level of change in structure, function or composition. Ecosystem types are categorised as Critically Endangered ("CR"), Endangered ("EN"), Vulnerable ("VU"), Near Threatened ("NT") or Least Concern ("LC"), based on the proportion of the original extent of each ecosystem type that remains in good ecological condition. This provides a holistic view of the vegetation type, the threatened species associated with the ecosystem and the overall land use currently in the area. According to the spatial dataset the project overlaps with a LC ecosystem.

Ecosystem Protection Level

This is an indicator of the extent to which ecosystems are adequately protected or under-protected. Ecosystem types are categorised as Well Protected ("WP"), Moderately Protected ("MP"), Poorly Protected ("PP"), or Not Protected ("NP"), based on the proportion of the biodiversity target for each ecosystem type that is included within one or more protected areas. NP, PP or MP ecosystem types are collectively referred to as under-protected ecosystems. The project overlaps with mainly a MP ecosystem and a small portion of a WP ecosystem.

Critical Biodiversity Areas and Ecological Support Areas

It is important to note that the Critical Biodiversity Areas ("CBA") map accounts for terrestrial fauna and flora only. The inclusion of the aquatic component was limited to the Freshwater Ecosystem Priority

Areas (“FEPA”) catchments (included in the cost layer and for the identification of Ecological Support Areas (“ESA”s)) and wetland clusters (included in the ESAs only).

A CBA is considered a significant and ecologically sensitive area and needs to be kept in a pristine or near-natural state to ensure the continued functioning of ecosystems (SANBI, 2017). A CBA represents the best choice for achieving biodiversity targets. ESAs are not essential for achieving targets, but they play a vital role in the continued functioning of ecosystems and often are essential for proper functioning of adjacent CBAs.

The project area superimposed on the Terrestrial CBA map (depicted in Figure 20) The project area overlaps with ESA1 and ONA classified areas.

National Protected Area Expansion Strategy

National Protected Area Expansion Strategy 2016 (NPAES) were identified through a systematic biodiversity planning process. They present the best opportunities for meeting the ecosystem-specific protected area targets set in the NPAES and were designed with strong emphasis on climate change resilience and requirements for protecting freshwater ecosystems. These areas should not be seen as future boundaries of protected areas, as in many cases only a portion of a particular focus area would be required to meet the protected area targets set in the NPAES. They are also not a replacement for fine scale planning which may identify a range of different priority sites based on local requirements, constraints and opportunities (NPAES, 2016). The project area overlaps with a Priority Focus Area.

Protected Area

The area overlaps with the Mapungubwe Cultural Landscape as well as is within the Vhembe Biosphere reserve. It also falls within the 5 km buffer of the Sedula Private Nature Reserve.

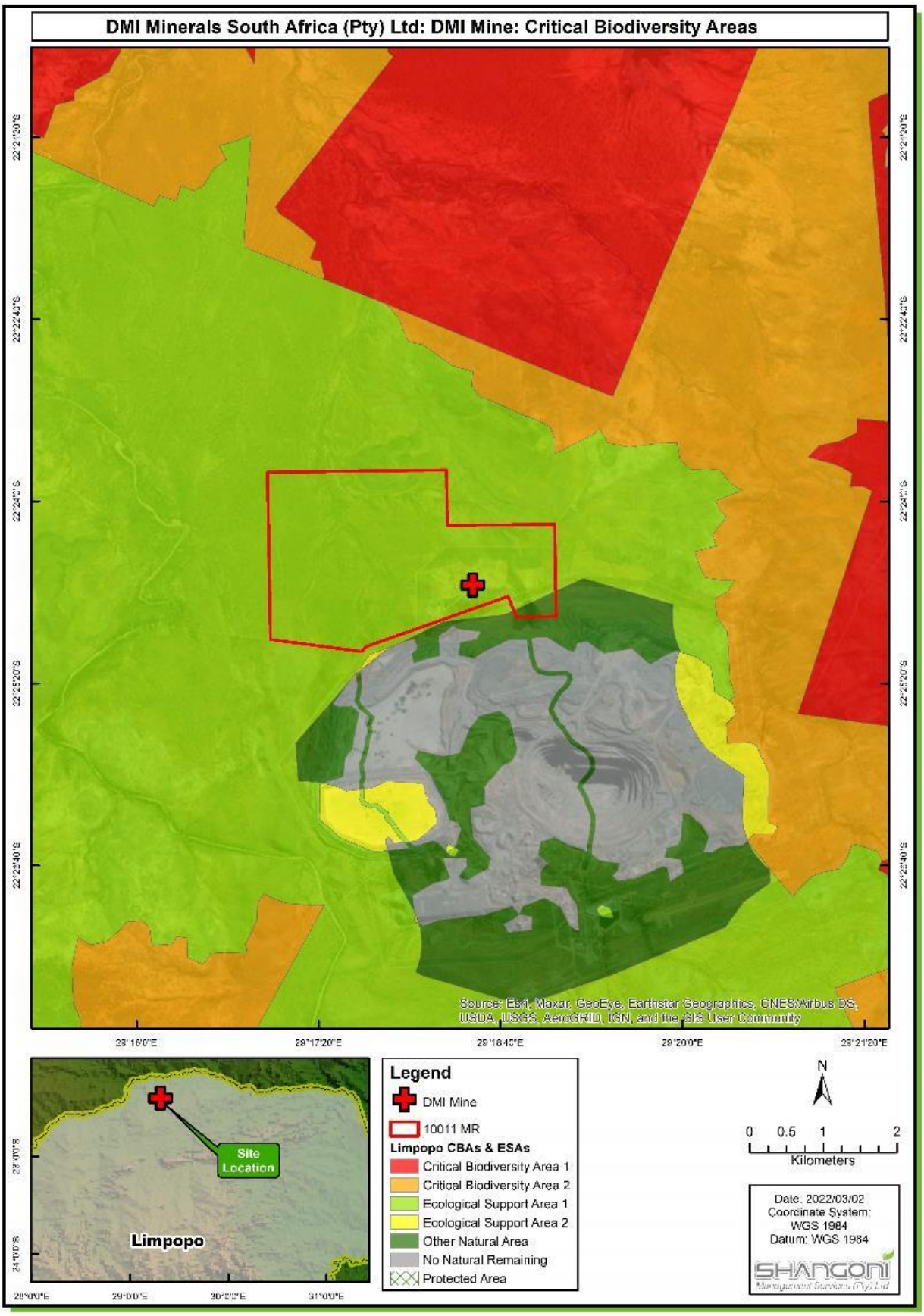

Figure 20: Critical Biodiversity Areas

Chapter M: Visual aspects

The mining site is located adjacent to the Venetia Mine. DMI Minerals Krone-Endora Mine is not visible from the regional road R521, that runs past the mine connecting All-days to Musina and the R572 to Musina.

Chapter N: Regional socio-economic structure

The following information was extracted from the *Vhembe District Municipality 2021/22 IDP Review*.

The mine is located within the Musina Local Municipality of Vhembe District. The Musina Municipality is located to the northwest of Vhembe District Municipality and is bordered by Zimbabwe to the north, Makhado, and Mutale Local Municipalities to the south and east and Capricorn District to the west.

Population birth and death index

There was an increase of 25 702 on the number of births in 2018/19 compared with 24 391 births in 2017/18, on the other hand there was increase on death in the district hospitals in which 4 325 people died in 2018/19 compared to 3 986 in 2017/18. The contributing factor to the numbers of birth and death rates includes residents from other districts and foreign nationals.

Vhembe district ‘s average inpatient death under 1 year is 69.7% whereas inpatient under 5 year is 41 %. During the financial year 2018/19, Louis Trichardt hospital registered the highest rate of inpatient death under 1 year recorded 22.2%, followed by Tshilidzini hospital at 13.2% and Messina hospital at 12.1%. The National Development Plan (NDP) indicate that maternal, infant and child mortality must be reduced.

Human Immune Virus (HIV) and Tuberculosis (TB)

HIV prevention is done through male condom distribution medical male circumcision. 18 934 800 male condoms in the district have been distributed during 2018/19 financial year. TB success rate has decreased from 80.4% in 2017/18 to 70.5% in 2018/19.

Population Growth Trends

Results from Census 2001 and Census 2011 and Community Survey 2016 comparisons with Vhembe District municipality; Musina local municipality in 2001 population was at 39 310 and by Census 2011 the population was at 68 359, and by Community Survey 2016 the population is at 132 009. The population growth from 2001 Census, 2011 Census and Community survey 2016 is at 63 650. Musina local municipality population growth is 63 650 compared to the district municipality’s population growth of 99 228.

The population of Vhembe District was 1 294 722 in Census 2011 and increased to 1 393 949 from 2016 Community Survey. The information reveals that from 2011 to 2016 the population of Vhembe has increased by 99 227 people. The district population has been increasing by 1.8 % from 1996 -2011 census and 0.8% from 2011 census-2016 community services, which means any service delivery planning involving population size must be estimated at 0.8% increment.

Population groups

The dominant population group is Black Africans at 127 621 of the total population followed by Whites at 3 645 and the least population group being Coloured at 337.

7.4 Impacts and risks identified

The following section contains all the potential impacts and risks identified for the project and were sourced from the specialist studies conducted for the project. The methodology used to determine the risks is detailed in section 7.5.1 below.

7.4.1 Impacts

Table 13: Impacts and risks associated with the existing activities on the mine

No.	Aspect affected	Activity	Potential Impact	Reversibility	Irreplaceable loss	Phase	Size and scale of disturbance	Significance pre-mitigation			Mitigation Type	Significance post- mitigation		
								Probability	Magnitude	Significance		Probability	Magnitude	Significance
1a	Fauna, flora and habitats	Clearance of vegetation (>20 ha) for the initial construction of the mining and mining-related activities including the clearance for excavation of the pits, haul road, workshop, plant, and waste yard areas.	Loss and degradation of habitat.	Notably altered	High degree	Initial construction	Moderate	4	3	High	Minimisation	3	2	Medium
1b			Spread and/or establishment of alien and/or invasive species.	Might be negligibly altered or enhanced, still reversible	Low degree	Initial construction	Moderate	4	3	High	Minimisation	3	1	Medium
1c		Operation phase activities, including mining activities, mining-related activities, vehicle, and machinery use, plant, workshop and waste yard. Storage, use and maintenance of vehicles, machines & equipment.	Continued displacement of faunal community (including SCC) due to direct mortalities and disturbance (road collisions, noise, light, dust, vibration, and poaching) & reduced dispersal / migration of fauna.	Might be negligibly altered or enhanced, still reversible	Low degree	Operational	Moderate	4	3	High	Minimisation	3	2	Medium
1d			Environmental pollution due to water dirty water runoff. Contamination of water resources and habitat.	Notably altered or enhanced, still reversible	Low degree	Operational	Large	4	4	High	Avoid	4	3	Medium
1e			Continued fragmentation and degradation of habitats and ecosystems because of dust or polluted runoff beyond the mining area boundaries.	Might be negligibly altered or enhanced, still reversible	High degree	Operational	Moderate	3	3	Medium	Minimisation	2	2	Low
1f			Spread and/or establishment of alien and/or invasive species.	Spread and/or establishment of alien and/or invasive species	Low degree	Operational	Moderate	3	3	Medium	Minimisation	2	2	Low
1g			Litter, spills, fuels, chemicals, and human waste in and around the site.	Might be negligibly altered or enhanced, still reversible	Low degree	Operational	Moderate	3	3	Medium	Avoid	2	2	Low

No.	Aspect affected	Activity	Potential Impact	Reversibility	Irreplaceable loss	Phase	Size and scale of disturbance	Significance pre-mitigation			Mitigation Type	Significance post- mitigation		
								Probability	Magnitude	Significance		Probability	Magnitude	Significance
1h		Decommissioning phase activities, vehicle, and machinery use.	Continued displacement of faunal community (including SCC) due to direct mortalities and disturbance (road collisions, noise, light, dust, vibration, and poaching) & Reduced dispersal/migration of fauna.	Might be negligibly altered or enhanced, still reversible	Low degree	Decommissioning	Moderate	3	3	Medium	Minimisation	2	2	Low
1i			Contamination of water resources and habitat. Environmental pollution due to water/ mine drainage runoff.	Notably altered or enhanced, still reversible	Low degree	Decommissioning	Large	4	4	High	Avoid	3	3	Medium
1j		Decommissioning phase activities, vehicle, and machinery use.	Dust and noise generation by decommissioning activities.	Might be negligibly altered or enhanced, still reversible	Low degree	Decommissioning	Moderate	3	3	Medium	Minimisation	2	2	Low
2a	Surface water	Opencast mining (current)	The main impact associated with the current and future opencast mining is a reduction in the amount of surface water reporting to the regional catchment if surface water runoff is allowed to enter the pits in an uncontrolled manner. In addition, if affected water from the opencast pit areas come into contact with clean runoff, there may be negative impacts on surface water quality, mainly due to increased sedimentation (the Geohydrological Impact Assessment determined that pollution potential from the material being mined is negligible). <u>Surface water quantity:</u> A reduction in the quantity (i.e., volume) of surface water reporting to the regional sub-catchment, affecting the use of surface water as a natural resource. <u>Surface water quality:</u> A deterioration in surface water quality due to increased sedimentation, affecting the use of surface water as a natural resource.	Partially reversible	Medium Degree	Operational	Mining footprint	3	3	Medium	Avoid, control	1	1	Low

No.	Aspect affected	Activity	Potential Impact	Reversibility	Irreplaceable loss	Phase	Size and scale of disturbance	Significance pre-mitigation			Mitigation Type	Significance post- mitigation		
								Probability	Magnitude	Significance		Probability	Magnitude	Significance
2b		Operation of the MTP, workshops, diesel depot, salvage yard, Return Water Dam and Settling Dam 2	The MTP, workshops, diesel depot, salvage yard, Return Water Dam, and Settling Dam 2 are situated in close proximity to each other and form WMA 2. The Drainage Line Diversion that conveys clean runoff from the Project towards the environment is situated along Water management area "WMA" 2. Hazardous chemicals and substances are commonly used in this area which has the potential to pollute surface water runoff. Spillages of affected water from the Return Water Dam and Settling Dam 2 also has the potential to pollute surface water runoff. If left unmitigated, affected runoff and spillages from WMA 2 will enter the Drainage Line Diversion and the receiving environment, leading to negative impacts on surface water quality. Surface water quality: A deterioration of surface water quality due to chemical contamination and sedimentation, affecting the use of surface water as a natural resource.	Reversible	Medium degree	Operational	Mining infrastructure footprint	3	3	Medium	Avoid, mitigate	1	2	Low
2c		Operation of the dry mobile in-field screening plant ("IFP")	The IFP is situated in WMA 5 and is a dry screening plant used to separate the diamond bearing gravel reporting to the MTP. Excess dust and sediment are produced at the IFP that may negatively impact surface water quality. It is assumed that hazardous chemicals / substances (e.g., oil, grease and / or fuel) are also used at the IFP to maintain functionality. Spillages of these substances may also negatively impact surface water quality. Surface water quality: A deterioration of surface water quality due to chemical contamination increased sedimentation, affecting the use of surface water as a natural resource.	Reversible	Medium degree	Operational	IFP footprint	2	2	Low	Avoid, mitigate	1	1	Low
2d		Operation of Mine Residue Deposits	There are several mine residues deposits ("MRD") situated throughout the Project, most notably the concentrate reject stockpile and product stockpile situated in water management area ("WMA") 2, and the WRD situated in WMA 5. The Geohydrological Impact Assessment dated 2 February 2022 conducted for the project determined that the impact of chemical pollution from the MRDs on surface water is negligible. It is therefore assumed that the main impact on surface water resulting from the MRDs will be an increase in sedimentation resulting in a decrease in surface water quality. Surface water quality: A deterioration in surface water quality due to increased sedimentation.	Partially reversible	Medium Degree	Operational	Mining footprint	2	2	Low	Avoid, mitigate	1	1	Low

No.	Aspect affected	Activity	Potential Impact	Reversibility	Irreplaceable loss	Phase	Size and scale of disturbance	Significance pre-mitigation			Mitigation Type	Significance post- mitigation		
								Probability	Magnitude	Significance		Probability	Magnitude	Significance
2e		Wet rehabilitation	Given the results of the Geohydrological Impact Assessment dated 2 February 2022, the main impact on surface water as a result of wet rehabilitation practises will be as a result of increased sedimentation. Only once the areas have been fully rehabilitated and revegetated are they deemed to be clean runoff areas and will the impact on surface water resources be negligible. In addition, if clean runoff is allowed to enter these wet rehabilitation areas uncontrollable, there will be a reduction in the volume of runoff reporting to the regional catchment. Surface water quantity: A reduction in the quantity (i.e., volume) of surface water reporting to the regional sub-catchment. Surface water quality: A deterioration in surface water quality due to increased sedimentation.	Partially reversible	Medium Degree	Operational	Mining footprint	2	2	Low	Control	1	1	Low
2f		Operation of haul roads	Numerous haul roads traverse the mine. The main impact associated with the haul roads is a decrease in surface water quality due to increased rates of erosion and sedimentation. Surface water quality: A deterioration of surface water quality due to increased erosion and sedimentation affecting the use of surface water as a natural resource.	Reversible	Low Degree	Operational	Mining footprint	2	2	Low	Control	1	1	Low

No.	Aspect affected	Activity	Potential Impact	Reversibility	Irreplaceable loss	Phase	Size and scale of disturbance	Significance pre-mitigation			Mitigation Type	Significance post- mitigation		
								Probability	Magnitude	Significance		Probability	Magnitude	Significance
2g		Mining within the Eastern Drainage Line.	Mining within the Eastern Draining Line will have direct impacts on the aquatic biodiversity of the area. These impacts and risks are being assessed separately as part of the specialist Wetland Assessment Report conducted for the Project. The impacts discussed below are only focused on surface water quality and quantity. Mining of the Eastern Drainage Line will essentially offset the drainage lines' origin 350 m north, outside of the active mining area. This will reduce the size of the current regional sub-catchment by approximately 1%. Based on the slow response time and high infiltration rates associated with the project, it is anticipated that less than 1% of surface water runoff will be lost to the regional sub-catchment as only a small fraction of runoff is expected to report to the Matotwane River. Therefore, the impact on surface water quantity (i.e., volume) is deemed to be minimal. Offsetting the origin of the Eastern Draining Line outside of the active mining area may lead to an improvement in the quality of surface water runoff entering the receiving environment as the potential for pollution and contamination is reduced. <u>Surface water quantity:</u> A negligible reduction in the quantity (i.e., volume) of surface water reporting to the regional sub-catchment. <u>Surface water quality:</u> A potential improvement in surface water quality reporting to the regional sub-catchment.	Reversible	Low Degree	Operational	Eastern Drainage Line	2	1	Low	Control	1	1	Low
3	Groundwater	Operation of affected water circuit and backfilled pits	Backfilling with mineral waste material and affected mine water have the potential to contaminate downgradient groundwater resources with dissolved salts (mostly SO_4, Cl, Na and NO_3). Due to the very low country rock permeabilities and hence very little groundwater plume migration, the groundwater contribution to the downstream impact is rated as low for the groundwater resource.	Reversible	Low Degree	Operational	Mine footprint	2	2	Low	Prevent or contain groundwater contamination	1	2	Low
		Backfilled pits	Backfilling with mineral waste material has the potential to contaminate downgradient groundwater resources with dissolved salts (mostly SO4, Cl, Na and NO3). Due to the very low country rock permeabilities and hence very little groundwater plume migration, the groundwater contribution to the downstream impact is rated as low for the groundwater resource. Minor groundwater quality impacts are expected but will largely be contained within the mine boundary. No groundwater users will be affected.	Reversible	Low Degree	Operational	Mine footprint	3	2	Medium	Prevent or contain groundwater contamination	2	2	Low

No.	Aspect affected	Activity	Potential Impact		Reversibility	Irreplaceable loss	Phase	Size and scale of disturbance	Significance pre-mitigation			Mitigation Type	Significance post- mitigation		
									Probability	Magnitude	Significance		Probability	Magnitude	Significance
4	Air quality	Existing mining activities	Excavation activities at the quarry will cause dust generation. The use of the access and haul roads during the operational phase may result in vehicle entrained dust generation limited to the local area.		Reversible	Low degree	Operational	Mining area	3	2	Medium	Control	2	1	Low
5	Noise and vibration	Existing operational mining activities	As there are existing mining activities and due to the close proximity to Venetia Mine it is not anticipated that the operational activities will result in the generation of additional noise and will not impact on any sensitive receptors.		Reversible	Low degree	Operational	Regional area	2	2	Low	Control	1	1	Low
6	Sites of Archaeological and Cultural Importance	Existing mining activities	There are no impacts identified on Sites of Archaeological and Cultural Importance as a result of the existing activities taking place on the mine. According to the *Heritage Impact Assessment Report* compiled by G & A Heritage Management Consultants, dated 2012, although research by Mr Thomas Huffman did not cover the farms Krone 104 MS and Endora 66 MS in detail (pers. comm., 2012), it should be noted that the Krone-Endora mining area does not exhibit these characteristics and there is currently no site of cultural significance reported on the area.												
7a	Sensitive landscapes (Watercourses-Riparian and instream habitat)	Direct ecosystem modification or destruction / loss impacts	REALISTIC POOR MITIGATION SCENARIO: Direct and permanent destruction / loss of 0.791 ha of a moderately important watercourse (W1) and 0.798 ha of a moderately-low important watercourse (W2), as well as surrounding terrestrial habitats, due to vegetation clearance, earthworks and mining works, including excavation and infilling.	W1	Irreversible	Medium degree	Construction	0.791 ha	3	3	Medium	-Avoid/prevent -Minimize/reduce -Remedy/ rehabilitate -Offset	3	3	Medium
				W2	Irreversible	Low degree	Construction	0.798 ha	2	2	Low		1	1	Low
			REALISTIC GOOD MITIGATION SCENARIO: Direct and permanent destruction / loss of 1.589 ha of two moderately low important watercourses (W1 and W2), as well as their surrounding terrestrial habitats, due to vegetation clearance, earthworks and mining works, including excavation and infilling.	W1 and W2	Irreversible	Low degree	Construction	1.589 ha	2	2	Low	-Avoid/prevent -Minimize/reduce -Remedy/ rehabilitate	1	1	Low
7b		Alteration of hydrological and geo-morphological processes	Alteration of flow, erosion and/or sedimentation regimes downstream of watercourse units due to catchment land clearing, land cover disturbance and permanent loss upstream channels during vegetation clearance, earthworks and construction works.	W1 and W2	Irreversible	Low degree	Construction	1.589 ha	3	3	Medium	-Minimize/reduce -Remedy/ rehabilitate	2	2	Low
				W3	Irreversible	Low degree		15.249 ha	2	2	Low	-Minimize/reduce -Remedy/ rehabilitate	2	1	Low

No.	Aspect affected	Activity	Potential Impact		Reversibility	Irreplaceable loss	Phase	Size and scale of disturbance	Significance pre-mitigation			Mitigation Type	Significance post- mitigation		
									Probability	Magnitude	Significance		Probability	Magnitude	Significance
7c		Ecological connectivity and edge disturbance impacts	Decrease in ecological connectivity between catchment up- and down-stream of affected watercourses during vegetation clearance, earthworks and construction works.	W1, W2 and W3	Irreversible	Low degree	Construction	16.838 ha	2	2	Low	-Avoid/prevent -Remedy/ rehabilitate	2	2	Low
7d		Water pollution impacts	Pollution of downstream watercourse units due to the mishandling of hazardous substances and/or improper maintenance of machinery during construction e.g., oil and diesel leaks and spills.	W2 and W3	Reversible	Low degree	Construction	16.047 ha	2	2	Low	-Avoid/prevent -Remedy/ rehabilitate	2	2	Low
7e		Direct ecosystem modification or destruction / loss impacts	Direct disturbance and removal of riparian soil and vegetation during the expansion of the mining activities.	All watercourses	Reversible	None	Construction	Localised. Dependent on crossing footprints.	2	2	Low	-Minimize/reduce -Remedy/ rehabilitate	2	1	Low
7f		Alteration of hydrological and geo-morphological processes	Erosion and/or sedimentation of watercourse units due to catchment land clearing and land cover disturbance during the upgrade/construction of access roads and use of heavy machinery on site.		Reversible	None	Construction	Localised. Dependent on crossing footprints.	2	2	Low	Minimize/reduce -Remedy/ rehabilitate	2	1	Low
			Alteration of flow, erosion and/or sedimentation regimes downstream of watercourse units due to catchment land clearing, land cover disturbance and permanent loss of upstream channels during vegetation clearance, earthworks and construction works.		Reversible	None			2	2	Low	Minimize/reduce -Remedy/ rehabilitate	1	2	Low
7g		Ecological connectivity and edge disturbance impacts	Temporary decrease in ecological connectivity between sections of watercourse unit on either side of the access road, as well as an increase in edge effects on the roadward edges of the watercourse sections on either side of the road, during construction.		Reversible	None	Operational	Localised. Dependent on crossing footprints.	3	1	Low	-Avoid/prevent -Minimize/reduce -Remedy/ rehabilitate	2	1	Low
7h		Water pollution impacts	Pollution of watercourse units due to the mishandling of hazardous substances and/or improper maintenance of machinery during construction e.g., oil and diesel leaks and spills.		Reversible	None	Operational	Localised. Dependent on crossing footprints.	2	3	Medium	-Avoid/prevent -Remedy/ rehabilitate	1	2	Low
7i		Water pollution impacts	Pollution of downstream watercourse units due to the mishandling of hazardous substances and/or improper maintenance of machinery during operational phase e.g., oil and diesel leaks and spills.	W2 and W3	Reversible	None	Operational	16.047 ha	2	3	Medium	- Avoid/prevent - Minimize/reduce Remedy/ rehabilitate	2	2	Low

No.	Aspect affected	Activity	Potential Impact		Reversibility	Irreplaceable loss	Phase	Size and scale of disturbance	Significance pre-mitigation			Mitigation Type	Significance post- mitigation		
									Probability	Magnitude	Significance		Probability	Magnitude	Significance
7j		Alteration of hydrological and geo-morphological processes	Erosion and/or sedimentation of watercourse units due to poor maintenance of stormwater infrastructure.	All watercourses	Reversible	None	Operational	Localised. Dependent on crossing footprints	2	1	Low	- Minimize/reduce Remedy/ rehabilitate	1	1	Low
7k		Direct ecosystem modification or destruction / loss impacts	Direct disturbance and poor implementation of rehabilitation during the decommissioning and removal of infrastructure, and use of access road by heavy machinery.	W1, W2 and W3	Reversible	Low degree	Decommissioning	16.838 ha	2	1	Low	-Minimize/reduce -Remedy/ rehabilitate	1	1	Low
7l		Alteration of hydrological and geo-morphological processes	Erosion and/or sedimentation of watercourse units due to decommissioning, excavation and removal of infrastructure, use of access road by heavy machinery, and poor implementation of rehabilitation.	W1, W2 and W3	Reversible	None	Decommissioning	16.838 ha	2	2	Low	-Minimize/reduce -Remedy/ rehabilitate	2	1	Low
			Alteration of watercourse units downstream due to decommissioning, excavation and removal of infrastructure, use of access road by heavy machinery, and poor implementation of rehabilitation. Increase in downstream flow.	W2, and W3	Reversible	Low degree	Decommissioning	16.047 ha	2	2	Low	-Minimize/reduce -Remedy/ rehabilitate	2	1	Low
7m		Ecological connectivity and edge disturbance impacts	Temporary decrease in ecological connectivity between sections of watercourse unit on either side of the mine and access roads, as well as an increase in edge disturbance during decommissioning.	W1, W2 and W3	Reversible	Low degree	Decommissioning	16.838 ha	1	2	Low	-Minimize/reduce -Remedy/ rehabilitate	1	1	Low
7n		Water pollution impacts	Pollution of watercourse units due to the mishandling of hazardous substances and/or improper maintenance of machinery during decommissioning e.g., oil and diesel leaks and spills.	W2, and W3	Reversible	None	Decommissioning	16.047 ha	2	2	Low	-Avoid/prevent -Minimize/reduce -Remedy/ rehabilitate	1	2	Low
8	Visual	Existing mining activities.	Visual impact of mining activities.		Irreversible	Medium degree	Operational	Mining areas	2	2	Low	Control, minimise	2	1	Low
9	Socio-economic	Existing mining activities.	Where possible, local contractors will be used for the mining activities. This will lead to a positive impact on the socio-economic aspect of the area that can create jobs opportunities and promote investments.		N/A		Operational	Regional mining area	Positive impact			N/A	Positive impact		

Table 14: Identified cumulative impacts

Environmental component (Aspects affected)	Potential Impact description
Biodiversity	The impacts of projects are often assessed by comparing the post-project situation to a pre-existing baseline. Where projects can be considered in isolation this provides a good method of assessing a project's impact. However, in areas where baselines have already been affected, or where future development will continue to add to the impacts in an area or region, it is appropriate to consider the cumulative effects of development. This is similar to the concept of shifting baselines, which describes how the environmental baseline at a point in time may represent a significant change from the original state of the system. This section describes the potential impacts of the project that are cumulative for terrestrial fauna and flora. These are the assumed cumulative impacts that may result from mining operations in the immediate vicinity of the project area. Localised cumulative impacts include the cumulative effects from operations that are close enough to potentially cause additive effects on the environment or sensitive receivers (such as nearby mining activities within the area). These include dust deposition, noise and vibration, disruption of wildlife corridors or habitat, groundwater drawdown, groundwater and surface water quality, and transport. Overall, the development of mining in certain areas of the project area region has resulted in surface clearing for mining activities. Very few mines are operational in the vicinity of the project area. The most notable cumulative impacts are associated with the loss of drainage/watercourses systems and the adjacent bushveld, and the resulting deterioration of the systems to provide ecological services and essential habitat for fauna. The cumulative loss of these areas should be avoided, especially the drainage areas. The cumulative deterioration (and disturbances) of the water resource, and also the reduction in surface flows and interflow is high. These more significant risks are all regarded to be permanent. In the light of all above, the expected cumulative impact is expected to be moderately detrimental.
Groundwater	There are no source monitoring boreholes drilled near to the mining area or potential sources of pollution that may indicate present mining related impacts. Groundwater from one borehole, however, H18-0697, located approximately 600 m north (downgradient) of DMI show a profile similar to the mine water at DMI with high to elevated levels of salinity, Na, Cl, SO_4 and F. This borehole is located within an old paleo-channel that directly underlies Venetia's waste rock dump. An upstream borehole from DMI, KLM04, is also located within this paleo-channel and displays similar results and chemical profiles. It is believed that these old paleochannels play a big role in subsurface water movement especially within the high permeable shallow alluvial material underlying the Venetia waste rock dump which acts as preferential pathway for the movement of water and salts.
Visual	Venetia mine who is directly adjacent to the project is currently characterised by mining activities and will contribute cumulatively to the visual impacts.
Socio-Economic	Jobs will be retained, providing income and, therefore, having a further impact on the regional socio-economy aspects of the area.

7.5 Methodology used in determining and ranking potential environmental impacts and risks

7.5.1 Methodology applied for the existing activities on the mine

The environmental risk of any aspect is determined by a combination of parameters associated with the impact. Each parameter connects the physical characteristics of an impact to a quantifiable value to

rate the environmental risk. Impact assessments should be conducted based on a methodology that includes the following:

- Clear processes for impact identification, predication, and evaluation.
- Specification of the impact identification techniques.
- Criteria to evaluate the significance of impacts.
- Design of mitigation measures to lessen impacts.
- Definition of the different types of impacts (indirect, direct, or cumulative); and
- Specification of uncertainties.

After all impacts have been identified, the nature and scale of each impact can be predicted. The impact prediction will consider physical, biological, socio-economic, and cultural information and will then estimate the likely parameters and characteristics of the impacts. The impact prediction will aim to provide a basis from which the significance of each impact can be determined, and appropriate mitigation measures can be developed. The risk assessment methodology is based on defining and understanding the three basic components of the risk, i.e., the source of the risk, the pathway and the target that experiences the risk (receptor).

Table 15 and Table 16 below indicate the methodology to be used in order to assess the Probability and Magnitude of the impact, respectively, and Table 17 provides the Risk Matrix that will be used to plot the Probability against the Magnitude in order to determine the Severity of the impact.

Table 15: Determination of Probability of impact

Score	Frequency of aspect / unwanted event	Availability of pathway from the source to the receptor	Availability of receptor
1	Never known to have happened, but may happen	A pathway to allow for the impact to occur is never available	The receptor is never available
2	Known to happen in industry	A pathway to allow for the impact to occur is almost never available	The receptor is almost never available
3	< once a year	A pathway to allow for the impact to occur is sometimes available	The receptor is sometimes available
4	Once per year to up to once per month	A pathway to allow for the impact to occur is almost always available	The receptor is almost always available
5	Once a month - Continuous	A pathway to allow for the impact to occur is always available	The receptor is always available

Step 1: *Determine the* ***PROBABILITY*** *of the impact by calculating the average between the Frequency of the Aspect, the Availability of a pathway to the receptor and the availability of the receptor.*

Table 16: Determination of Magnitude of impact

Score	Source			Receptor		
	Duration of impact	Extent	Volume / Quantity / Intensity	Toxicity / Destruction Effect	Reversibility	Sensitivity of environmental component
1	Lasting days to a month	Effect limited to the site. (metres);	Very small quantities / volumes / intensity (e.g., < 50 ℓ or < 1 ha)	Non-toxic (e.g., water) / Very low potential to create damage or destruction to the environment	Bio-physical and/or social functions and/or processes will remain unaltered.	Current environmental component(s) are largely disturbed from the natural state.
2	Lasting 1 month to 1 year	Effect limited to the activity and its immediate surroundings. (Tens of metres)	Small quantities / volumes / intensity (e.g., 50 ℓ to 210 ℓ or 1 ha to 5 ha)	Slightly toxic / Harmful (e.g., diluted brine) / Low potential to create damage or destruction to the environment	Bio-physical and/or social functions and/or processes might be negligibly altered or enhanced / Still reversible	Receptor of low significance / sensitivity
3	Lasting 1 – 5 years	Impacts on extended area beyond site boundary (hundreds of metres)	Moderate quantities / volumes / intensity (e.g., > 210 ℓ < 5000 ℓ or 5 – 8 ha)	Moderately toxic (e.g., slimes) Potential to create damage or destruction to the environment	Bio-physical and/or social functions and/or processes might be notably altered or enhanced / Partially reversible	Current environmental component(s) are moderately disturbed from the natural state.
4	Lasting 5 years to Life of Organisation	Impact on local scale / adjacent sites (km)	Very large quantities / volumes / intensity (e.g., 5000 ℓ – 10 000 ℓ or 8 ha– 12 ha)	Toxic (e.g., diesel & Sodium Hydroxide)	Bio-physical and/or social functions and/or processes might be considerably altered or enhanced / potentially irreversible	No environmentally sensitive components.
5	Beyond life of Organisation / Permanent impacts	Extends widely (nationally or globally)	Very large quantities / volumes / intensity (e.g., > 10 000 ℓ or > 12 ha)	Highly toxic (e.g., arsenic or TCE)	Bio-physical and/or social functions and/or processes might be severely/substantially altered or enhanced / Irreversible	Current environmental component(s) are a mix of disturbed and undisturbed areas.

Step 2: *Determine the* ***MAGNITUDE*** *of the impact by calculating the average of the factors above*

Table 17: Determination of Severity of impact

Environmental Impact Rating / Priority					
Probability	**Magnitude**				
	1 Minor	2 Low	3 Medium	4 High	5 Major
5 Almost Certain	Low	Medium	High	High	High
4 Likely	Low	Medium	High	High	High
3 Possible	Low	Medium	Medium	High	High
2 Unlikely	Low	Low	Medium	Medium	High
1 Rare	Low	Low	Low	Medium	Medium

Step 3: *Determine the* ***SEVERITY*** *of the impact by plotting the averages that were obtained above for Probability and Magnitude.*

8. Full description of the process undertaken to identify, assess and rank the impacts and risks

All impacts and risks as identified are contained within section 7.4.1 of Part A. As further provided is 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. The methodology applied in assessing and ranking the impacts and risks on the preferred site is described in section 7.5 of Part A.

9. Assessment of each identified potentially significant impact and risk

Refer to the full risk assessment table provided in section 7.4.1 (Part A) above.

10. Summary of specialist reports

Table 20: Summary of specialist reports

Specialist study	**Recommendations of specialists**	**Reference to applicable section in report where specialist recommendation is included**
Surface Water Assessment	All recommendations and mitigation / management measures contained in specialist reports contained in Annexure D have been included in Section 1.4 (Part B) of this report.	Section 1.4 (Part B)
Paleo Study		

Specialist study	Recommendations of specialists	Reference to applicable section in report where specialist recommendation is included
Biodiversity Study (Terrestrial Ecology and Habitat Delineation & Sensitivity)		
Aquatic and Wetland Impact Assessment		
Geohydrological Assessment		
Waste Classification		

11. Environmental impact statement

This EIAR/EMPr has been compiled based in accordance with the NEMA and associated EIA Regulations as part of the rectification of the commencement of listed activities without authorisation, in terms of Section 24G of the NEMA.

The Impact Assessment undertaken involved a detailed assessment of the potential identified impacts. This included commissioning of specialist studies, and analysis of specialist findings. This Report will be made available for public comment period and will be submitted to the DMRE for consideration of the rectification application.

Impact significance was determined through considering the probability of the impact occurring, its duration, magnitude, and extent of the potential impacts. These potential impacts were then rated as either of low, medium and high environmental impact depending.

The impact assessment identified the following potential negative impacts (rated as medium – high):

- Loss and degradation of habitat.
- Continued displacement of faunal community (including Species of Conservation Concern) due to direct mortalities and disturbance (road collisions, noise, light, dust, vibration, and poaching) & reduced dispersal/migration of fauna.
- Contamination of water resources and habitat.
- Continued fragmentation and degradation of habitats and ecosystems because of dust or polluted runoff beyond the mining area boundaries.
- Spread and/or establishment of alien and/or invasive species.

However, with mitigation measures, all the high impacts are reduced to either medium or low. Mitigation and management measures for the predicted impacts are included in Part B of this Section 24G EIAR/EMPr and need to be implemented by the applicant. The implementation of the mitigation measures will result in the minimisation of the significance of the potential impacts (post-mitigation).

11.1 Site layout map

Figure 3 depicts the site layout map of the current activities and infrastructure related to the project.

12. Proposed impact management outcomes for inclusion into the EMPr

Based on the assessment and where applicable the recommendations from specialist reports, the impact management outcomes for the project for inclusion in the EMPr as well as for inclusion as conditions of authorisation were identified. Impact management outcomes are included in Section 1.4 of Part B.

13. Description of any assumptions, uncertainties, and gaps in knowledge

In terms of the EIA Regulations GN R982 Appendix 1(3)(o), the Environmental Impact Assessment Practitioner ("EAP") must provide a description of any assumptions, uncertainties, and gaps in knowledge upon which the impact assessment has been based. The table below provides the assumptions and limitations applicable to the various specialist assessments.

Table 22: Specialist assumptions and limitations

Specialist study	Assumptions and limitations
Surface Water Assessment	• Whilst every endeavour has been made by Shangoni to ensure that information provided is correct and relevant, this technical report is, of necessity, based on information that could reasonably have been sourced within the time period allocated to the assessment, and is, furthermore, of necessity, dependent on information provided by management and/or its representatives during the course of the project. • It is assumed that the Client provided all information to Shangoni that is relevant to the scope of work included in this technical report and that no important information has been withheld. • The relevant information received from the Client during the course of this project will be deemed true and correct. If such information reflected in any documentation relevant to this project is discovered to be misleading, Shangoni does not take any responsibility for the implications of such misrepresentations made by the Client. • Shangoni is under no obligation to the Client and others to conduct work not specified in the scope of work as agreed in the relevant proposal. • Storm water control recommendations are based on industry experience and best practice. Final designs should be authorised by an approved engineer. • Contour and elevation data as provided during the analysis are assumed to be accurate and representative of the site and catchment areas. • There is no storm water quality data available for storm water runoff associated with the haul roads and conveyors. • Upstream catchment activities are interpreted according to common practices and no detailed insight is available on possible storm water measures beyond the site. The assessment does not guarantee the integrity of downstream infrastructure in the event of release or discharge from site. • The measures proposed as part of the storm water management section of the report do not impose preference as this is an operational document to assist in

Specialist study	Assumptions and limitations
	the complete management of clean and dirty surface water in the vicinity of the operation. • The measures proposed in the storm water management plan section of the report do not specifically cover considerations relevant to storm water management for the purpose of safety, like flooding and loss of life; the primary focus being environmental management and the identification of potential environmental concerns. • This SWA assumes that the proposed Venetia cut-off trench will be constructed. • This SWA assumes that an aquatic impact assessment is conducted for the Project as part of the specialist Wetland Assessment Report.
Biodiversity Study (Terrestrial Ecology and Habitat Delineation & Sensitivity)	The following assumptions and limitations are applicable for this assessment: • The assessment area was based on the area provided by the client and any alterations to the route and/or missing GIS information pertaining to the assessment area would have affected the area surveyed; • The area was only surveyed during a single site visit and therefore, this assessment does not consider temporal trends; • Only a single season survey was conducted for the respective studies, this would constitute a wet season survey; • The majority of the project area could not be assessed due to restricted access, these portions were only assessed from a desktop perspective and might not represent a true reflection of the infield conditions; • The GPS used in the assessment has an accuracy of 5 m and consequently any spatial features may be offset by 5 m; • The impact assessment is only relevant to the areas that could be accessed as an infield habitat assessment and search for SCCs could not be conducted; • Some areas within the project area have been developed / mined prior to the assessment and as such were assessed retrospectively; and • Acid Mine Drainage (AMD) was not considered for the impact assessment. The waste classification undertaken for the project indicated that the rock is Type iii and non-acid forming.
River and Wetland Ecosystem Specialist Report	This report is based on current available information and, as a result, the following limitations and assumptions are implicit: • The report is based on a project description received from the client. • Species of Conservation Concern (“SCC”) are difficult to find and difficult to identify, thus species described in this report do not comprise an exhaustive list. It is almost certain that additional SCCs will be found during operation of the development. • Sampling by its nature means that not all parts of the study area were visited. The assessment findings are thus only applicable to those areas sampled, which were extrapolated to the rest of the study area. • A Soil Munsell Colour Chart was used to determine the soil matrix colour of the soil sampled. However, it is important to note that the recording of the colours using the soil chart is highly subjective and varies significantly depending on

Specialist study	Assumptions and limitations
	soil moisture and the prevailing light conditions. In this case, all the soils sampled were dry and sampling was undertaken in sunny conditions. • Soil wetness indicators (i.e., soil mottles, grey soil matrix), which in practice are primary indicators of hydromorphic soils, are not seasonally dependent (wetness indicators are retained in the soil for many years) and therefore seasonality has no influence on the delineation of wetland areas. • All vegetation information recorded was based on the onsite visual observations of the author and no formal vegetation sampling was undertaken. Furthermore, only dominant, and noteworthy plant species were recorded. Thus, the vegetation information provided has limitations for true botanical applications. • Although every effort was made to correctly identify the plant species encountered onsite, wetland plants, particularly the *Cyperaceae* (sedge) family, are notoriously difficult to identify to species level. Every effort was made to accurately identify plants species but where identification to species level could not be determined, such species were only identified to genus level. • Seasonality can also influence the species of flora encountered at the site, with the flowering time of many species often posing a challenge in species identification. Since the wetland vegetation in the study area was found to be largely secondary/degraded with low native plant diversity, seasonality would not be as significant a limitation when compared with a vegetation community that is largely natural or high in native plant diversity. • Sampling and infield delineation within the Venetia Nature Reserve section of the study area was limited to an in-vehicle assessment at stream crossings along the existing access roads due to the presence of large predators within the Nature Reserve. • This watercourse and wetland assessment excluded the assessment of hydrological, hydrogeological, hydropedological, water chemistry and flood-line impacts. Qualified, independent specialists will need to be appointed to conduct these assessments if required. • Due to the ephemeral streams encountered and assessed being dry at the time of assessment, no instream biomonitoring assessments were undertaken i.e., SASS5 (Dickens & Graham, 2002). • It should be noted that Venetia Mine is currently applying for authorisation to upgrade their existing stormwater infrastructure, upstream of the Diamcor Mine. The outcome of their application, the scheduling of their proposed activities and the overall success of their project will therefore affect freshwater ecosystems within Diamcor Mine, namely unit W1. The implications of this are further discussed in Chapter 5 of the specialist report.
Geohydrological Assessment	• The numerical groundwater model, despite all efforts and advances in software and algorithms, remains a very simplified representation of the very complex and heterogeneous interactions that exist in the fractured rock aquifers of

Specialist study	Assumptions and limitations
	South Africa. The integrity of a numerical model depends strongly on the formulation of a sound conceptual model and the quality and quantity (distribution, length of records etc.) of input data. Nonetheless, a numerical model can be used successfully to assess the effectiveness of various management and remediation options/techniques, especially if the shortcomings in information and assumptions made in the construction and calibration of the model are clearly listed and kept in mind during modelling. • The main purpose is thus not to try and predict every minute detail of the system. The heterogeneity of the natural groundwater system, especially the secondary fractured rock aquifer environment, is simply too great to accurately incorporate into the model. The purpose is rather to evaluate what the relative magnitude or contribution of certain impacts or different pollution sources will be on the larger groundwater regime and then to determine the effect on a temporal scale to manage impacts appropriately. • All numerical modelling simulations require assumptions to be made during the translation of any geohydrological system into a numerical model. These assumptions, which reflect data gaps in the conceptual model regarding the aquifer distribution and the aquifer parameters, can result in uncertainty in the model output and predictions. For practical purposes considerable simplifications had to be made with regards to this model. • The accuracy of the modelling depends on the quality of the input data and the available information. Even with a final design and an unchanging environment, impacts are difficult to predict with certainty. Future predictions were calculated with the calibrated groundwater flow and contaminant transport models, which are simplified versions of reality. The model cannot be viewed as a precise simulation of reality and all models have inherent errors within them. Uncertainties are approached conservatively, based on the precautionary principle to ensure that the predictions and impact assessment in this report addresses the maximum potential impact of the facility (prior to mitigation). • Due to the nature and heterogeneity of fractured rock aquifers, aquifer parameters will vary significantly over short distances. It is therefore clear that on a very small scale (microscopic scale or pore scale) a porous (homogenous) media approach of modelling would lead to an inadequate description of the modelling problem with resulting inaccuracies. The realistic alternative therefore is to move to a coarser scale of aquifer description by introducing measurable phenomenological coefficients such as hydraulic gradients. In the continuum approach, the concept of the representative elementary volume (REV) is evoked. The REV is a theoretical approach in which representative values for flow (and transport) parameters are averaged over an appropriate volume. On a larger scale (macroscopic scale), parameters are averaged, and for a sufficiently large modelling cell size (representative elementary volume)

Specialist study	Assumptions and limitations
	a porous media approach can be adopted by specifying regional representative aquifer parameters. Other assumptions and limitations of the modelling exercise include: 1. The model was developed on the assumption that the fractured rock aquifer will behave as an equivalent homogeneous porous medium. This is not reality for the hard rock aquifers and parameters in the 'real world' will be highly variable. However, on a large enough scale this assumption should be acceptable, and the Representative Elemental Volume (REV) should suffice well enough. 2. The complexities of fractured rock aquifers imply that the model can only be used as a guide to estimate the aquifer hydraulic properties that will in turn be used in the model to predict the contaminant transport. 3. If there are preferential flow paths due to faults or fractures that have not been identified, it can be expected that the contaminant plume will move faster in these structures and could therefore have a greater aerial extent. 4. Where no information exists on the permeability or conductivity of fractures or dyke structures, literature-based values were used. 5. The top of the aquifer is represented by the generated groundwater heads. 6. The available geological / hydrogeological information was used to describe the different aquifers. 7. The available information on the geology and field tests is considered as correct. 8. Certain aquifer parameters have not been determined in the field and therefore have to be estimated. 9. The groundwater model was based on a two-dimensional approximation of horizontal groundwater flow within the shallow aquifer. • Notwithstanding the assumptions and limitations is, however, the modeller's opinion that the model produced is of a sufficient confidence level to meet the modelling objectives providing conservative (worst case) predictions. The model should routinely be validated and updated as soon as additional time-dependant data becomes available during the operational phase of the project, especially to plan appropriately for the post-closure phase of the mine.

14. Reasoned opinion as to whether the activities should or should not be authorised

14.1 Reasons why the activity should be authorised or not

In terms of collectively considering ecological, social, and economic impacts it is important to remember that while there might be some trade-offs between the considerations, in South Africa all development must in terms of Section 24 of the Constitution be ecologically sustainable, while economic and social development must be justifiable. There are, therefore, specific "trade-off" rules that apply.

Environmental integrity may never be compromised, and the social and economic development must take a certain form and meet certain specific objectives for it to be considered justifiable[1].

According to the *Surface Water Assessment in support of the S24G Rectification Application, WUL Application, and Part 2 EMPr Amendment* compiled by Shangoni Management Services dated February 2022, "*no fatal flaws have been identified that may prevent the activities associated with the project from continuing. It is the opinion of the specialist that the project may proceed on the condition that all mitigation measures outlined and discussed in this report are adhered to. It should be taken into consideration that mining of the Eastern Drainage Line may lead to an irreplaceable loss of aquatic biodiversity if not properly mitigated and / or rehabilitated. An aquatic specialist was appointed to quantify the impacts and risks associated with the Project".*

According to the *Diamcor Mining Inc. DMI Minerals South Africa (Pty) Ltd: Krone - Endora Mine Geohydrological Impact Assessment Draft Report* dated January 2022 and prepared by Shangoni AquiScience (Pty) Ltd "*based on the findings of the geohydrological assessment, no fatal flaws have been identified that may limit the ongoing activities. It is the opinion of the specialist that the project may proceed on condition that all mitigation measures as outlined and discussed in this report are adhered to".*

According to the *Terrestrial Impact Assessment for the proposed Diamcor Diamond Mine Project Bridgewater, Limpopo Province* compiled by the Biodiversity Company dated February 2022, the impact statement by the specialist refers "*the main expected impacts of the proposed infrastructure will include the following:*

- habitat loss and fragmentation.
- degradation of surrounding habitat.
- disturbance and displacement caused during the operational phases.
- direct mortality during the operational phase; and
- Environmental pollution due to water/ mine drainage runoff.

According to the *DMI Minerals Krone-Endora Mining Expansion Project, Limpopo Province River and Wetland Ecosystem Specialist Report* compiled by CES dated February 2022, "*It is the opinion of the specialist that NO FATAL FLAWS exist with the development as long as the residual moderate impacts are offset / compensated for as recommended in the report".*

"The aquatic impacts of all aspects for the development were assessed and considered to be acceptable, provided that the mitigation measures provided in this report are implemented. Impacts are rated as LOW to MODERATE pre-mitigation. Therefore, implementation of recommended mitigation measures coupled with comprehensive rehabilitation and monitoring in terms of re-vegetation and restoration is an important element of the mitigation strategy. Implementing the recommended mitigations measures will reduce all indirect impacts and offset or compensate for all residual direct impacts".

[1] Guideline on need and desirability in terms of the Environmental Impact Assessment (EIA) Regulations, 2010 (GN 891 of 20 October 2014).

14.2 Conditions that must be included in the authorisation

Although the project is expected to create some negative impacts, the EAP is of opinion that social and economic benefits will also be derived from the project.

Refer to section 11.1 above for impacts rated as high pre mitigation. Impacts associated with the project have a medium to low environmental impact significance if the recommended mitigation measures are effectively implemented.

14.2.1 Specific conditions to be included into the compilation and approval of the EMPr

Should the DMRE grant authorisation for the project, it should be subject to the following conditions:

- The project should remain in full compliance with the requirements of the EMPr and with all regulatory requirements,
- The EMPr should be implemented by qualified environmental personnel who have the competence and credibility to interpret the requirements of the EIAR/EMPr. Such persons must be issued with a written mandate by mine management to provide guidance and instructions to employees and contractors, and
- Stakeholder engagement must be maintained during all phases of the project.

15. Period for which Environmental Authorisation is required

According to the *DMI Minerals South Africa (Pty) Ltd. Environmental Impact Assessment and Environmental Management Programme* ("EMPr"), dated November 2012 and compiled by Eco-Partners the timeframes provided for post closure is after May 2031. Therefore, the operations would cease in April 2028 and the authorisation would need to be valid until such time.

16. Undertaking

The undertaking by the EAP is provided in section 2 of Part B below. This undertaking confirms: the correctness of the information provided in the reports, the inclusion of comments and inputs from stakeholders and I&APs, the inclusion of inputs and recommendations from the specialist reports where relevant and the acceptability of the project in relation to the finding of the assessment and level of mitigation proposed.

17. Financial provisions

17.1 Explain how the aforesaid amount was derived

The following information pertaining to financial closure liability was extracted from the *Financial Provision Calculation Compiled in Terms of The Mineral and Petroleum Resources Development Act* (ACT 28 OF 2002) compiled by Eco Partners dated 17 June 2021.

The 2021 financial provision that was submitted was calculated at R 7 694 260.24. Refer to Table 25.

17.2 Confirm that this amount can be provided for from operating expenditure

The rehabilitation guarantees currently held at the standard Bank totalling R 7,140,016 are as follows:

- R 250,000 Debeers
- R 250,000 Debeers
- R 2,383,510 DMR
- R 643,997 DMR
- R 3,027,507 DMR
- R 390,000 DMR
- R 195,000 DMR

As of June 17, 2021, the company had approximately R 7,483,000 in a money market account supporting these guarantees.

Table 25: Quantum Calculation 2021

Applicant:	**DMI Minerals**				**Ref No.:**	**P30/5/1/2/2/10011MR**	
Evaluator:	**San Oosthuizen**				**Date:**	**19-May-21**	
No.	**Description**	**Unit**	**A**	**B**	**C**	**D**	**E=A*B*C*D**
			Quantity	**Master**	**Multiplication**	**Weighting**	**Amount**
				Rate	**factor**	**factor 1**	**(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 powerlines)	m3	12379	16.37	1	1	R 202 634.94
2 (A)	Demolition of steel buildings and structures	m2	n/a	227.96	1	1	R 0.00
2(B)	Demolition of reinforced concrete buildings and structures	m2	1863	335.95	1	1	R 625 868.23
3	Rehabilitation of access roads	m2	20318	40.79	1	1	R 828 842.27
4 (A)	Demolition and rehabilitation of electrified railway lines	m	n/a	395.94	1	1	R 0.00
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	n/a	215.97	1	1	R 0.00
5	Demolition of housing and/or administration facilities	m2	n/a	455.93	1	1	R 0.00
6	Opencast rehabilitation including final voids and ramps	ha	3.42	232043.01	1	1	R 793 587.09
7	Sealing of shafts adits and inclines	m3	n/a	122.38	1	1	R 0.00
8 (A)	Rehabilitation of overburden and spoils	ha	4.62	159334.60	1	1	R 736 125.85
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0.55	198448.37	1	1	R 109 146.60
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	n/a	576388.12	1	1	R 0.00
9	Rehabilitation of subsided areas	ha	n/a	133418.73	1	1	R 0.00
10	General surface rehabilitation	ha	8.63	126219.88	1	1	R 1 089 277.56
11	River diversions	ha	n/a	126219.88	1	1	R 0.00
12	Fencing	m	3960	143.98	1	1	R 570 149.11
13	Water management	ha	n/a	47992.35	1	1	R 0.00
14	2 to 3 years of maintenance and aftercare	ha	7.59	16797.32	1	1	R 127 491.68
15 (A)	Specialist study	Sum				1	R 0.00
15 (B)	Specialist study	Sum				1	R 0.00
			(Sum of items 1 to 15 Above)		Sub total 1		R 5 083 123.33
1	Preliminary and General		12.5% of subtotal 1		**Weighting Factor 2**	1.05	R 667 159.94
2	Administration		6% of sub total 1				R 304 987.40
3	Engineering drawings and specifications		2% of sub total 1				
4	Engineering and procurement of specialist work		2.5% of sub total 1				

Applicant:	**DMI Minerals**			**Ref No.:**	**P30/5/1/2/2/10011MR**
5	Development of closure plan		2.5% of sub total 1		R 127 078.08
6	Final groundwater modeling		2.5% of sub total 1		R 0.00
	(Sub total 1 plus sum of management & administrative items, 1 to 6 above)			Sub total 2	R 6 182 348.74
7	Contingency		10% of subtotal 1		R 508 312.33
	(Sub total 2 plus contingency)			Sub total 3	R 6 690 661.08
				VAT (15%)	R 1 003 599.16
	(Sub total 3 plus VAT)			**Grand Total**	**R 7 694 260.24**

18. Specific information required by the competent authority

The information, as presented in Table 26 below, will be required by the competent authority.

Table 26: Monitoring information required by the competent authority

Information	Frequency of submission
Quantum of financial provision	Annually
Annual rehabilitation plan	Annually
Environmental audit report on approved EIAR/EMPr and other environmental authorisations	Annually or as per auditing timeframe indicated in authorisation(s)
Surface water monitoring reports	As per IWUL
Groundwater monitoring reports	As per IWUL
Fall-out dust monitoring reports	As per the National Dust Control Regulations (GN827, 2013)

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

1. Draft environmental management programme

1.1 Details of the EAP

The requirements for the provision of the detail and expertise of the EAP are included in section 1.2 of Part A.

1.2 Description of the aspects of the activity

The requirement to describe the aspects of the activity that are covered by the draft environmental management programme is included in section 7.5 of Part A.

1.3 Composite map

Refer to Figure 3 as well as Annexure A for the site layout of the site.

1.4 Description of the impact management outcomes and actions

Table 24: Measures to rehabilitate the environment affected by the existing activities

No.	Aspect affected	Activity	Potential Impact	Phase	Mitigation type	Impact management actions / Mitigation measures	Impact management outcome/ Standard to be achieved	Time period for implementation
1a	Fauna, flora and habitats	Clearance of vegetation (ESA) of >20 ha for the initial construction of the mining and mining-related activities including the clearance for excavation of the pits, haul road, workshop, plant and waste yard areas.	Loss and degradation of habitat. Spread and/or establishment of alien and/or invasive species.	Initial construction phase	Minimise & control	Limit disturbance to designated mining footprint areas. Concurrent rehabilitation and revegetation of previously disturbed areas. Continuous eradication of alien and invasive species.	Limit disturbance to designated mining footprint and concurrent rehabilitation.	Continuous
1a 1b		Operation phase activities, including mining activities, mining-related activities, vehicle, and machinery use, plant, workshop and waste yard. Operation phase activities, including mining activities, mining-related activities, vehicle, and machinery use, plant, workshop and waste yard. Storage, use and maintenance of vehicles, machines & equipment.	• Destruction, fragmentation and degradation of habitats, ecosystems, and loss of ecological sensitive area “ESA”, including protected species.	Operational Phase	Minimise & control	Where possible, existing access routes and walking paths must be made use of, and the development of new routes limited.	Include in toolbox talks. To be included in contractor method statements where applicable.	Continuous
1c			• Spread and/or establishment of alien and/or invasive species; and • Displacement of faunal community (including SCC) due to habitat loss, direct mortalities, and disturbance (road collisions, noise, light, dust, vibration, and poaching). • Litter, spills, fuels, chemicals, and human waste in and around the site.	Life of operation	Minimise & control	A hydrocarbon spill management plan must be put in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas. The Contractor shall be in possession of an emergency spill kit that must always be complete and available on site. Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use. No servicing of equipment on site unless necessary. All contaminated soil / yard stone shall be treated in situ or removed and be placed in containers. Appropriately contain any generator diesel storage tanks, machinery spills (e.g., accidental spills of hydrocarbons oils, diesel etc.) in such a way as to prevent them leaking and entering the environment.	Include in toolbox talks, and policy documents. To be included in contractor method statements where applicable.	Continuous
1d				Life of operation	Minimise & control	Keep the surface & sub-surface water as well as storm water away that may run off from the dumps from the low laying areas, such as water resources as well as the surrounding areas, from leaving the project area in an uncontrolled manner.	Include in toolbox talks. To be included in contractor method statements where applicable.	Continuous

No.	Aspect affected	Activity	Potential Impact	Phase	Mitigation type	Impact management actions / Mitigation measures	Impact management outcome/ Standard to be achieved	Time period for implementation
1e				Life of operation	Minimise & control	Leaking equipment and vehicles must be repaired immediately or be removed from project area to facilitate repair.	Include in toolbox talks. To be included in contractor method statements where applicable.	Continuous
1f	Fauna, flora and habitats	Operation phase activities, including mining activities, mining-related activities, vehicle, and machinery use, plant, workshop and waste yard. Operation phase activities, including mining activities, mining-related activities, vehicle, and machinery use, plant, workshop and waste yard. Storage, use and maintenance of vehicles, machines & equipment	• Destruction, fragmentation and degradation of habitats, ecosystems, and loss of ecological sensitive area “ESA”, including protected species. • Spread and/or establishment of alien and/or invasive species; and • Displacement of faunal community (including SCC) due to habitat loss, direct mortalities, and disturbance (road collisions, noise, light, dust, vibration, and poaching). • Litter, spills, fuels, chemicals, and human waste in and around the site.	Life of operation	Minimise & control	• Storm Water run-off & Discharge Water Quality monitoring and control. • Incorporate green /soft engineering storm water measures. Avoid unnecessary vegetation clearing and avoid preferential surface flow paths. • Cut-off trenches must be incorporated into the open cast mining areas’ design to decrease contamination of watercourses.. • No cleaning of vehicles, machines, and equipment in water resources. • No servicing of machines, vehicles, and equipment on site. • Storage of potential contaminants in bunded areas. • All contractors must have spill kits available and be trained in the correct use thereof. • All released water must be within DWAF (1996) water quality standards for aquatic ecosystems, and discharge must be managed to avoid scouring and erosion of the receiving systems. • Contain wastewater in a PCD. Contaminated water must not be discharged into the watercourses. • Clean and dirty water must be separated. This water should be looked at for treatment and then re-introduced to mitigate losses to the catchment water hydrodynamics; and to at least minimise impacts to water quality, a treatment strategy is required, and the Groundwater report needs to be considered.	Include in toolbox talks. To be included in contractor method statements where applicable.	Continuous
1g				Life of operation	Minimise & control	It should be made an offence for any staff to /take bring any plant species into/out of any portion of the project area. No plant species whether indigenous or exotic should be brought into/taken from the project area, to prevent the spread of exotic or invasive species or the illegal collection of plants.	Include in toolbox talks. To be included in contractor method statements where applicable.	Continuous

No.	Aspect affected	Activity	Potential Impact	Phase	Mitigation type	Impact management actions / Mitigation measures	Impact management outcome/ Standard to be achieved	Time period for implementation
1h				Life of operation	Minimise & control	Appropriate speed humps, enforcing of speed limits and mitre drains must be constructed along the access roads (every three metres of elevation) in order to slow the flow of water run-off from the road surface if this does not already exist. Reducing the dust generated by the listed activities above, especially the earth moving machinery, through wetting the soil surface (with “dirty water”) and putting up signs to enforce speed limit as well as speed bumps built to force slow speeds.	Include in toolbox talks. To be included in contractor method statements where applicable.	Continuous
1i	Fauna, flora and habitats	Operation phase activities, including mining activities, mining-related activities, vehicle, and machinery use, plant, workshop and waste yard. Operation phase activities, including mining activities, mining-related activities, vehicle, and machinery use, plant, workshop and waste yard. Storage, use and maintenance of vehicles, machines & equipment.	• Destruction, fragmentation and degradation of habitats, ecosystems, and loss of ecological sensitive area “ESA”, including protected species. • Spread and/or establishment of alien and/or invasive species; and • Displacement of faunal community (including SCC) due to habitat loss, direct mortalities, and disturbance (road collisions, noise, light, dust, vibration, and poaching). • Litter, spills, fuels, chemicals, and human waste in and around the site.	Life of operation	Minimise & control	A fire management plan needs to be complied and implemented to restrict the impact fire might have on the rehabilitated areas.	Include in toolbox talks. To be included in contractor method statements where applicable.	Continuous
1j				Life of operation	Minimise & control	Monitor the surface water level in relation to potential subsidence.	Include in toolbox talks. To be included in contractor method statements where applicable.	Continuous
1k				Life of operation	Minimise & control	Monitor the surface water level in relation to potential subsidence.	Include in toolbox talks. To be included in contractor method statements where applicable.	Continuous
1l				Operational Phase	Minimise & control	Noise must be kept to an absolute minimum during the evenings and at night to minimize all possible disturbances to amphibian species and nocturnal mammals.	Include in toolbox talks. To be included in contractor method statements where applicable.	Continuous
1m				Life of operation	Minimise & control	No trapping, killing, or poisoning of any wildlife is to be allowed Include in toolbox talks. To be included in contractor method statements where applicable. Signs must be put up to enforce this.	Include in toolbox talks. To be included in contractor method statements where applicable.	Continuous
1n				Operational Phase	Minimise & control	Outside lighting should be designed and limited to minimize impacts on fauna. All outside lighting should be directed away from highly sensitive areas such as the water resource. Fluorescent and mercury vapor lighting should be avoided, and sodium vapor (yellow) lights should be used wherever possible.	Include in toolbox talks. To be included in contractor method statements where applicable.	Continuous
1o				Life of operation	Minimise & control	All construction and maintenance motor vehicle operators should undergo an environmental induction that includes instruction on the need to comply with speed limits, to respect all forms of wildlife. Speed limits must still be enforced to ensure that road killings and erosion is limited.	Include in toolbox talks. To be included in contractor method statements where applicable.	Continuous

No.	Aspect affected	Activity	Potential Impact	Phase	Mitigation type	Impact management actions / Mitigation measures	Impact management outcome/ Standard to be achieved	Time period for implementation
1p				Life of operation	Minimise & control	• Schedule activities and operations during least sensitive periods, to avoid migration, nesting, and breeding seasons. Include in toolbox talks. • Driving on access roads close to highly sensitive areas at night should be prevented in order to reduce or prevent wildlife road mortalities which occur more frequently during this period;	Include in toolbox talks. To be included in contractor method statements where applicable.	Continuous
1q				Operational Phase	Minimise & control	Water sources must be monitored on a quarterly basis and the quality of the water must be in line with the requirements of the WUL. This is imperative as metal pollution is one of the greatest threats to Flamingos and other filter feeder bird species.	Include in toolbox talks. To be included in contractor method statements where applicable.	Continuous
1u	Fauna, flora and habitats	Operation phase activities, including mining activities, mining-related activities, vehicle, and machinery use, plant, workshop and waste yard. Operation phase activities, including mining activities, mining-related activities, vehicle, and machinery use, plant, workshop and waste yard. Storage, use and maintenance of vehicles, machines & equipment	• Destruction, fragmentation and degradation of habitats, ecosystems, and loss of ecological sensitive area “ESA”, including protected species. • Spread and/or establishment of alien and/or invasive species; and • Displacement of faunal community (including SCC) due to habitat loss, direct mortalities, and disturbance (road collisions, noise, light, dust, vibration, and poaching). • Litter, spills, fuels, chemicals, and human waste in and around the site.	Life of operation	Minimise & control	• Schedule activities and operations during least sensitive periods, to avoid migration, nesting, and breeding seasons. • Driving on access roads close to highly sensitive areas at night should be prevented in order to reduce or prevent wildlife road mortalities which occur more frequently during this period.	Include in toolbox talks. To be included in contractor method statements where applicable.	Continuous
1r				Operational Phase	Minimise & control	• Waste management must be a priority and all waste must be collected and stored adequately. It is recommended that all waste be removed from site on a weekly basis to prevent rodents and pests entering the site. • Refuse bins will be emptied and secured. • Temporary storage of domestic waste shall be in covered waste skips; and • Maximum domestic waste storage period will be 10 days.	Include in toolbox talks. To be included in contractor method statements where applicable.	Continuous
1s				Life of operation	Minimise & control	A pest control plan must be put in place and implemented; it is imperative that poisons not be used due to the likely presence of SCCs.	Include in toolbox talks. To be included in contractor method statements where applicable.	Continuous
1t				Life of operation	Minimise & control	Dust-reducing mitigation measures must be put in place and must be strictly adhered to, for all roads and dumps especially. This includes wetting of exposed soft soil surfaces and not conducting activities on windy days which will increase the likelihood of dust being generated.	Include in toolbox talks. To be included in contractor method statements where applicable.	Continuous
1w				Life of operation	Minimise & control	Waste management must be a priority and all waste must be collected and stored effectively.	Include in toolbox talks. To be included in contractor method statements where applicable.	Continuous

No.	Aspect affected	Activity	Potential Impact	Phase	Mitigation type	Impact management actions / Mitigation measures	Impact management outcome/ Standard to be achieved	Time period for implementation
1x				Life of operation	Minimise & control	A minimum of one toilet must be provided per 10 persons. Portable toilets must be pumped dry to ensure the system does not degrade over time and spill into the surrounding area.	Include in toolbox talks. To be included in contractor method statements where applicable.	Continuous
1y				Life of operation	Minimise & control	The Contractor should supply sealable and properly marked domestic waste collection bins and all solid waste collected shall be disposed of at a licensed disposal facility.	Include in toolbox talks. To be included in contractor method statements where applicable.	Continuous
1z	Fauna, flora and habitats	Operation phase activities, including mining activities, mining-related activities, vehicle, and machinery use, plant, workshop and waste yard. Operation phase activities, including mining activities, mining-related activities, vehicle, and machinery use, plant, workshop and waste yard. Storage, use and maintenance of vehicles, machines & equipment	• Destruction, fragmentation and degradation of habitats, ecosystems, and loss of ecological sensitive area “ESA”, including protected species. • Spread and/or establishment of alien and/or invasive species; and • Displacement of faunal community (including SCC) due to habitat loss, direct mortalities, and disturbance (road collisions, noise, light, dust, vibration, and poaching). • Litter, spills, fuels, chemicals, and human waste in and around the site.	Life of operation	Minimise & control	Where a registered disposal facility is not available close to the project area, the Contractor shall provide a method statement with regard to waste management. Under no circumstances may domestic waste be burned on site.	Include in toolbox talks. To be included in contractor method statements where applicable.	Continuous
1aa				Life of operation	Minimise & control	Refuse bins will be emptied and secured Temporary storage of domestic waste shall be in covered waste skips. Maximum domestic waste storage period will be 10 days.	Include in toolbox talks. To be included in contractor method statements where applicable.	Continuous
1bb			• Continued displacement of faunal community (including SCC) due to direct mortalities and disturbance (road collisions, noise, light, dust, vibration, and poaching) & Reduced dispersal/migration of fauna. • Contamination of water resources and habitat. Environmental pollution due to water/ mine drainage runoff. • Dust and noise generation by decommissioning activities.	Life of operation	Minimise & control	A storm water management plan must be compiled and implemented.	Include in toolbox talks. To be included in contractor method statements where applicable.	Continuous
1cc		Decommissioning phase activities, vehicle, and machinery use.		Closure Phase/ Post Closure Phase	Minimise & control	Sewage system must be pumped dry to ensure the system does not degrade over time and spill into the surrounding area.	Include in toolbox talks. To be included in contractor method statements where applicable.	Continuous

No.	Aspect affected	Activity	Potential Impact	Phase	Mitigation type	Impact management actions / Mitigation measures	Impact management outcome/ Standard to be achieved	Time period for implementation
2a	Surface water	Opencast mining (current).	The main impact associated with the current and future opencast mining is a reduction in the amount of surface water reporting to the regional catchment if surface water runoff is allowed to enter the pits in an uncontrolled manner. In addition, if affected water from the opencast pit areas come into contact with clean runoff, there may be negative impacts on surface water quality, mainly due to increased sedimentation (the Geohydrological Impact Assessment determined that pollution potential from the material being mined is negligible). <u>Surface water quantity:</u> A reduction in the quantity (i.e., volume) of surface water reporting to the regional sub-catchment, affecting the use of surface water as a natural resource. <u>Surface water quality:</u> A deterioration in surface water quality due to increased sedimentation, affecting the use of surface water as a natural resource.	Operational	Avoid, modify, remedy, control or stop	• All opencast pit areas should be enclosed with containment / safety berms to prevent clean runoff from entering the pits and to prevent affected runoff from leaving the pits. This mitigation measure should be applied to all current and future opencast pits. • A maintenance schedule should be developed and implemented to ensure that the integrity and functionality of containment / safety berms are maintained at all times.	Prevent dirty surface water from entering the clean water management area.	N/A

2b		Operation of the MTP, workshops, diesel depot, salvage yard, Return Water Dam and Settling Dam 2.	The MTP, workshops, diesel depot, salvage yard, Return Water Dam, and Settling Dam 2 are situated in close proximity to each other and form WMA 2. The Drainage Line Diversion that conveys clean runoff from the Project towards the environment is situated along WMA 2. Hazardous chemicals and substances are commonly used in this area which has the potential to pollute surface water runoff. Spillages of affected water from the Return Water Dam and Settling Dam 2 also has the potential to pollute surface water runoff. If left unmitigated, affected runoff and spillages from WMA 2 will enter the Drainage Line Diversion and the receiving environment, leading to negative impacts on surface water quality. <u>Surface water quality:</u> A deterioration of surface water quality due to chemical contamination and sedimentation, affecting the use of surface water as a natural resource.	Operational	Avoid, modify, remedy, control or stop	• It is recommended to construct a containment berm around WMA 2 to prevent affected runoff from entering the Drainage Line Diversion and the receiving environment. • It is recommended to construct affected water channels adjacent to the inside of the containment berms to collect affected runoff reporting to WMA 2. • It is recommended to construct an affected water sump at the lowest point in WMA 2. The sump should be able to contain the volume of water associated with a 1:50-yerar flood event (i.e., 1 177 m^3). The affected water channels should be excavated and free draining towards the sump. The sump should be fitted with pumping infrastructure so that affected water can be reused for mining activities. • The Drainage Line Diversion situated along the outside of the containment berm was not properly engineered and does not consider certain regulatory design parameters. It is recommended that the mine prepare and implement a formal river diversion design capable of conveying the 1:50-year flood event (i.e., 9 010 m^3). The associated culverts should also be properly engineered and able to convey this volume of water without overflows into the mining areas. • Erosion prevention measures (i.e., grass, cement, rock, and / or gabions) should be installed along all runoff concentration points, including the channel inlet / outlet and all culvert inlets/ outlets. • The Return Water Dam and Settling Dam 2 should at all times be operated below the 0.8 m freeboard requirement as per Regulation GN 704. • Treat all hydrocarbon spills as hazardous waste and dispose of accordingly. • Emergency spill kits should be available, and all spills should be cleaned up quickly and effectively with an approved absorbent material. • All mixing practices should be conducted on impermeable surfaces. • All vehicle and equipment usage should be limited to designated areas only. • Store fuel and oil in designated bunded areas capable of containing 110% of the volume stored. • Refuelling of vehicles should take place on an impermeable surface fitted with a sump to contain any spillages.	Prevent dirty surface water from entering the clean water management area.	N/A

No.	Aspect affected	Activity	Potential Impact	Phase	Mitigation type	Impact management actions / Mitigation measures	Impact management outcome/ Standard to be achieved	Time period for implementation
						• All storm water management measures should be included in the maintenance schedule mentioned above to ensure integrity and functionality is maintained.		
2c		Operation of the dry mobile in-field screening plant (“IFP”)	The IFP is situated in WMA 5 and is a dry screening plant used to separate the diamond bearing gravel reporting to the MTP. Excess dust and sediment are produced at the IFP that may negatively impact surface water quality. It is assumed that hazardous chemicals / substances (e.g., oil, grease and / or fuel) are also used at the IFP to maintain functionality. Spillages of these substances may also negatively impact surface water quality. <u>Surface water quality:</u> A deterioration of surface water quality due to chemical contamination increased sedimentation, affecting the use of surface water as a natural resource.	Operational	Avoid, modify, remedy, control or stop	• It is recommended to construct a containment berm around WMA 5 to prevent sediment-laden runoff from the IFP and WRD entering the receiving environment. • It is recommended to construct affected water channels along the inside of the berms to collect runoff generated in WMA 5 and convey it towards a proposed sump(s) capable of containing the 1:50-year flood event (i.e., 1 024 m^3). • All hazardous chemicals / substances associated with the IFP should be stored on impermeable, bunded surfaces capable of containing 110% of the volume of the stored substance. • Mixing practises and refuelling of vehicles to take place on an impermeable surface fitted with a sump to contain any spillages. • All storm water management measures should be included in the maintenance schedule recommended above to ensure integrity and functionality is, maintained at all times.	Prevent dirty surface water from entering the clean water management area.	N/A

No.	Aspect affected	Activity	Potential Impact	Phase	Mitigation type	Impact management actions / Mitigation measures	Impact management outcome/ Standard to be achieved	Time period for implementation
2d		Operation of Mine Residue Deposits.	There are several MRDs situated throughout the Project., most notably the concentrate reject stockpile and product stockpile situated in WMA 2, and the WRD situated in WMA 5. The *Geohydrological Impact Assessment* dated 31 January 2022 conducted for the Project determined that the impact of chemical pollution from the MRDs on surface water is negligible. It is therefore assumed that the main impact on surface water resulting from the MRDs will be an increase in sedimentation resulting in a decrease in surface water quality. <u>Surface water quality:</u> A deterioration in surface water quality due to increased sedimentation.	Operational	Avoid, modify, remedy, control or stop	• It is recommended to construct small (0.5 m) diversion / containment berms around all MRDs to contain sediment laden runoff, and to prevent clean runoff from coming into contact with affected runoff from the MRDs. • The concentrate reject stockpile and product stockpile should be enclosed with the containment berm associated with WMA 2, and the WRD should be enclosed with the containment berm associated with WMA 5. • The proposed berms should be included in the maintenance schedule recommended above to ensure that the integrity and functionality is maintained at all times.	Prevent dirty surface water from entering the clean water management area.	N/A

No.	Aspect affected	Activity	Potential Impact	Phase	Mitigation type	Impact management actions / Mitigation measures	Impact management outcome/ Standard to be achieved	Time period for implementation
2e		Wet rehabilitation	Given the results of the *Geohydrological Impact Assessment* dated 2 February 2022, the main impact on surface water as a result of wet rehabilitation practises will be as a result of increased sedimentation. Only once the areas have been fully rehabilitated and revegetated are they deemed to be clean runoff areas and will the impact on surface water resources be negligible. In addition, if clean runoff is allowed to enter these wet rehabilitation areas uncontrollable, there will be a reduction in the volume of runoff reporting to the regional catchment. <u>Surface water quantity:</u> A reduction in the quantity (i.e., volume) of surface water reporting to the regional sub-catchment. <u>Surface water quality:</u> A deterioration in surface water quality due to increased sedimentation.	Operational	Avoid, modify, remedy, control or stop	• Areas where wet rehabilitation is ongoing should be enclosed with small (0.5m) containment / diversion berms to contain sediment laden runoff, to prevent clean runoff from coming into contact with affected runoff, and to prevent clean runoff from draining into these areas. • The proposed berms should be included in the maintenance schedule recommended above to ensure that the integrity and functionality is maintained at all times.	Prevent dirty surface water from entering the clean water management area.	N/A
2f		Operation of haul roads	Numerous haul roads traverse the mine. The main impact associated with the haul roads is a decrease in surface water quality due to increased rates of erosion and sedimentation. <u>Surface water quality:</u> A deterioration of surface water quality due to increased erosion and sedimentation affecting the use of surface water as a natural resource.	Operational	Avoid, modify, remedy, control or stop	• All haul roads should be managed in such a manner as to disperse runoff and to prevent the concentration of storm water runoff. Runoff should be diverted from roads through the use of mitre drains and gaps in the roadside berms to disperse runoff and to prevent the concentrating of storm water flow. • Where culverts are installed in haul roads to ensure effective drainage, erosion prevention measures (i.e., cement, rock, grass, and / or gabions) should be installed. • Stormwater management measures associated with haul roads should be included in the maintenance schedule mentioned above.	Prevent dirty surface water from entering the clean water management area.	N/A

2g		Mining within the Eastern Drainage Line.	Mining within the Eastern Draining Line will have direct impacts on the aquatic biodiversity of the area. These impacts and risks are being assessed separately as part of the specialist Wetland Assessment Report conducted for the Project. The impacts discussed below are only focused on surface water quality and quantity. Mining of the Eastern Drainage Line will essentially offset the drainage lines' origin 350 m north, outside of the active mining area. This will reduce the size of the current regional sub-catchment by approximately 1%. Based on the slow response time and high infiltration rates associated with the project, it is anticipated that less than 1% of surface water runoff will be lost to the regional sub-catchment as only a small fraction of runoff is expected to report to the Matotwane River. Therefore, the impact on surface water quantity (i.e., volume) is deemed to be minimal. Offsetting the origin of the Eastern Draining Line outside of the active mining area may lead to an improvement in the quality of surface water runoff entering the receiving environment as the potential for pollution and contamination is reduced. <u>Surface water quantity:</u> A negligible reduction in the quantity (i.e., volume) of surface water reporting to the regional sub-catchment. <u>Surface water quality:</u> A potential improvement in surface water quality reporting to the regional sub-catchment.	Operational	Avoid, modify, remedy, control or stop	• The Drainage Line Pit should be enclosed with containment / safety berms to prevent clean runoff from entering the pit and to prevent affected runoff from leaving the pits. This mitigation measure should be applied to all current and future opencast pits. • The proposed berms should be included in the maintenance schedule recommended above to ensure that the integrity and functionality is maintained at all times. • The Eastern Drainage Line should be re-instated and rehabilitated once mining is complete to minimise the impact on aquatic biodiversity, (refer to the impact assessment conducted as part of the specialist *Wetland Assessment* Report).	Prevent dirty surface water from entering the clean water management area.	N/A

No.	Aspect affected	Activity	Potential Impact	Phase	Mitigation type	Impact management actions / Mitigation measures	Impact management outcome/ Standard to be achieved	Time period for implementation
3	Groundwater	Operation of PCDs	Backfilling with mineral waste material and affected mine water have the potential to contaminate downgradient groundwater resources with dissolved salts (mostly SO4, Cl, Na and NO3). Due to the very low country rock permeabilities and hence very little groundwater plume migration, the groundwater contribution to the downstream impact is rated as low for the groundwater resource.	Operational	Avoid, modify, remedy, control or stop	Management measures: • Prevent cumulative contamination of the receiving groundwater environment. • Minimize seepage, prevent contact between clean and dirty areas, and to recycle contaminated water. • Action plans: • Minimise recharge of rainwater into the rehabilitated pit by creating free draining slopes and capping with low permeable material. • Ponding should be prevented on rehabilitated surfaces. • Monitor the groundwater resource in terms of quality. Should it be indicated through monitoring and investigation that groundwater users are impacted upon in terms of quality of borehole water, alternative water sources must be made available to such users by the mine.	Prevent or contain groundwater contamination	Operational phase
		Backfilled pits	Backfilling with mineral waste material and affected mine water have the potential to contaminate downgradient groundwater resources with dissolved salts (mostly SO4, Cl, Na and NO3). Due to the very low country rock permeabilities and hence very little groundwater plume migration, the groundwater contribution to the downstream impact is rated as low for the groundwater resource.	Operational	Avoid, modify, remedy, control or stop	Management measures: • Prevent cumulative contamination of the receiving groundwater environment. • Minimize seepage, prevent contact between clean and dirty areas, and to recycle contaminated water. • Action plans: • Minimise recharge of rainwater into the rehabilitated pit by creating free draining slopes and capping with low permeable material. • Ponding should be prevented on rehabilitated surfaces. Monitor the groundwater resource in terms of quality at the source/s until acceptable groundwater quality is achieved.	Prevent or contain groundwater contamination	Operational phase
4	Air quality	Existing mining activities	The use of the access and haul roads during the operational phase may result in vehicle entrained dust generation limited to the local area.	Operational	Control	• Implement speed limit on access and haul roads. • Regularly inspect and maintain access and haul roads.	*Outcome:* Prevent the deterioration of air quality. *Standard:* National Environmental Management: Air Quality Act (Act No 39 of 2004); Regulations there under and amendments thereto. GG 36974, R827, National Dust Control Regulations, 1 November 2013.	Operational phase

No.	Aspect affected	Activity	Potential Impact	Phase	Mitigation type	Impact management actions / Mitigation measures	Impact management outcome/ Standard to be achieved	Time period for implementation
5	Noise and vibration	Existing operational mining activities	As there are existing mining activities and due to the close proximity to Venetia Mine it is not anticipated that the operational activities will result in the generation of additional noise and will not impact on any sensitive receptors.	Operational	Control	No mitigation measures proposed.	N/A	N/A
6	Sites of Archaeological and Cultural Importance	Existing mining activities	There are no impacts identified on Sites of Archaeological and Cultural Importance as a result of the existing activities taking place on the mine.	Operational	Avoid	• If any graves or material is exposed during operational activities, all activities must cease, a 30 m no-go barrier constructed and SAHRA contacted for further investigation. • The area should be demarcated in order to prevent any further work there until an investigation has been completed. • An archaeologist should be contacted immediately to provide advice on the matter.	Prevent the damage to / or destruction of heritage resources. In compliance with the National Heritage Resources Act (Act No. 25 of 1999)	Opertaioanal Phase

No.	Aspect affected	Activity	Potential Impact		Phase	Mitigation type	Impact management actions / Mitigation measures	Impact management outcome/ Standard to be achieved	Time period for implementation
7a	Sensitive landscapes (Watercourses-Riparian and instream habitat)	Direct ecosystem modification or destruction / loss impacts	REALISTIC POOR MITIGATION SCENARIO: Direct and permanent destruction / loss of 0.791 ha of a moderately important watercourse (W1) and 0.798 ha of a moderately-low important watercourse (W2), as well as surrounding terrestrial habitats, due to vegetation clearance, earthworks and mining works, including excavation and infilling.	W1	Construction	Avoid/prevent -Minimize/reduce -Remedy/ rehabilitate -Offset	<u>Application of the Mitigation Hierarchy</u> Development planning for the project must adhere to the 'mitigation hierarchy'. Firstly, every effort should be taken to avoid the destruction and infilling of watercourses that provide ecosystem services in the landscape and, where direct impacts cannot be avoided, this be well substantiated, and the impacts reduced and minimised as far as practically possible. In this case, it is understood that the development and destruction of the following watercourse units is proposed: • Unit W1 – 0.791 ha, constituting a third of the total 1.594 ha of the unit; and • Unit W2 – 0.798 ha, constituting the entirety of the unit. The applicant is thus required to investigate whether they can amend the layout to avoid mining across W1 and W2 as part step 1 before moving onto steps 2-4. If such encroachment is unavoidable, this will need to be clearly substantiated. <u>Demarcation of 'no-go' areas and construction corridors</u> • Prior to the commencement of any construction activities, the following features must be staked out by a surveyor and demarcated using brightly coloured shade cloth: ○ Outer edge of the delineated wetland and riparian areas occurring within 100 m of the proposed non-linear infrastructure. ○ Outer edge of the delineated wetland and riparian areas occurring within 32 m of proposed access roads. • Access to and from the project area should be either via existing roads or within the construction servitude where possible. • Demarcation of all identified access, haulage, and service roads. The alignment and routes for any roads not covered under this assessment need to be reviewed by the wetland ecologist. • All excavated soils and soil stockpiles must be stored / sited outside of the watercourses.	<u>Impact management outcome</u>: Moderate residual negative risk/impact following the implementation of mitigation measures. <u>Standard to be achieved</u>: - NEMA EIA Regulations - NWA Section 21	- No-go and/or sensitive areas need to be demarcated prior to the commencement of construction. - All method statements must be compiled and approved prior to the commencement of construction. - Rehabilitation and monitoring should take place throughout construction and operational phases. - Loss of W1 sediment trapping services to be offset by creating an alluvial or wetland feature downstream that would result in the gain of sediment trapping services in the landscape while the mine is operational, thus mitigating both the direct losses and indirect impacts of the activities

No.	Aspect affected	Activity	Potential Impact		Phase	Mitigation type	Impact management actions / Mitigation measures	Impact management outcome/ Standard to be achieved	Time period for implementation
							• The demarcation work must be signed off by the Environmental Control Officer (ECO) before any work commences. • Demarcations are to remain until construction and rehabilitation is complete. • All areas outside of this demarcated working servitude must be considered no-go areas for the entire construction phase. Any contractor found working within No-Go areas must be disciplined in line with the relevant contractual/my processes. • No equipment laydown or storage areas must be located within delineated wetland or riparian habitats. • No equipment laydown or storage areas must be located within delineated wetland and riparian areas. • All disturbed areas beyond the construction site that are intentionally or accidentally disturbed during the construction phase must be rehabilitated immediately to the satisfaction of the ECO. <u>Method statements for working in watercourses</u> If applicable, a detailed method statement for the construction activities within all watercourses must be compiled and appended to the construction (EMPr) prior to construction commencing. The final method statement must be reviewed by a suitably qualified ecological specialist prior to commencement and must include all measures provided in this section where relevant and applicable.		

				W2			General rehabilitation guidelines
							• All land impacted by the proposed development must be rehabilitated by undertaking the following general tasks:
							  ○ All foreign material must be removed from site.
							  ○ Land must be regraded / reshaped, and topsoils must be reinstated. All topsoil will be managed in line with the mine's topsoil management plan and will be stockpiled for reuse during rehabilitation activities
							  ○ Compacted soils must be adequately ripped/loosened where compacted, as informed by the ECO.
							  ○ Restoration of the area's biodiversity (fauna and flora) will take place in line with the mine's Biodiversity Management Plan.
							• For the permanently and seasonally saturated areas (at present) - via translocation / transplanting of resecured sods and, where there are not enough rescued sods, via the translocation / transplanting of sods from the surrounding wetland as advised a wetland ecologist.
							Construction phase monitoring measures
							• Compliance monitoring will be the responsibility of a suitably qualified/trained ECO (Environmental Control Officer) with any additional supporting EO's (Environmental Officers) having the required competency skills and experience to ensure that monitoring is undertaken effectively and appropriately.
							• A photographic record of the state of the watercourse prior to the commencement of clearing/construction must be kept for reference and rehabilitation monitoring purposes.
							• The ECO must undertake compliance monitoring audits. Freshwater ecosystem aspects that must be monitored related to monitoring freshwater ecosystem impacts include:
							  ○ The condition of the demarcation fence.
							  ○ Evidence of any no-go area incursions.
							  ○ The condition of the temporary runoff, erosion and sediment control measures and evidence of any failures.
							  ○ Evidence of sedimentary deposits / plumes and elevated rates of sedimentation (i.e., vegetation smothering / burial).
							  ○ Evidence of elevated river / stream turbidity levels.
								Impact management outcome: Low residual negative risk/impact following the implementation of mitigation measures.
								
								Standard to be achieved:
								- NEMA EIA Regulations
								- NWA Section 21	

No.	Aspect affected	Activity	Potential Impact		Phase	Mitigation type	Impact management actions / Mitigation measures	Impact management outcome/ Standard to be achieved	Time period for implementation
							○ Evidence of gully or bed/bank erosion. ○ Visual assessment of stormwater quality and instream water quality. ○ The condition of waste bins and the presence of litter within the working area. ○ Evidence of solid waste within the no-go areas. ○ Evidence of hazardous materials spills and soil contamination. ○ Presence of alien invasive and weedy vegetation within the working area. ○ Rehabilitation and re-vegetation methods and success. ○ Once the post-construction rehabilitation has been completed, the ECO should conduct a close out site audit 1 month after the completion of rehabilitation.		

			REALISTIC GOOD MITIGATION SCENARIO: Direct and permanent destruction / loss of 1.589 ha of two moderately low important watercourses (W1 and W2), as well as their surrounding terrestrial habitats, due to vegetation clearance, earthworks and mining works, including excavation and infilling.	W1 and W2	Construction	Avoid/prevent- Minimize/reduce -Remedy/ rehabilitate -Offset	<u>Demarcation of 'no-go' areas and construction corridors</u> • Prior to the commencement of any construction activities, the following features must be staked out by a surveyor and demarcated using brightly coloured shade cloth: ○ Outer edge of the delineated wetland and riparian areas occurring within 100 m of the proposed non-linear infrastructure. ○ O Outer edge of the delineated wetland and riparian areas occurring within 32 m of proposed access roads. • Access to and from the project area should be either via existing roads or within the construction servitude where possible. • Demarcation of all identified access, haulage, and service roads. The alignment and routes for any roads not covered under this assessment need to be reviewed by the wetland ecologist. • All excavated soils and soil stockpiles must be stored / sited outside of the watercourses. • The demarcation work must be signed off by the Environmental Control Officer (ECO) before any work commences. • Demarcations are to remain until construction and rehabilitation is complete. • All areas outside of this demarcated working servitude must be considered no-go areas for the entire construction phase. Any contractor found working within No-Go areas must be disciplined in line with the relevant contractual/my processes. • No equipment laydown or storage areas must be located within delineated wetland or riparian habitats. • No equipment laydown or storage areas must be located within delineated wetland and riparian areas. • All disturbed areas beyond the construction site that are intentionally or accidentally disturbed during the construction phase must be rehabilitated immediately to the satisfaction of the ECO. <u>Method statements for working in watercourses</u> • Refer to mitigation as detailed in 7a above. <u>General rehabilitation guidelines</u> • Refer to detailed mitigation measures in 7a above. <u>Construction phase monitoring measures</u>	<u>Impact management outcome</u>: Low residual negative risk/impact following the implementation of mitigation measures. <u>Standard to be achieved</u>: - NEMA EIA Regulations - NWA Section 21	- No-go and/or sensitive areas need to be demarcated prior to the commencement of construction. - All method statements must be compiled and approved prior to the commencement of construction. - Rehabilitation and monitoring should take place throughout construction and operational phases.

No.	Aspect affected	Activity	Potential Impact		Phase	Mitigation type	Impact management actions / Mitigation measures	Impact management outcome/ Standard to be achieved	Time period for implementation
							• Compliance monitoring will be the responsibility of a suitably qualified/trained ECO (Environmental Control Officer) with any additional supporting EO's (Environmental Officers) having the required competency skills and experience to ensure that monitoring is undertaken effectively and appropriately. • A photographic record of the state of the watercourse prior to the commencement of clearing/construction must be kept for reference and rehabilitation monitoring purposes. • The ECO must undertake compliance monitoring audits. Freshwater ecosystem aspects that must be monitored related to monitoring freshwater ecosystem impacts include: o The condition of the demarcation fence. o Evidence of any no-go area incursions. o The condition of the temporary runoff, erosion and sediment control measures and evidence of any failures. o Evidence of sedimentary deposits / plumes and elevated rates of sedimentation (i.e., vegetation smothering / burial). o Evidence of elevated river / stream turbidity levels. o Evidence of gully or bed/bank erosion. o Visual assessment of stormwater quality and instream water quality. o The condition of waste bins and the presence of litter within the working area. o Evidence of solid waste within the no-go areas. o Evidence of hazardous materials spills and soil contamination. o Presence of alien invasive and weedy vegetation within the working area. o Rehabilitation and re-vegetation methods and success. o Once the post-construction rehabilitation has been completed, the ECO should conduct a close out site audit 1 month after the completion of rehabilitation.		
7b		Alteration of hydrological and geo-morphological processes	Alteration of flow, erosion and/or sedimentation regimes downstream of	W1 and W2	Construction	Minimize/reduce -Remedy/ rehabilitate	<u>Method statements for working in watercourses</u> • Refer to mitigation measure as detailed in 7a above.	<u>Impact management outcome</u>: Low residual negative risk/impact following the	- All method statements must be compiled and

			watercourse units due to catchment land clearing, land cover disturbance and permanent loss upstream channels during vegetation clearance, earthworks and construction works.	W3		Minimize/reduce -Remedy/ rehabilitate	<u>Runoff, erosion and sediment control</u> • Wherever possible, existing vegetation cover on the development site should be maintained during the construction phase. The unnecessary removal of groundcover from slopes must be prevented, especially on steep slopes which will not be developed. • Any vegetation removal must be aligned with the site's Surface Disturbance Management Plan that will incorporate the assessment of any protected tree species. • Clearing activities must only be undertaken during agreed working times and permitted weather conditions. If heavy rains are expected, clearing activities should be put on hold. In this regard, the contractor must be aware of weather forecasts. • Bare slopes and surfaces to be exposed to the elements during clearing and earthworks must be protected against erosion. • Once shaped, all exposed/bare surfaces and embankments must be re-vegetated as soon as possible to prevent erosion. • If re-vegetation of exposed surfaces cannot be established immediately due to phasing issues, temporary erosion and sediment control measures must be maintained until such a time that re-vegetation can commence. • All temporary erosion and sediment control measures must be monitored for the duration of the construction phase and repaired immediately when damaged. All temporary erosion and sediment control structures must only be removed once vegetation cover has successfully recolonised the affected areas. • After every rainfall event, the contractor must check the site for erosion damage and rehabilitate this damage immediately. Erosion rills and gullies must be filled-in with appropriate material and silt fences or fascine work must be established along the gulley for additional protection until vegetation has re-colonised the rehabilitated area. <u>General rehabilitation guidelines</u> • All land impacted by the proposed development must be rehabilitated by undertaking the following general tasks: o All foreign material must be removed from site.	implementation of mitigation measures. <u>Standard to be achieved</u>: - NEMA EIA Regulations - NWA Section 21	approved prior to the commencement of construction. - Run-off, erosion, and sediment control measure needs to be put in place prior to construction and monitored throughout the construction and operational phases. -Rehabilitation and monitoring should take place throughout construction and operational phases

							○ Land must be regraded / reshaped, and topsoils must be reinstated. All topsoil will be managed in line with the mine's topsoil management plan and will be stockpiled for reuse during rehabilitation activities ○ Compacted soils must be adequately ripped/loosened where compacted, as informed by the ECO. ○ Restoration of the area's biodiversity (fauna and flora) will take place in line with the mine's Biodiversity Management Plan: • For the permanently and seasonally saturated areas (at present) - via translocation / transplanting of resecured sods and, where there are not enough rescued sods, via the translocation / transplanting of sods from the surrounding wetland as advised a wetland ecologist. <u>Construction phase monitoring measures</u> • Compliance monitoring will be the responsibility of a suitably qualified/trained ECO (Environmental Control Officer) with any additional supporting EO's (Environmental Officers) having the required competency skills and experience to ensure that monitoring is undertaken effectively and appropriately. • A photographic record of the state of the watercourse prior to the commencement of clearing/construction must be kept for reference and rehabilitation monitoring purposes. • The ECO must undertake compliance monitoring audits. Freshwater ecosystem aspects that must be monitored related to monitoring freshwater ecosystem impacts include: ○ The condition of the demarcation fence. ○ Evidence of any no-go area incursions. ○ The condition of the temporary runoff, erosion and sediment control measures and evidence of any failures. ○ Evidence of sedimentary deposits / plumes and elevated rates of sedimentation (i.e., vegetation smothering / burial). ○ Evidence of elevated river / stream turbidity levels. ○ Evidence of gully or bed/bank erosion. ○ Visual assessment of stormwater quality and instream water quality.		

No.	Aspect affected	Activity	Potential Impact		Phase	Mitigation type	Impact management actions / Mitigation measures	Impact management outcome/ Standard to be achieved	Time period for implementation
							○ The condition of waste bins and the presence of litter within the working area. ○ Evidence of solid waste within the no-go areas. ○ Evidence of hazardous materials spills and soil contamination. ○ Presence of alien invasive and weedy vegetation within the working area. ○ Rehabilitation and re-vegetation methods and success. ○ Once the post-construction rehabilitation has been completed, the ECO should conduct a close out site audit 1 month after the completion of rehabilitation.		
7c		Ecological connectivity and edge disturbance impacts	Decrease in ecological connectivity between catchment up- and down-stream of affected watercourses during vegetation clearance, earthworks and construction works.	W1, W2, and W3	Construction	-Avoid/prevent -Remedy/ rehabilitate	Demarcation of 'no-go' areas and construction corridors • Refer to detailed mitigation measures in 7a above. Method statements for working in watercourses • Refer to detailed mitigation measures in 7a above. General rehabilitation guidelines • Refer to detailed mitigation measures in 7b above. Construction phase monitoring measures • Refer to detailed mitigation measures in 7b above.	Impact management outcome: Low residual negative risk/impact following the implementation of mitigation measures. Standard to be achieved: - NEMA EIA Regulations - NWA Section 21	- No-go and/or sensitive areas need to be demarcated prior to the commencement of construction. - All method statements must be compiled and approved prior to the commencement of construction. - Rehabilitation and monitoring should take place throughout construction and operational phases.

No.	Aspect affected	Activity	Potential Impact		Phase	Mitigation type	Impact management actions / Mitigation measures	Impact management outcome/ Standard to be achieved	Time period for implementation
7d		Water pollution impacts	Pollution of downstream watercourse units due to the mishandling of hazardous substances and/or improper maintenance of machinery during construction e.g., oil and diesel leaks and spills.	W2 and W3	Construction	-Avoid/prevent -Remedy/ rehabilitate	<u>Hazardous substances / materials management</u> • The proper storage and handling of hazardous substances (e.g., fuel, oil, cement, etc.) needs to be administered. • Mixing and/or decanting of all chemicals and hazardous substances must take place on a tray, shutter boards or on an impermeable surface and must be protected from the ingress and egress of stormwater. • Drip trays should be utilised at all dispensing areas. • No refuelling, servicing or chemical storage should occur within 30 m of any watercourse. • No vehicles transporting concrete, asphalt or any other bituminous product may be washed at construction site unless all controls to mitigate impacts are installed and appropriately managed. • Vehicle maintenance should not take place on site unless a specific bunded area is constructed for such a purpose. • Hazardous storage areas must be bunded prior to their use on site during the construction period. The bund wall should be high enough to contain at least 110% of any stored volume. The surface of the bunded surface should allow for spillages to be collected and satisfactorily disposed of. Refuelling practices must be aligned with the mine's refuelling procedures. • All necessary equipment for dealing with spills of fuels/chemicals must be available at the site. Spills must be cleaned up immediately and contaminated soil/material disposed of appropriately at a registered site. • Contaminated water containing fuel, oil or other hazardous substances must never be released into the environment. It must be disposed of at a registered hazardous landfill site. • Spills must be cleaned up immediately and contaminated soil/material disposed of appropriately at a registered site. <u>Construction phase monitoring measures</u> • Refer to detailed mitigation measures in 7b above.	<u>Impact management outcome</u>: Low residual negative risk/impact following the implementation of mitigation measures. <u>Standard to be achieved</u>: - NEMA EIA Regulations - NWA Section 21	- No-go and/or sensitive areas need to be demarcated prior to the commencement of construction. - All method statements must be compiled and approved prior to the commencement of construction. - Rehabilitation and monitoring should take place throughout construction and operational phases.

7e		Direct ecosystem modification or destruction / loss impacts	Direct disturbance and removal of riparian soil and vegetation during the expansion of the mining activities.	All watercourses	Construction	-Minimize/reduce -Remedy/ rehabilitate	<u>Permitting requirements and management plans</u> • All legal matters pertaining to permitting must be completed prior to any construction activity. • In particular, all necessary Water Use Authorisations must be in order for any construction and operational activities within 500 m of a watercourse or wetland. • An Erosion and Stormwater Management Plan should be developed during the planning and design phase, and implemented during the construction, operational and decommissioning phases. • An Emergency Spillage and Hazardous Waste Management Plan should be developed during the planning and design phase, and implemented during the construction, operational and decommissioning phases. <u>Erosion control measures for discharges</u> • All diverted flows must be conveyed into downstream watercourses in a controlled manner that does not increase the rates of erosion or increase flooding / inundation such that there are measurable changes in hydrology. In this regard the following is recommended: ○ Energy dissipation and erosion control measures must be built into the discharge canal. Ideally energy dissipation measures must be established at regular intervals along the canal with the number of structures increasing with increasing slope. • The canal discharge outlet must be designed to dissipate the energy of outgoing flows to levels that present a low erosion risk. In this regard, suitably designed energy dissipation and erosion protection structures (Reno-mattresses) will need to be installed at the outlet. • Erosion control structures must be designed based on the predicted and modelled discharges and velocities of the incoming flow from the diversion trenches and evidence of such design must be provided. • All erosion protection measures must be established to reflect the natural slope of the surface and located at the natural ground-/bed-level. <u>Demarcation of 'no-go' areas and construction corridors</u> • Refer to detailed mitigation measures in 7a above. <u>Method statements for working in watercourses</u> • Refer to detailed mitigation measures in 7a above.	<u>Impact management outcome</u>: Low residual negative risk/impact following the implementation of mitigation measures. <u>Standard to be achieved</u>: - NEMA EIA Regulations - NWA Section 21	- No-go and/or sensitive areas need to be demarcated prior to the commencement of construction. - All method statements must be compiled and approved prior to the commencement of construction. - Rehabilitation and monitoring should take place throughout construction and operational phases.

No.	Aspect affected	Activity	Potential Impact		Phase	Mitigation type	Impact management actions / Mitigation measures	Impact management outcome/ Standard to be achieved	Time period for implementation
							General rehabilitation guidelines • Refer to detailed mitigation measures in 7b above Construction phase monitoring measures • Refer to detailed mitigation measures in 7d above.		
7f		Alteration of hydrological and geo-morphological processes	Erosion and/or sedimentation of watercourse units due to catchment land clearing and land cover disturbance during the upgrade/construction of access roads and use of heavy machinery on site.		Construction	-Minimize/reduce -Remedy/ rehabilitate	Permitting requirements and management plans • All legal matters pertaining to permitting must be completed prior to any construction activity. • In particular, all necessary Water Use Authorisations must be in order for any construction and operational activities within 500 m of a watercourse or wetland. • An Erosion and Stormwater Management Plan should be developed during the planning and design phase,	Impact management outcome: Low residual negative risk/impact following the implementation of mitigation measures. Standard to be achieved: - NEMA EIA Regulations - NWA Section 21	- No-go and/or sensitive areas need to be demarcated prior to the commencement of construction. - All method statements must

No.	Aspect affected	Activity	Potential Impact		Phase	Mitigation type	Impact management actions / Mitigation measures	Impact management outcome/ Standard to be achieved	Time period for implementation
			Alteration of flow, erosion and/or sedimentation regimes downstream of watercourse units due to catchment land clearing, land cover disturbance and permanent loss of upstream channels during vegetation clearance, earthworks and construction works.			-Minimize/reduce -Remedy/ rehabilitate	and implemented during the construction, operational and decommissioning phases. • An Emergency Spillage and Hazardous Waste Management Plan should be developed during the planning and design phase, and implemented during the construction, operational and decommissioning phases. <u>Erosion control measures for discharges</u> • Refer to detailed mitigation measures in 7e above. <u>Method statements for working in watercourses</u> • Refer to detailed mitigation measures in 7e above. <u>Runoff, erosion and sediment control</u> • Refer to detailed mitigation measures in 7b above. <u>Invasive alien plant control</u> • All alien invasive vegetation that colonises the construction site must be removed in line with the mine's relevant procedures. The contactor shall conduct alien vegetation removals based on the recommendations from environmental inspections. • Herbicides should be utilised where hand pulling/uprooting is not possible. ONLY herbicides which have been certified safe for use in wetlands by independent testing authority are to be used. The ECO must be consulted in this regard. <u>General rehabilitation guidelines</u> • Refer to detailed mitigation measures in 7e above. <u>Construction phase monitoring measures</u> • Refer to detailed mitigation measures in 7d above		be compiled and approved prior to the commencement of construction. - Run-off, erosion, and sediment control measure needs to be put in place prior to construction and monitored throughout the construction and operational phases. - Alien vegetation monitoring and control throughout construction and operational phases. - Rehabilitation and monitoring should take place throughout construction and operational phases.

No.	Aspect affected	Activity	Potential Impact		Phase	Mitigation type	Impact management actions / Mitigation measures	Impact management outcome/ Standard to be achieved	Time period for implementation
7g		Ecological connectivity and edge disturbance impacts	Temporary decrease in ecological connectivity between sections of watercourse unit on either side of the access road, as well as an increase in edge effects on the roadward edges of the watercourse sections on either side of the road, during construction.		Construction	- Avoid/prevent - Minimize/reduce Remedy/ rehabilitate	<u>Permitting requirements and management plans</u> • Refer to detailed mitigation measures in 7d above. <u>Erosion control measures for discharges</u> • Refer to detailed mitigation measures in 7e above. <u>Demarcation of 'no-go' areas and construction corridors</u> • Refer to detailed mitigation measures in 7a above. <u>Method statements for working in watercourses</u> • Refer to mitigation as detailed in 7a above. <u>General rehabilitation guidelines</u> • Refer to detailed mitigation measures in 7b above. <u>Construction phase monitoring measures</u> • Refer to detailed mitigation measures in 7b above.	<u>Impact management outcome</u>: Low residual negative risk/impact following the implementation of mitigation measures. <u>Standard to be achieved</u>: - NEMA EIA Regulations - NWA Section 21	- No-go and/or sensitive areas need to be demarcated prior to the commencement of construction. - All method statements must be compiled and approved prior to the commencement of construction. - Rehabilitation and monitoring should take place throughout construction and operational phases.
7h		Water pollution impacts	Pollution of watercourse units due to the mishandling of hazardous substances and/or improper maintenance of machinery during construction e.g., oil and diesel leaks and spills.		Construction	- Avoid/prevent Remedy/ rehabilitate	<u>Permitting requirements and management plans</u> • Refer to detailed mitigation measures in 7d above. <u>Construction phase monitoring measures</u> • Refer to detailed mitigation measures in 7b above.	<u>Impact management outcome</u>: Low residual negative risk/impact following the implementation of mitigation measures. <u>Standard to be achieved</u>: - NEMA EIA Regulations - NWA Section 21	- All method statements must be compiled and approved prior to the commencement of construction. - Rehabilitation and monitoring should take place throughout construction and operational phases.

No.	Aspect affected	Activity	Potential Impact		Phase	Mitigation type	Impact management actions / Mitigation measures	Impact management outcome/ Standard to be achieved	Time period for implementation
7i		Alteration of hydrological and geo-morphological processes	Erosion and/or sedimentation of watercourse units due to poor maintenance of stormwater infrastructure.	W1, W2 and W3	Operational	- Minimize/reduce Remedy/ rehabilitate	<u>Maintenance and management</u> • It is the applicant's responsibility to ensure the proper functioning of all surface mining infrastructure that is likely to require regular on-going maintenance. • It is important that the location and extent of the wetlands and rivers in the vicinity of project activities be incorporated into all formal maintenance and repair plans for the project. • In terms of management, alien invasive plant control must be practiced on an on-going basis in line with the requirements of Section 2(2) and Section 3 (2) the National Environmental Management: Biodiversity Act (NEM:BA), which obligates the landowner/developer to control IAPs on their property. Regular maintenance of sediment control dams must be undertaken during the construction / establishment period to ensure that these structures continue to function appropriately. <u>Monitoring</u> It will be important that long-term monitoring of the potential freshwater ecosystem impacts be undertaken to proactively to identity any environmental issues and impacts that may arise as a result of the operational phase of the project. The following key aspects should be monitored: • Erosion and/or sedimentation in the watercourse's downslope of the mining activities (i.e. W2 and W3). • Erosion and/or sedimentation in the watercourses upstream and downstream of any access/service road crossings. • Evidence of water quality issues in affected watercourses. • Presence of alien invasive plants. • If applicable, water quality monitoring for any PCDs, as well as for any discharges from PCDs into natural watercourses. Evidence of erosion and/or sedimentation in watercourses affected by these discharges.	<u>Impact management outcome</u>: Low residual negative risk/impact following the implementation of mitigation measures. <u>Standard to be achieved</u>: - NEMA EIA Regulations - NWA Section 21	- Rehabilitation and monitoring should take place throughout construction and operational phases
7jj		Ecological connectivity and edge disturbance impacts	Long-term decrease in ecological connectivity between sections of watercourse unit on either side of the mining area, as well as an increase in edge disturbance.	W1, W2 and W3	Operational	- Minimize/reduce Remedy/ rehabilitate			
7k		Water pollution impacts	Pollution of downstream watercourse units due to the mishandling of hazardous substances and/or improper maintenance of machinery during operational phase e.g., oil and diesel leaks and spills.	W2 and W3	Operational	- Avoid/prevent - Minimize/reduce Remedy/ rehabilitate			
7l		Alteration of hydrological and geo-morphological processes	Erosion and/or sedimentation of watercourse units due to poor maintenance of stormwater infrastructure.	All watercourses	Operational	- Minimize/reduce Remedy/ rehabilitate			

No.	Aspect affected	Activity	Potential Impact		Phase	Mitigation type	Impact management actions / Mitigation measures	Impact management outcome/ Standard to be achieved	Time period for implementation
7m		Direct ecosystem modification or destruction / loss impacts	Direct disturbance and poor implementation of rehabilitation during the decommissioning and removal of infrastructure, and use of access road by heavy machinery.	W1, W2 and W3	Decommissioning	- Minimize/reduce Remedy/ rehabilitate	<u>Wetland rehabilitation</u> A detailed watercourse and wetland rehabilitation plan must be prepared to inform the dismantling and decommissioning of structures within the watercourses and wetlands. <u>Ecological monitoring</u> It will be important that long-term monitoring of the potential freshwater ecosystem impacts be undertaken to proactively to identity any environmental issues and impacts that may arise as a result of the decommissioning and post-closure project. The following key aspects should be monitored: • A photographic record of the state of the watercourse prior to the commencement of decommissioning must be kept for reference and rehabilitation monitoring purposes. • During decommissioning: ○ Erosion and/or sedimentation in the watercourse's downslope of the mining activities (i.e. W2 and W3). ○ Erosion and/or sedimentation in the watercourses upstream and downstream of any access/service road crossings. ○ Presence of alien invasive plants. ○ Rehabilitation and re-vegetation methods and success. ○ Once the construction rehabilitation has been completed, the ECO should conduct a close out site audit after a reasonable period to allow for vegetation growth / establishment. After decommissioning: ○ Stream water quality. ○ Evidence of seepage. ○ Evidence of erosion and/or sedimentation in affected watercourses. ○ Evidence of water quality issues in affected watercourses. ○ Presence of alien invasive plants.	<u>Impact management outcome</u>: Low residual negative risk/impact following the implementation of mitigation measures. <u>Standard to be achieved</u>: - NEMA EIA Regulations - NWA Section 21	- Watercourse and Wetland rehabilitation plan to be compiled and approved prior to the decommissioning phase. - Ecological monitoring prior, during and after decommissioning.
7n		Alteration of hydrological and geo-morphological processes	Erosion and/or sedimentation of watercourse units due to decommissioning, excavation and removal of infrastructure, use of access road by heavy machinery, and poor implementation of rehabilitation.	W1, W2 and W3	Decommissioning	- Minimize/reduce Remedy/ rehabilitate			
7o		Ecological connectivity and edge disturbance impacts	Alteration of watercourse units downstream due to decommissioning, excavation and removal of infrastructure, use of access road by heavy machinery, and poor implementation of rehabilitation. Increase in downstream flow.	W2, and W3	Decommissioning	- Minimize/reduce Remedy/ rehabilitate			
7p		Water pollution impacts	Temporary decrease in ecological connectivity between sections of watercourse unit on either side of the mine and access roads, as well as an increase in edge disturbance during decommissioning.	W1, W2 and W3	Decommissioning	- Minimize/reduce - Remedy/ rehabilitate			
8	Visual	Existing mining activities.	Visual impact of mining activities.		Operational	Control	No mitigation proposed.	*Outcome:* To limit visual impacts. *Standard:* National Environmental Management Act (NEMA) (Act 107 of 1998).	Operational phase

No.	Aspect affected	Activity	Potential Impact	Phase	Mitigation type	Impact management actions / Mitigation measures	Impact management outcome/ Standard to be achieved	Time period for implementation
9	Socio-economic	Existing mining activities.	Where possible, local contractors will be used for the mining activities. This will lead to a positive impact on the socio-economic aspect of the area that can create jobs opportunities and promote investments.	Operational	Control	• Ensure a transparent employment system is in place. • The beneficiaries of local economic opportunities must as far as possible be from the local community. • Develop a recruitment policy that allows equal opportunity to all people (woman, disabled) and give preference to local labour. • A complaints register should be kept, and the following should be recorded, investigated and feedback provided to complainants: o Name and surname of complainant, o Contact details of complainant, o Date of complaint, o Person or department responsible for complaint, o Actions for implementation (if any), o Date of implementation, o Date of feedback provided to complainant, and o Indication if complaint is closed or open.	*Outcome:* To maximise economic opportunities for local employment and development. Standard: Mineral and Petroleum Resources Development Act (MPRDA) (Act 28 of 2002). Social and Labour Plan.	Operational phase

1.5 Closure objectives and financial provision

1.5.1 Closure objectives identified

The following principles in regulation 56 of the Mineral and Petroleum Resources Development Act 28 OF 2002 governs mine closure:

"In accordance with applicable legislative requirements for mine closure, the holder of a prospecting right, mining right, retention permit or mining permit must ensure that -

- the closure of a prospecting or mining operation incorporates a process which must start at the commencement of the operation and continue throughout the life of the operation;
- risks pertaining to environmental impacts must be quantified and managed pro-actively, which includes the gathering of relevant information throughout the life of a prospecting or mining operation; in accordance with the provisions of the National Environmental Management Act, 1998, the Financial Provision Regulations, 2015 and the Environmental Impact Assessment Regulations, 2014.
- the safety and health requirements in terms of the Mine Health and Safety Act, 1996 (Act No. 29 of 1996) are complied with;
- residual and possible latent environmental impacts are identified and quantified; in accordance with the provisions of the National Environmental Management Act, 1998, the Financial Provision Regulations, 2015 and the Environmental Impact Assessment Regulations, 2014.
- the land is rehabilitated, as far as is practicable, to its natural state, or to a predetermined and agreed standard or land use which conforms with the concept of sustainable development; in accordance with the provisions of the National Environmental Management Act, 1998, the Financial Provision Regulations, 2015 and the Environmental Impact Assessment Regulations, 2014;
- and prospecting or mining operations are closed efficiently and cost effectively."

1.5.2 Confirm specifically that the environmental objectives in relation to closure have been consulted with landowner and interested and affected parties

This draft Section 24G EIAR / EMPr is made available to the public for review for a period thirty (30) days. The public is also encouraged to comment on sections of this report (with specific reference to the closure objectives as presented in Section 1.5.1 above), any aspect of the project and raise any concerns and / or issues they may have.

1.5.3 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 following information pertaining to financial closure liability was extracted from the *Financial Provision Calculation Compiled in Terms of The Mineral and Petroleum Resources Development Act* (ACT 28 OF 2002) compiled by Eco Partners 30 May 2019.

Concurrent rehabilitation is practiced by DMI Minerals during the mining operations. The rehabilitation process entails landscaping the filled quarries, cladding and vegetation of the total areas.

Concurrent rehabilitation is done in three phases:

- Dry Rehabilitation: All the dry rejects from the screening plant are returned immediately to the excavated areas as backfill.
- Wet Rehabilitation: All the fines reject from the treatment plant are pumped back into excavated areas, again as backfill and more importantly, as part of the mine's water reclamation/water recycle system.
- Topsoil Rehabilitation.

In terms of progress of rehabilitation as of May 2019 a summary is given in Table 27 below.

Table 27: Progress of rehabilitation (May 2019)

No	Area		Area in ha	Area in ha
1		Rehabilitated with vegetation cover	15.99 ha	
		Rehabilitated		16 ha
3				
		Maintenance		1 ha
2		Backfilled	7.12 ha	
4		90 % backfilled	1.1 ha	
Rehabilitation in Progress				8 ha

Source: Calculated from Google Earth Imagery using information obtained from DMI Minerals

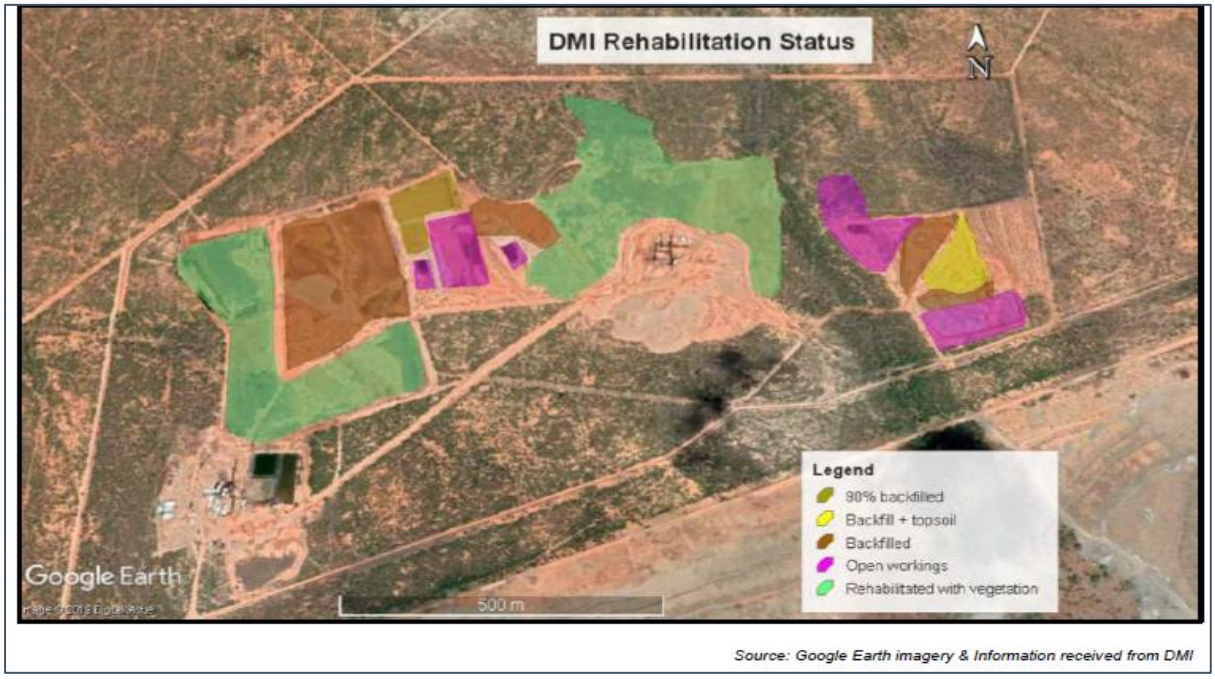

Figure 21: Rehabilitation status as of May 2019

1.6 Mechanisms for monitoring compliance

The mine currently has monitoring programmes in place that will continue to be implemented for the remaining LOM. In addition to the existing monitoring programmes, impacts identified in the impact assessment must be monitored to ensure the effective implementation of the management measures. Monitoring compliance falls within the mandate of the Mine Manager. Refer to the Table 28 below for the monitoring recommendations.

Table 28: Monitoring Recommendations

List of identified impacts which will require monitoring programmes	Functional requirements for the said monitoring programmes	Roles and responsibilities for the execution of the monitoring programmes	Time frames for monitoring and reporting
Ground water use	Monitoring for chemistry and water levels as per the current monitoring programme to continue (AGES, 2021).	Environmental / H&S / HR / Skills Development Manager	Daily consumption to be measured
Ground water quality		Environmental / H&S / HR / Skills Development Manager	Quarterly
Noise	The noise generated by the mining operation should be assessed.	Environmental / H&S / HR / Skills Development Manager	Once-off with commencement of mining activities. Additional monitoring dependant on results obtained.
Rehabilitation	The success of rehabilitation actions needs to be monitored.	Environmental / H&S / HR / Skills Development Manager	Monthly during ongoing rehabilitation then annually
Cultural & Heritage artefacts	The presence of cultural and heritage artefacts need to be monitored.	Contracted heritage practitioner	During mining phase. Once every two weeks for the first year and then once a month for the next two years
Auditing	Environmental compliance audits on the EMPr	External auditors	Annually

1.7 Programme for reporting on compliance

Unless otherwise instructed by the Competent Authority (in this case, the DMRE) or as a condition to the EA, environmental compliance audits on the EMPr will be undertaken annually, and the resultant audit reports will be submitted to the DMRE. The auditing process, as well as report format will comply with the requirements as contained in the EIA Regulations, GN R982, dated December 2014, as amended.

1.8 Environmental awareness plan

Environmental awareness will be conducted via a site induction process and via daily toolbox talks.

The Site Induction training will focus on the following:

- Discussion of environmental impacts.

- Waste management – the location of waste bins on site, the identification of general and hazardous waste and the separation of waste.
- Water usage – Conservation of water, correlation between water & erosion.
- Driving protocol – Pre-start vehicle checks prior to driving, speed on dirt roads.
- Environmental mitigation – Example no collection of wood, no open fires, no snaring of animals, no unnecessary destruction of natural vegetation, clean-up of hydrocarbon spills, etc; and
- Emergency procedure – Type of emergencies, type of alarms, emergency equipment, location of assembly point and identification of trained emergency personnel.

During the daily toolbox talks the following will be discussed:

- Any incidents that may have occurred the previous day.
- Mitigation requirements for the day.
- Status of housekeeping on site; and
- Ad hoc refresher in terms of emergency procedures.

1.9 Specific information required by the Competent Authority

The information, as presented in Table 29 below, will be required by the competent authority.

Table 29: Monitoring information required by the competent authority

Information	Frequency of submission
Quantum of financial provision	Annually
Annual rehabilitation plan	Annually
Environmental audit report on approved EIAR/EMPr and other environmental authorisations	Annually or as per auditing timeframe indicated in authorisation(s)
Surface water monitoring reports	As per IWUL
Groundwater monitoring reports	As per IWUL
Fall-out dust monitoring reports	As per the National Dust Control Regulations (GN827, 2013)

2. Undertaking

The EAP herewith confirms

- the correctness of the information provided in the reports ☒
- the inclusion of comments and inputs from stakeholders and I&APs; ☐
- the inclusion of inputs and recommendations from the specialist reports where relevant; ☒and
- the acceptability of the project in relation to the finding of the assessment and level of mitigation proposed; ☒

DRAFT FOR PUBLIC COMMENT

19 April 2022

Signature of EAP	**Date**

3. Declaration of independence

Shangoni hereby declares that it is an independent auditor in that it has no business, financial, personal, or other interest in this project in respect of which Shangoni is appointed. Furthermore, no circumstances exist that may compromise the objectivity of Shangoni, excluding fair remuneration for work performed in connection with this project.

Report compiled by:	**DRAFT FOR REVIEW**	**Report reviewed by:**	**DRAFT FOR REVIEW**
	Lee-Anne Fellowes		Ashley Miller
	EAPASAr: 2019/850		
	SACNASP: 115574		