

**IMERY'S REFRACTORY MINERALS SOUTH
AFRICA (PTY) LTD: ANNESLEY ANDALUSITE
MINE**

**Draft Environmental Impact Assessment Report and
Environmental Management Programme Report for the
relocation of the portion of D4134 Road and 22 kV
Powerline across Annesley Andalusite Mine**

DRAFT FOR PUBLIC COMMENT

Report date: November 2021

SHANGONI
Management Services (Pty) Ltd

Executive summary

Imerys Refractory Minerals South Africa (Pty) Ltd.: Annesley Andalusite Mine appointed Shangoni Management Services (Pty) Ltd. to undertake the necessary Environmental Authorisation application associated with the proposed relocation of the D4134 provincial road and 22 kV Eskom powerline (hereafter referred to as the “proposed project”), situated in the Greater Tubatse Local Municipality in Limpopo. The proposed relocation and associated activities are required for the mine to continue expanding mining operations towards the northern section of the approved mining area.

The proposed new location of the D4134 road and 22 kV powerline will extend over a dyke that is situated between two open mining pits. The mine will make use of existing overburden and waste rock dump material for the new road layout. Additional activities associated with the proposed relocation project include stormwater management channels and culverts. The relocation and associated activities trigger Listed Activities in terms of the Environmental Impact Assessment Regulation, Listing Notice 1 (GN R983 dated 2014, as amended), Listing Notice 2 (GN R984 dated 2014, as amended) and Listing Notice 3 (GN R985 dated 2014, as amended). As a result, the mine is required to undertake a full Scoping- and Environmental Impact Assessment (“S&EIA”) process. The use of waste rock dump- and overburden material to construct the road is identified as a waste listed activity in terms of the NEM:WA, 2008 as well as the GN 921, and requires a Waste Management Licence as a result of the triggered activities. Due to the proximity of the proposed activities to drainage lines as well as the nature of the construction activities (using waste rock dump and dust suppression with dirty water), a Water Use Licence application will also be undertaken as part of this project.

The application for environmental authorisation and the draft scoping report was submitted to the DMRE on 13 July 2021. The final scoping report was subsequently submitted to the DMRE on 26 August 2021. The application form and the draft scoping report was acknowledged by the DMRE on 1 September 2021. This report is the draft Environmental Impact Assessment Report and Environmental Management Programme Report (“EIAR / EMPr”) for the proposed D4134 road and 22 kV powerline relocation project and will be made available for public comment for a period of 30 days.



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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

Name of operation	Annesley Andalusite Mine ("AAM")
Applicant	Imerys Refractory Minerals South Africa (Pty) Ltd: Annesley Andalusite Mine
Project title	Annesley Andalusite Mine proposed D4134 Road and 22 kV Powerline Relocation Project ("the proposed project")
Postal address	P.O. Box 8118, Centurion, South Africa
Responsible person	Ross Lewis
Telephone no.	013 216 2923 / 083 576 9057
e-mail address	ross.lewis@imerys.com
Company registration no.	1997/010849/07

1.2 Details of the environmental assessment practitioner

EAP	Shangoni Management Services (Pty) Ltd.: Renate Steffens
Tel No	(012) 807 7036
Fax No	(012) 807 1014
E-mail Address	renate@shangoni.co.za

1.3 Expertise of the environmental assessment practitioner

Name and Surname	Qualifications and summary of experience
Renate Steffens	Renate Steffens is a Senior Environmental Scientist with more than 6 years' experience in drafting Basic Assessment Reports, Scoping Reports, Environmental Impact Assessments (EIA), Environmental Management Programme Reports (EMPr), Integrated Water and Waste Management Plans (IWWMP) and Integrated Water Use Licence Applications (IWULA). Renate also has the following experience in auditing: External Water Use Licence audits, Environmental Authorisation audits and Environmental Management Programme audits. Renate has also gained valuable experience in Geographic Information Systems (GIS) in compiling regional, locality and infrastructure maps and mine plans.



2 Description of the property

Table 1: Description of the properties applicable to the proposed project

Farm name	Remaining Extent of Farm Annesley 109 KT
Magisterial district	Greater Tubatse Local Municipality, Sekhukhune District Municipality
Distance and direction from nearest town	3 km West from Penge 35 km North from Burgersfort
21-digit Surveyor General Code	Road and powerline relocation: TOKT00000000010900000

3 Locality of the project

3.1 Magisterial district and administrative boundaries

Annesley Andalusite Mine (“AAM”) falls within the administrative boundaries presented in Table 2.

Table 2: Administrative boundaries

Province	Limpopo Province
District municipality	Sekhukhune District Municipality
Local municipality	Greater Tubatse 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 (Lydenburg)
Catchment zone	Olifants River Catchment
Sub-catchments	B71
Water Management Area (“CMA”)	Olifants
Quaternary catchment	B71F

3.2 Location of the proposed activities

The proposed project will take place within the existing AAM Mining Right boundary, located in the Limpopo Province of South Africa. AAM is located approximately 35 km north of Burgersfort (Figure 1). The proposed project falls within the remaining extent of Farm Annesley 109 KT. Refer to Table 1 above for property details as well as Figure 2 for an illustration of the property applicable to the proposed project.



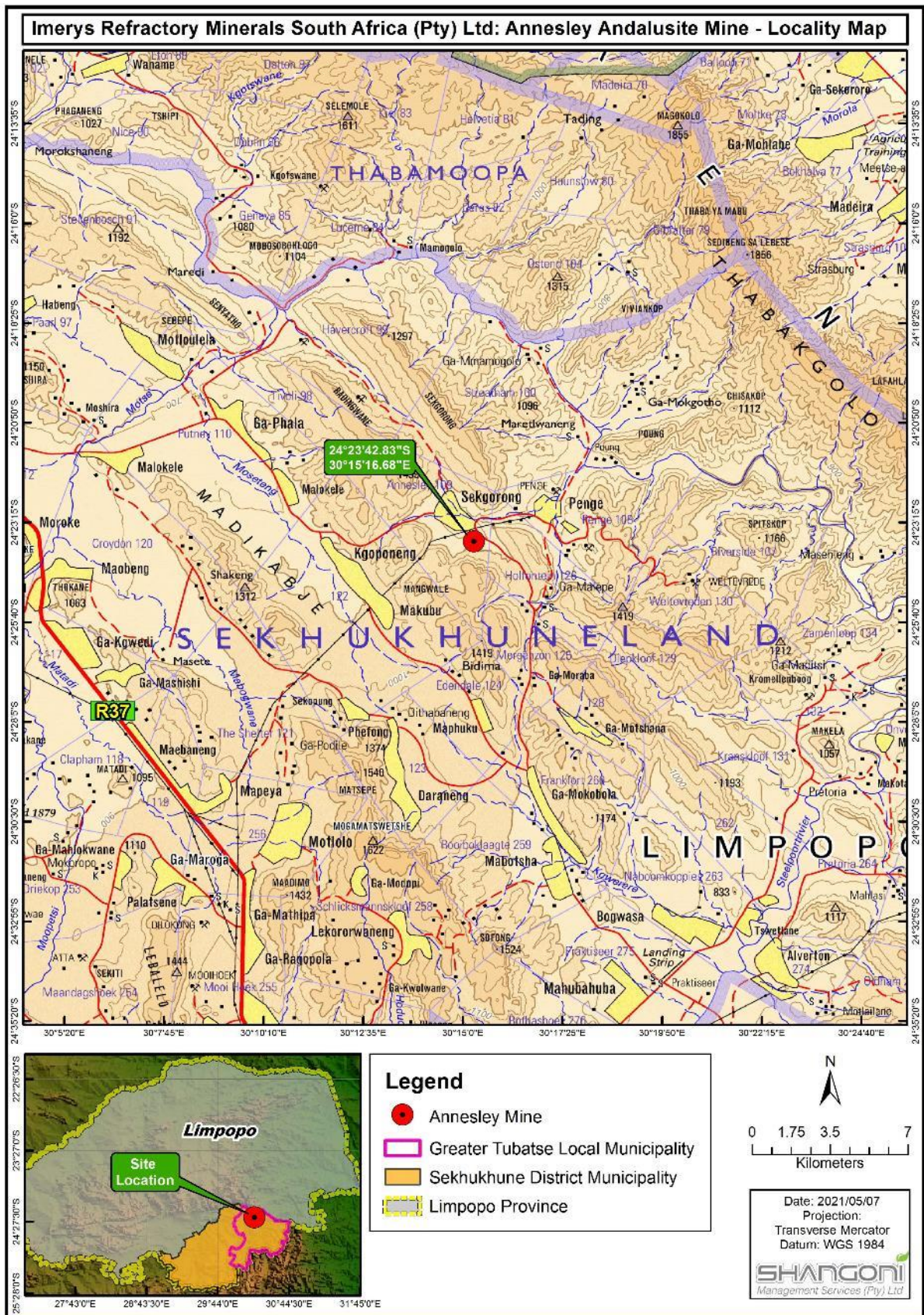


Figure 1: Locality of Annesley Andalusite Mine.

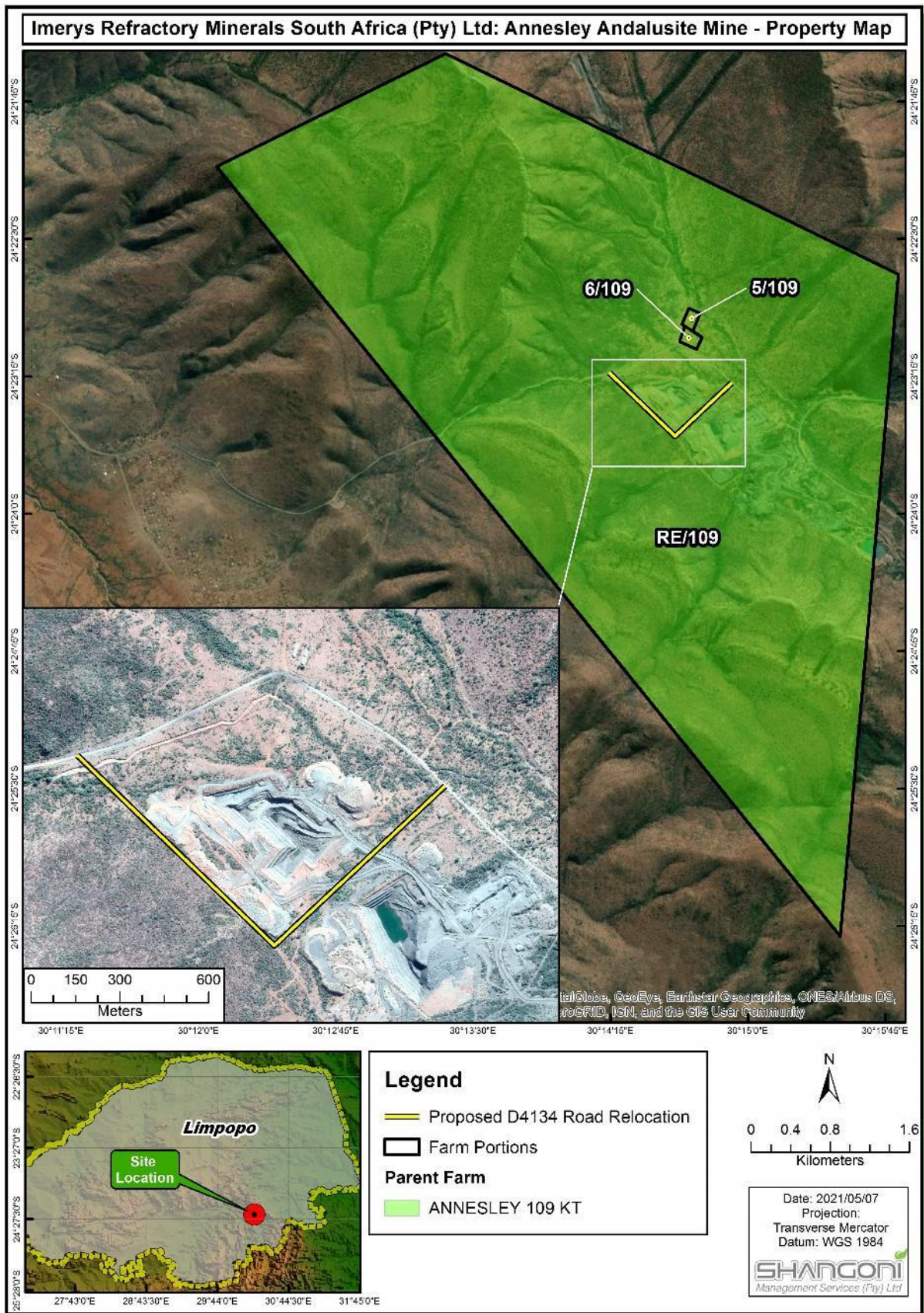


Figure 2: Affected properties associated with the proposed project.



4 Description of the scope of the proposed activity

AAM has been mining the Timeball Hill formation in the Segorong area since 1990. The current approved mine plan incorporates a bench mining approach, which advances in a northern direction due to the lateral extension of the ore body. An existing provincial road (D4134) and 22 kV powerline traverses the ore body approximately 200 m north-west of the current opencast quarry pit. Due to the bench mining method, and progression to the north, the operation will inevitably extend over the D4134 road and 22 kV powerline. As a result, the mine proposes to relocate the D4134 road and 22 kV powerline to access the reserves in the north while still allowing the public to utilise the D4134 road. The proposed project will also include the construction of channels / trenches and culverts for effective management of stormwater. Backfilling will continuously take place as the open pit progresses to the north. The existing river diversion, also located north of the pit will be decommissioned and the natural drainage line will be restored once the pit has been backfilled and rehabilitated.

The proposed project will include the following main activities and facilities:

- Relocation of the existing D4134 provincial road.
- Relocation of the existing 22 kV Eskom powerline.
- Stormwater management infrastructure (channels / trenches and culverts).

The proposed relocated D4134 road will be 8 m in width, approximately 1600 m in length and will include a reserve of 20 m. The existing 22 kV electric powerline adjacent to the provincial road will be relocated to run parallel with the new road. The powerline offset will be 10 m from the centre of the D4134 road. The mine will make use of waste rock dump- and overburden material, currently stockpiled on site, to construct the road.

The proposed new D4134 road will cross the existing river diversion. Culverts are already in place where an existing narrow service road crosses the river diversion. The proposed new D4134 road will partially encroach on the existing service road footprint. Additional culverts will be constructed where the proposed new D4134 road will cross drainage lines. A stormwater design report detailing stormwater management infrastructure and measures have been compiled and are included in this EIAR / EMP. Figure 3 below depicts the layout for the proposed project.





Figure 3: Layout map of the proposed D4134 road (Preferred option) and 22 kV powerline relocation including additional stormwater management infrastructure



4.1 Listed and specified activities applied for

The proposed project will trigger the following authorisations:

- An Environmental Authorisation (“EA”) for listed activities contained in the Environmental Impact Assessment Regulations Listing Notices of 2014, as amended and published in terms of sections 24(2), 24 (5), 24D, 44 and 47(A) (1) (b) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (“NEMA”).
- Waste Management Licence (“WML”) in terms of section 19 of the National Environmental Management Waste Act (Act No. 59 of 2008) (“NEM:WA”) and the List of Waste Management Activities (“GN.R 921”) dated 29 November 2013, as amended.
- 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”).

For the EA and WML applications, a Scoping and Environmental Impact Assessment (“S&EIR”) is conducted in accordance with the NEMA and the Environmental Impact Assessment Regulations, 2014 (GN R982 of 4 December 2014) (“GN R982”), as amended. Listed Activities have been identified and provided in Table 3.

An exemption from the requirements of the regulations on use of water for mining and related activities aimed at the protection of water resources (“GN 704”), dated 1999 will also be submitted as part of the proposed project (forming part of the WUL application).



Table 3: Activities and listed activities associated with the proposed project

Name of Activity	Aerial Extent of Activity Ha or m ²	Listed/ Waste Activity (Mark with X)	Applicable Listing Notice (GN R983, GN R984, GN R985) and applicable Waste Management Activity (GN 921)
Site clearing and construction of the facilities			
Construction of a new road (relocation of and existing road)	3.3 ha (Total extent including site clearance for road, powerline and stormwater management infrastructure)	X	<p><u>Activity 12 of Listing Notice 1 (GNR 983 of GG 40772 of 7 April 2017):</u></p> <p><i>The development of-</i></p> <ul style="list-style-type: none"> <i>(i) canals exceeding 100 square metres in size;</i> <i>(ii) channels exceeding 100 square metres in size;</i> <i>(iii) bridges exceeding 100 square metres in size;</i> <i>(iv) dams, where the dam, including infrastructure and water surface area, exceeds 100 square metres in size;</i> <i>(v) weirs, where the weir, including infrastructure and water surface area, exceeds 100 square metres in size;</i> <i>(vi) bulk storm water outlet structures exceeding 100 square metres in size;</i> <i>(vii) marinas exceeding 100 square metres in size;</i> <i>(viii) jetties exceeding 100 square metres in size;</i> <i>(ix) slipways exceeding 100 square metres in size;</i> <i>(x) buildings exceeding 100 square metres in size;</i> <i>(xi) boardwalks exceeding 100 square metres in size; or</i> <i>(xii) infrastructure or structures with a physical footprint of 100 square metres or more;</i> <p><i>where such development occurs-</i></p> <ul style="list-style-type: none"> <i>(a) within a watercourse;</i> <i>(b) in front of a development setback; or</i> <i>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;</i> <p><i>excluding-</i></p> <ul style="list-style-type: none"> <i>(aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour;</i>



Name of Activity	Aerial Extent of Activity Ha or m ²	Listed/ Waste Activity (Mark with X)	Applicable Listing Notice (GN R983, GN R984, GN R985) and applicable Waste Management Activity (GN 921)
			<p><i>(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;</i></p> <p><i>(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;</i></p> <p><i>(dd) where such development occurs within an urban area; or</i></p> <p><i>(ee) where such development occurs within existing roads or road reserves.</i></p> <p><u>Activity 19 of Listing Notice 1 (GNR 983 of GG 40772 of 7 April 2017):</u></p> <p><i>The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;</i></p> <p><i>but excluding where such infilling, depositing, dredging, excavation, removal or moving—</i></p> <p><i>(a) will occur behind a development setback;</i></p> <p><i>(b) is for maintenance purposes undertaken in accordance with a maintenance management plan;</i></p> <p><i>(c) falls within the ambit of activity 21 in this Notice, in which case that activity applies;</i></p> <p><i>(d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or</i></p> <p><i>(e) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.</i></p> <p><u>Activity 31 of Listing Notice 1 (GNR 983 of GG 40772 of 7 April 2017):</u></p> <p><i>The decommissioning of existing facilities, structures or infrastructure for-</i></p> <p><i>(i) any development and related operation activity or activities listed in this Notice, Listing Notice 2 of 2014 or Listing Notice 3 of 2014;</i></p> <p><i>(ii) any expansion and related operation activity or activities listed in this Notice, Listing Notice 2 of 2014 or Listing Notice 3 of 2014;</i></p> <p><i>(iii) any development and related operation activity or activities and expansion and related operation activity or activities listed in this Notice, Listing Notice 2 of 2014 or Listing Notice 3 of 2014;</i></p> <p><i>(iv) any phased activity or activities for development and related operation activity or expansion or related operation activities listed in this Notice or Listing Notice 3 of 2014; or</i></p>



Name of Activity	Aerial Extent of Activity Ha or m ²	Listed/ Waste Activity (Mark with X)	Applicable Listing Notice (GN R983, GN R984, GN R985) and applicable Waste Management Activity (GN 921)
			<p>(v) any activity regardless the time the activity was commenced with, where such activity:</p> <p>(a) is similarly listed to an activity in (i), (ii), (iii), or (iv) above; and</p> <p>(b) is still in operation or development is still in progress;</p> <p>excluding where-</p> <p>(aa) activity 22 of this notice applies; or</p> <p>(bb) the decommissioning is covered by part 8 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the National Environmental Management: Waste Act, 2008 applies.</p> <p><u>Activity 6 of Listing Notice 2 (GNR 984 of GG 40772 of 7 April 2017):</u></p> <p>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—</p> <p>(i) activities which are identified and included in Listing Notice 1 of 2014;</p> <p>(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;</p> <p>(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</p> <p>(iv) where the development is directly related to aquaculture facilities or infrastructure where the wastewater discharge capacity will not exceed 50 cubic metres per day.</p> <p><u>Activity 27 of Listing Notice 2 (GNR 984 of GG 40772 of 7 April 2017):</u></p> <p>The development of-</p> <p>(i) a national road as defined in section 40 of the South African National Roads Agency Limited and National Roads Act, 1998 (Act No. 7 of 1998);</p> <p>(ii) a road administered by a provincial authority;</p> <p>(iii) a road with a reserve wider than 30 metres; or</p> <p>(iv) a road catering for more than one lane of traffic in both directions;</p>



Name of Activity	Aerial Extent of Activity Ha or m ²	Listed/ Waste Activity (Mark with X)	Applicable Listing Notice (GN R983, GN R984, GN R985) and applicable Waste Management Activity (GN 921)
			<p><u>Activity 12 of Listing Notice 3 (GNR 985 of GG 40772 of 7 April 2017):</u></p> <p><i>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-</i></p> <p><i>e. Limpopo</i></p> <p><i>i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004;</i></p> <p><i>ii. Within critical biodiversity areas identified in bioregional plans; or</i></p> <p><i>iii. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning.</i></p> <p><u>Activity 14 of Listing Notice 3 (GNR 985 of GG 40772 of 7 April 2017):</u></p> <p><i>The development of—</i></p> <p><i>(ii) infrastructure or structures with a physical footprint of 10 square metres or more;</i></p> <p><i>where such development occurs—</i></p> <p><i>(a) within a watercourse;</i></p> <p><i>e. Limpopo</i></p> <p><i>i. Outside urban areas:</i></p> <p><i>(aa) A protected area identified in terms of NEMPAA, excluding conservancies;</i></p> <p><i>(ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.</i></p> <p><u>Activity 9 of Category B of GN No. 921 of 29 November 2013 (amendment GN R 633, July 2015):</u></p> <p><i>The disposal of inert waste to land in excess of 25 000 tons, excluding the disposal of such waste for the purposes of levelling and building which has been authorised by or under other legislation.</i></p>



Name of Activity	Aerial Extent of Activity Ha or m ²	Listed/ Waste Activity (Mark with X)	Applicable Listing Notice (GN R983, GN R984, GN R985) and applicable Waste Management Activity (GN 921)
			<p>Activity 11 of Category B of GN No. 921 of 29 November 2013 (amendment GN R 633, July 2015):</p> <p><i>The establishment or reclamation of a residue stockpile or residue deposit resulting from activities which require a mining right, exploration right or production right in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).</i></p>
<p>Stormwater management infrastructure: Channels / trenches and culverts</p>	<p>3.3 ha (Total extent including site clearance for road, powerline and stormwater management infrastructure)</p>	<p>-</p>	<p>Activity 12 of Listing Notice 1 (GNR 983 of GG 40772 of 7 April 2017):</p> <p><i>The development of-</i></p> <ul style="list-style-type: none"> <i>(i) canals exceeding 100 square metres in size;</i> <i>(ii) channels exceeding 100 square metres in size;</i> <i>(iii) bridges exceeding 100 square metres in size;</i> <i>(iv) dams, where the dam, including infrastructure and water surface area, exceeds 100 square metres in size;</i> <i>(v) weirs, where the weir, including infrastructure and water surface area, exceeds 100 square metres in size;</i> <i>(vi) bulk storm water outlet structures exceeding 100 square metres in size;</i> <i>(vii) marinas exceeding 100 square metres in size;</i> <i>(viii) jetties exceeding 100 square metres in size;</i> <i>(ix) slipways exceeding 100 square metres in size;</i> <i>(x) buildings exceeding 100 square metres in size;</i> <i>(xi) boardwalks exceeding 100 square metres in size; or</i> <i>(xii) infrastructure or structures with a physical footprint of 100 square metres or more;</i> <p><i>where such development occurs-</i></p> <ul style="list-style-type: none"> <i>(a) within a watercourse;</i> <i>(b) in front of a development setback; or</i> <i>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;</i> <p><i>excluding-</i></p>



Name of Activity	Aerial Extent of Activity Ha or m ²	Listed/Waste Activity (Mark with X)	Applicable Listing Notice (GN R983, GN R984, GN R985) and applicable Waste Management Activity (GN 921)
			<p>(aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour;</p> <p>(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;</p> <p>(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;</p> <p>(dd) where such development occurs within an urban area; or</p> <p>(ee) where such development occurs within existing roads or road reserves.</p> <p><u>Activity 19 of Listing Notice 1 (GNR 983 of GG 40772 of 7 April 2017):</u></p> <p>The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;</p> <p>but excluding where such infilling, depositing, dredging, excavation, removal or moving—</p> <p>(a) will occur behind a development setback;</p> <p>(b) is for maintenance purposes undertaken in accordance with a maintenance management plan;</p> <p>(c) falls within the ambit of activity 21 in this Notice, in which case that activity applies;</p> <p>(d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or</p> <p>(e) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.</p> <p><u>Activity 14 of Listing Notice 3 (GNR 985 of GG 40772 of 7 April 2017):</u></p> <p>The development of—</p> <p>(ii) infrastructure or structures with a physical footprint of 10 square metres or more;</p> <p>where such development occurs—</p> <p>(a) within a watercourse;</p> <p>e. Limpopo</p> <p>i. Outside urban areas:</p>



Name of Activity	Aerial Extent of Activity Ha or m ²	Listed/Waste Activity (Mark with X)	Applicable Listing Notice (GN R983, GN R984, GN R985) and applicable Waste Management Activity (GN 921)
			<p>(aa) A protected area identified in terms of NEMPAA, excluding conservancies;</p> <p>(ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.</p>
Relocation of an existing 22 kV powerline	3.3 ha (Total extent including site clearance for road, powerline and stormwater management infrastructure)	N/A	<p><u>Activity 19 of Listing Notice 1 (GNR 983 of 4 December 2014, amended 2017):</u></p> <p>The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;</p> <p>but excluding where such infilling, depositing, dredging, excavation, removal or moving—</p> <p>(a) will occur behind a development setback;</p> <p>(b) is for maintenance purposes undertaken in accordance with a maintenance management plan;</p> <p>(c) falls within the ambit of activity 21 in this Notice, in which case that activity applies;</p> <p>(d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or</p> <p>(e) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.</p> <p><u>Activity 31 of Listing Notice 1 (GNR 983 of GG 40772 of 7 April 2017):</u></p> <p>The decommissioning of existing facilities, structures or infrastructure for-</p> <p>(i) any development and related operation activity or activities listed in this Notice, Listing Notice 2 of 2014 or Listing Notice 3 of 2014;</p> <p>(ii) any expansion and related operation activity or activities listed in this Notice, Listing Notice 2 of 2014 or Listing Notice 3 of 2014;</p> <p>(iii) any development and related operation activity or activities and expansion and related operation activity or activities listed in this Notice, Listing Notice 2 of 2014 or Listing Notice 3 of 2014;</p> <p>(iv) any phased activity or activities for development and related operation activity or expansion or related operation activities listed in this Notice or Listing Notice 3 of 2014; or</p> <p>(v) any activity regardless the time the activity was commenced with, where such activity:</p> <p>(a) is similarly listed to an activity in (i), (ii), (iii), or (iv) above; and</p>



Name of Activity	Aerial Extent of Activity Ha or m ²	Listed/ Waste Activity (Mark with X)	Applicable Listing Notice (GN R983, GN R984, GN R985) and applicable Waste Management Activity (GN 921)
			<p><i>(b) is still in operation or development is still in progress;</i></p> <p><i>excluding where-</i></p> <p><i>(aa) activity 22 of this notice applies; or</i></p> <p><i>(bb) the decommissioning is covered by part 8 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the National Environmental Management: Waste Act, 2008 applies.</i></p> <p><u>Activity 12 of Listing Notice 3 (GNR 985 of GG 40772 of 7 April 2017):</u></p> <p><i>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-</i></p> <p><i>e. Limpopo</i></p> <p><i>i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004;</i></p> <p><i>ii. Within critical biodiversity areas identified in bioregional plans; or</i></p> <p><i>iii. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning.</i></p> <p><u>Activity 14 of Listing Notice 3 (GNR 985 of GG 40772 of 7 April 2017):</u></p> <p><i>The development of—</i></p> <p><i>(ii) infrastructure or structures with a physical footprint of 10 square metres or more;</i></p> <p><i>where such development occurs—</i></p> <p><i>(a) within a watercourse;</i></p> <p><i>e. Limpopo</i></p> <p><i>i. Outside urban areas:</i></p> <p><i>(ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.</i></p>



4.2 Description of the proposed activities

As mentioned in section 4.1 above, the proposed project will include the following main activities and facilities and will be discussed in more detail below:

- Relocation of the existing D4134 provincial road.
- Relocation of the existing 22 kV Eskom powerline.
- Stormwater management infrastructure (channels / trenches and culverts).

4.2.1 Relocation of the existing D4134 provincial road

The proposed new location of the D4134 road will extend over an ore body. The construction of the proposed D4134 road at the new location will include the following steps:

- Site establishment and demarcation of the proposed new location of the D4134 road footprint.
- Establishing of contractor's camps (if applicable).
- The clearing of approximately 4.86ha of vegetation and stripping of topsoil within the designated footprint area.
- Reshaping of existing waste rock dumps and overburden stockpiles that extends over the proposed relocated D4134 road footprint.
- Levelling, sloping and compaction of the subgrade soil with equipment and vehicles already available on the mining site.
- Construction of the embankment and surface layer with existing waste rock dump and overburden material on site.
- The road will be 8 m in width, 1600 m in length and include a reserve of 20 m.

4.2.2 Relocation of the existing 22 kV Eskom powerline

The existing 22 kV electric powerline situated adjacent to the provincial road will be relocated to run parallel with the new road. The powerline relocation activities will include the following:

- The powerline will be located within the 20 m road reserve, with a 10 m offset from the road centre. As a result, the footprint area of the relocated 22 kV will be cleared as part of the vegetation clearance for the D4134 road relocation.
- Shallow excavations will be made with excavators or alternative mining equipment and machinery for pylon placement.
- The total area of disturbance per pylon site will be less than 5 m².

4.2.3 Stormwater management infrastructure (channels / trenches and culverts)

The proposed new D4134 road will cross the existing river diversion. Culverts are already in place where an existing narrow service road crosses the river diversion. The proposed new D4134 road will partially encroach on the existing service road footprint. Additional culverts will be constructed where the proposed new D4134 road will cross drainage lines. A surface water assessment detailing



recommended stormwater management infrastructure and measures to be implemented has been compiled and attached under Annexure D1 of this EIAR / EMPr. Pipe culverts and stormwater channels will be designed to accommodate the 1 in 20-year flood event. Culvert designs are attached as Annexure A2 – A4.

Figure 4 depicts the proposed stormwater management infrastructure relative to the existing stormwater management infrastructure, drainage lines and runoff direction.

4.2.4 Waste classification and characterisation

The following information was obtained from the report *Imerys Refractory Minerals Annesley Andalusite Mine Waste Assessment Report*, dated July 2018 and prepared by Aquatico and refers to the waste material that will be used to construct the relocated D4134 road.

The aim of the assessment was to establish background qualities of the natural geological formations in the pit area, as well as water quality from a single borehole in the vicinity. These qualities were compared against qualities obtained for the waste streams (tailings & waste rock dump) that are used to backfill the quarry.

Analyses were performed in alignment with the stipulations found in the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008), GG36784, GNR 635 National Norms & Standards for Assessment of Waste for Disposal to Landfill (2013). The investigation focussed on the GNR 990 (2018) amendments to the regulations regarding the planning and management of residue stockpiles & residue deposits, 2015.

In summary, both waste streams (tailings and waste rock dump) are low risk waste. Their qualities correlate well with natural geological findings and impact resulting from disposing this waste into the quarries should be negligible based on the array of variables and testing standards used should leachable concentrations remain stable.

Based on this assessment, the impact of using waste rock dump and overburden material to construct the relocated D4134 road should also be negligible. Yet, to ensure compliance with the NEMWA, 2008, this proposed project includes an application for a Waste Licence for the disposal of overburden and waste rock dump material on land.



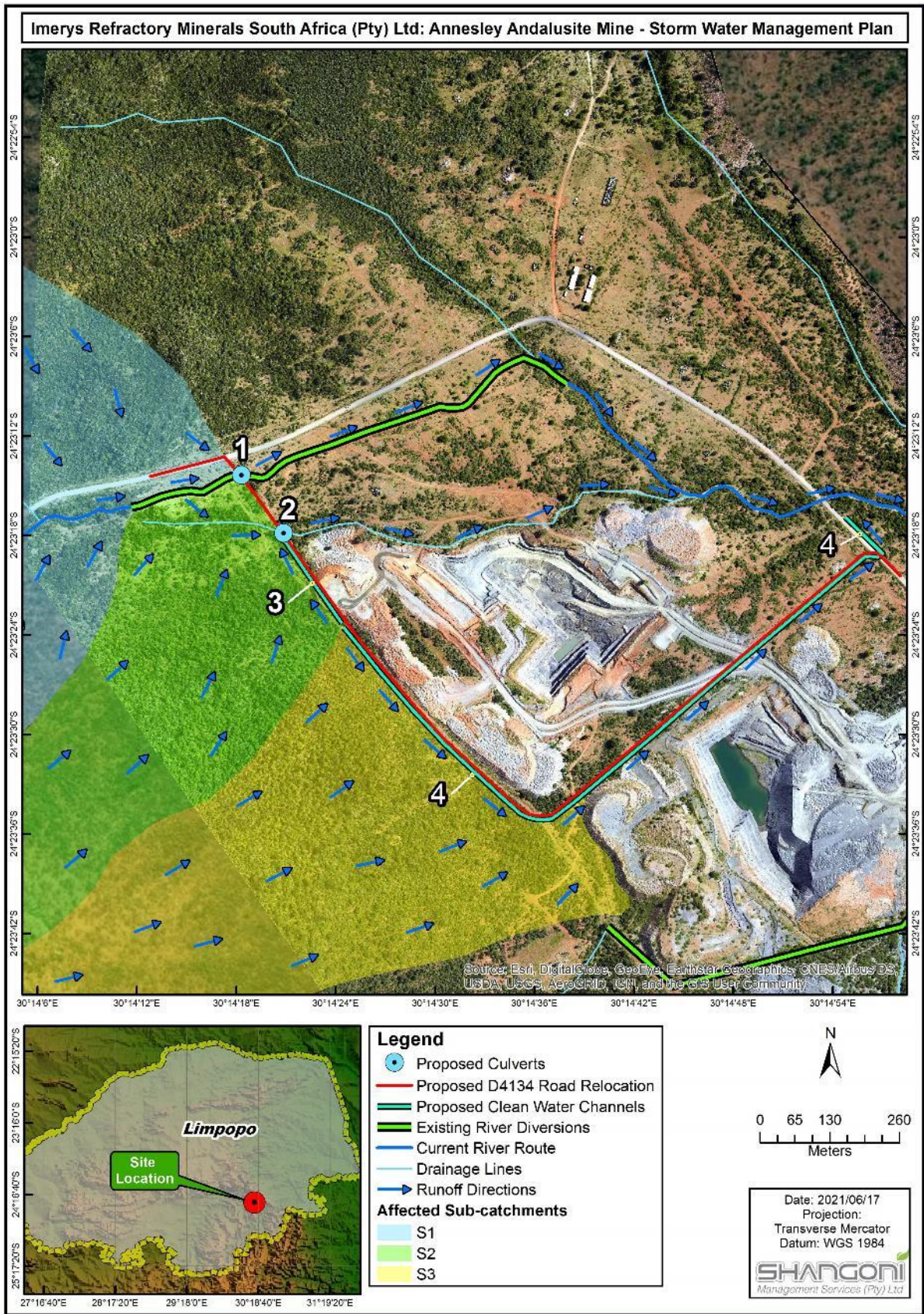


Figure 4: Existing and proposed stormwater management infrastructure associated relative to drainage lines and runoff directions.



5 Policy and legislative context

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

Table 4: Policy and legislative context

Applicable Legislation and Guidelines used to compile the Report	Compliance and response of the proposed 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 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 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 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").
The Environmental Impact Assessment Regulations (GN R982 dated 2014, as amended).	The 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 1. (GN R983 dated 2014, as amended).	Activity 12, 19 and 31 of Listing Notice 1 are applied for as part of the proposed project.
The Environmental Impact Assessment Regulation. Listing Notice 2. (GN R984 dated 2014, as amended).	Activity 6 and 27 of Listing Notice 2 are applied for as part of the proposed project.
The Environmental Impact Assessment Regulation. Listing Notice 3. (GN R985 dated 2014, as amended).	Activity 4, 12 and 14 of Listing Notice 3 are applied for as part of the proposed project.
Integrated Environmental Management Guideline: Guideline on Need and Desirability (2017).	The need and desirability were assessed for the proposed project.
Mining and Biodiversity Guideline: Mainstreaming biodiversity into the mining sector.	Biodiversity related to the proposed project was considered when the preferred site and alternatives were considered.
The National Water Act (Act No. 36 of 1998, as amended).	The proposed project will require a Water Use Licence ("WUL") for the following:



Applicable Legislation and Guidelines used to compile the Report	Compliance and response of the proposed project.
	<p>Section 21 (c) and (i) water uses for the construction of a road and powerline within 500 m of a watercourse. In addition, channels and trenches will divert the natural flow of water which constitutes a water use in terms of the Section 21 (c) and (i) of the NWA. Culverts are proposed where the road is expected to cross a drainage line.</p> <p>A Section 21 (a) and (g) water use in terms of the NWA (1998) for dewatering pit water as a source of dust suppression during the construction phase. The use of waste rock dump and overburden material for the construction of the new road also requires licensing in terms of Section 21 (g) of the NWA (1998).</p>
<p>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).</p>	<p>Stormwater management measures will be implemented at the project area. Exemption for the requirements of regulations 4, 5, 6, 7 and 10 of GN R704 will also be applied for due to the use of waste rock dump- and overburden material for the construction of the road, the proximity of the proposed road to existing watercourses as well as the fact that the culverts will only be designed to accommodate the 1 in 20-year floods.</p>
<p>The National Environmental Management: Biodiversity (Act 10 of 2004, as amended).</p>	<p>Biodiversity and ecological sensitive areas were considered to the proposed project and the alternatives considered.</p>
<p>Alien and Invasive Species Regulations (GN R598 dated 2014).</p>	<p>The mine is recommended to continue to implement an alien and invasive species eradication programme within the Mining Rights boundary throughout the construction phase of the proposed project.</p>
<p>Conservation of Agricultural Resources (Act 43 of 1983).</p>	<p>Erosion potential will be assessed and mitigated (in accordance with this act) during the construction phase of the proposed project.</p>
<p>The National Environmental Management: Air Quality (Act 39 of 2004, as amended).</p>	<p>No Atmospheric Emissions Licence is required for the proposed project.</p>
<p>SABS Code of Practice 0103 of 2008: The measurement and rating of environmental noise with respect to land use, health, annoyance and to speech communication.</p> <p>SABS Code of Practice 0328 of 2008: Environmental Noise Impact Assessments.</p>	<p>The SABS Code of Practice 0103 will be taken into account when the mitigation measures for the proposed project are identified.</p>



Applicable Legislation and Guidelines used to compile the Report	Compliance and response of the proposed project.
National Environmental Management: Waste Act (Act No. 59 of 2008, as amended).	<p>The use of waste rock dump- and overburden material to construct the road is identified as a waste listed activity in terms of the NEM:WA, 2008 and requires a Waste Management Licence as a result of the triggered activities.. The activity applied for in terms of NEM:WA, 2008 - GN 921 includes Activity 9 in Category B: <i>The disposal of inert waste to land in excess of 25 000 tons, excluding the disposal of such waste for the purposes of levelling and building which has been authorised by or under other legislation.</i>"</p> <p>The proposed activity also includes Activity 11 in Category B: <i>The establishment or reclamation of a residue stockpile or residue deposit resulting from activities which require a mining right, exploration right or production right in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).</i></p>
National Heritage Resources Act (Act No. 25 of 1999, as amended).	No archaeological or historical sites are anticipated to be affected by the proposed project. Should any sites be discovered during the construction phase, activities should cease, and the relevant authorities should be notified.
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.
Integrated Environmental Management Information Series. Criteria for determining alternatives in EIA.	Alternatives were assessed for the proposed project in section 7.1 of this EIAR / EMPr.
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 proposed project.



6 Need and desirability of the proposed 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 proposed project would have on the local, regional and even where applicable, the national community. It is, therefore, important to compare the need for the proposed 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 proposed project, the location of the project has already been established as the AAM is an existing mining operation with the relevant authorisation in place to continue mining towards the northern section of the boundary. As a result, the provincial road D4134 will need to be relocated. Alternative relocation layout options were considered and are discussed in section 7.1 of this report. The Desirability of this project is, therefore, related strongly to the Need for the project.

The guideline poses a series of questions that should be considered in order to demonstrate the need and desirability of the proposed 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 baseline specialist studies (Wetland delineation and GN 509 Risk Assessment, Surface water Assessment and Traffic Impact Study) as well as the consultation of previous specialist studies undertaken for the mine.
- Assessment of ecological related impacts:
 - Any disturbances and / or enhancements of ecosystems, as well as any possible pollution or degradation of the biophysical environment have been identified through the compilation of a detailed impact assessment as part of this EIAR / EMPr. Measures to minimise and remedy impacts are provided in the EMPr which follows this EIAR below.
 - It is not anticipated that the proposed project will impact any cultural heritage of the area. Any disturbances and / or enhancements of South Africa’s cultural heritage have been identified through the compilation of a detailed impact assessment as part of this EIAR. *(Note that a Heritage Impact Assessment was not undertaken as part of this project; however, previous studies have been undertaken and were considered during the compilation of this report).*



- The relocated road will be constructed, also using overburden material and waste rock dump material from the existing, authorised waste rock dumps at the mine (Type 3 waste). In essence, the proposed project will result in the reuse of waste rock material on site. It is not anticipated that the proposed project will generate any new waste material. Measures to minimise and remedy impacts are provided in the EMPr which follows this EIAR below.
 - No wetlands have been identified in the proposed project area. The proposed project area falls within a Ecological Support Area (“ESA”); however, the footprint is partially disturbed and alternatives have been considered for the proposed layout and design of the proposed project.
 - Ecological impacts that may impact on people within the vicinity of the mine, on people’s environmental rights, and on socio-economic aspects have been included in the impact assessment as part of this EIAR. Refer particularly to the impacts to I&APs that have been identified.
 - All measures that can be taken by AAM to improve on any identified positive impacts have been included in the EMPr below.
 - An assessment of the positive and negative impacts of the proposed project has been included in this report.
- Alternatives to the proposed project have been considered in terms of location and layout. Based on the positive and negative aspects of each alternative, the preferred option is considered the best practicable option.
 - All remaining identified knowledge gaps, as well as relevant assumptions to the proposed project have been included in this report.
 - The level of risk is low as previous specialist studies have been conducted for the existing mining operations, and therefore some information is already available. Sufficient information was gathered prior to the commencement of this process to indicate that the proposed project is feasible.

Promoting Justifiable economic and social development:

- Municipal context:
 - The Sekhukhune District Municipality SDM like any other District in South Africa is experiencing a decline in formal job opportunities because of the general global economic meltdown. This has led to an escalating unemployment particularly among the economically active population of 18 years and above. Unemployment rate has encouraged the fast growth of informal sector in the district.
 - The dominant economic sector in Greater Tubatse is mining, which contributes to more than 55% of the GVA of the municipality. The industry employs more than 51% of residents within the Municipality. The proposed project will allow mining operations to continue at AAM and will ensure that jobs are retained at AAM.
- Socio-economic aspects:
 - The proposed project will allow the mine to continue contributing to the local, regional and national Gross Domestic Produce (“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 which reflects that the mine is actively involved in the community whereby funds are made available for the development of local infrastructure and social upliftment Assessment of ecological related impacts.
 - Impacts to the socio-economic aspects have been identified through the compilation of a detailed impact assessment as part of this EIAR.
 - Measures to minimise and remedy impacts are provided in the EMPr, which follows this EIAR below.
 - All measures that can be taken by AAM to improve on any identified positive impacts have been included in the EMPr section below.
- Public consultation process:
 - The public participation process that has been (and still will be) undertaken as part of the Scoping and EIA phases aims to ensure that all I&APs are provided with an opportunity to gain an understanding of the proposed project, to ensure openness and transparency about the proposed activities, and to ensure access to relevant information regarding the manner in which they may be interested or affected by the proposed project. Further details pertaining to the public participation process are provided in section 7.2 of this report.
 - The EIA process that has been followed allows for intergovernmental co-ordination through the authority consultation that is undertaken. This forms part of the public participation process that has been described in section 7.2 below.
 - Existing employees:
 - AAM 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.
 - Where applicable, the alternatives considered towards the proposed project have been indicated in section 7.1.
 - The mine will provide financially for the anticipated costs of rehabilitation for the proposed project; however, it is assumed that the RAL will take over responsibility and liability upon completion of the construction phase. A transfer of the EA is anticipated. Yet, the financial provision is intended to ensure that sufficient funds are available to allow for the realistic long-term management of impacts. Refer to section 18 of this report for further details pertaining to the financial provision.



- All remaining identified knowledge gaps as well as relevant assumptions to the proposed project have been included in section 14 below.

7 Motivation for the preferred development footprint within the approved site

7.1 Details of alternatives considered as part of the proposed project

The following alternatives have been identified as part of the proposed project.

7.1.1 Location alternatives

The mine proposed a preferred location for the relocated road, powerline and associated stormwater management infrastructure, hereafter referred to as Option 1 and indicated in Figure 3. During the pre-feasibility phase of the project, the mine proposed a second shorter alternative route located north of the preferred layout and a third alternative even further north. These two additional alternatives are indicated as Option 2 and Option 3 respectively.

Refer also to section 7.7 of this document for the advantages and disadvantages associated with the alternative locations and layout of the road and powerline relocation.

7.1.2 No-go option

The no-go option would mean that the status quo of the environment would stay as is and there would be no additional impacts to the site. However, if the proposed relocation of the road and powerline and additional stormwater management infrastructure do not continue, the mine would not be able to extend mining activities to the north of the existing provincial road. The cessation of these mining activities would have monetary implications for AAM as the mine would not be able to economically mine the remainder of the resource reserve. This may result in pre-mature closure of AAM and lead to unemployment.

7.2 Details of the Public Participation Process followed

7.2.1 Identification and registration of I&APs and key stakeholders

Table 5 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 proposed project. All organs of state that may have jurisdiction in respect of the proposed project are considered to be registered I&APs.

Table 5: List of landowners and adjacent landowners identified and notified

Organs of state and stakeholders
National Departments
South African Heritage Resource Agency ("SAHRA")
Provincial Departments



Organs of state and stakeholders

Department of Mineral Resources and Energy – Limpopo Region (“DMRE”)

Department of Water and Sanitation – Lydenburg Regional Office (“DWS”)

Limpopo Department of Economic Development Environment and Tourism (“LEDET”)

Limpopo Department of Agriculture, Land Reform and Rural Development (“LDALRD”)

Roads Agency Limpopo (“RAL”)

Other interested and affected parties

Roka Malepe Traditional Council

7.2.2 Methods of notification

7.2.2.1 Scoping phase

A detailed public participation process was undertaken as part of the initial application- and scoping phase for the proposed project. The following actions were implemented:

- Advertisements.
 - A Newspaper advertisement was placed in the Steelburger on 15 July 2021.
- Site notices.
 - Site notices were placed around the project site as well as at the existing mine.
- Written notices.
 - Written notices (including BIDs) were distributed to Interested and Affected Parties (I&APs), where contact details were available.
- Availability of draft Scoping Report for public review.
 - The draft Scoping Report was made available for public and stakeholder review for a period of 30 days (from 15 July 2021 to 16 August 2021). 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.

7.2.2.2 EIAR / EMPr phase

A full PPP will further take place during this EIA Phase and will include the following:

- Advertisements.
 - A Newspaper advertisement will be placed in the Steelburger on 21 October 2021.
- Site notices.



- Site notices will be placed around the project site as well as at the existing mine.
- Written notices.
 - Written notices (including BIDs) will be distributed to Interested and Affected Parties (I&APs).
- Availability of EIAR / EMPr for public review.
 - The draft EIAR and EMPr will be made available for public and stakeholder review for a period of 30 days (from 22 October 2021 to 22 November 2021). Notices providing the detail of the public viewing station and review period, will also be sent to registered I&APs via e-mail. The document will also be uploaded onto the Shangoni website (www.shangoni.co.za) for public viewing.
- A copy of the draft Water Use Licence Application (“WULA”) technical report will be made available for a period of sixty (60) days from 22 October 2021 to 12 January 2022 (excluding December holidays). A copy of the mentioned document will be made available at the reception of Annesley Mine and on the Shangoni’s website (www.shangoni.co.za) for the I&APs to view.

7.2.3 I&APs register

Once all landowners, adjacent landowners, organs of state and the public are notified of the proposed project, an I&AP register is kept and will be updated during the process. Refer to Table 5 or a list of organs of states, stakeholders and landowners notified during the Scoping Phase.

7.2.4 Access and opportunity to comment on written submissions

The draft EIAR / EMPr will be made available to the public for review for a period of thirty (30) days, from 22 October 2021 to 22 November 2021. A copy of the mentioned document will be made available at the reception of Annesley Mine 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 EIAR / EMPr for public review by 22 October 2021.

Comments and registration forms, as well as Shangoni’s response to the comments are attached in Annexure E.

7.2.5 Consultation with the relevant Authorities

7.2.5.1 Application form in terms of the NEMA

The application for environmental authorisation was submitted to the DMRE on 15 July 2021. A copy of the application for environmental authorisation form is attached hereto in Annexure C1. A copy of DMRE’s acknowledgement of receipt letter of the Scoping Report is also attached as Annexure C3.

7.2.5.2 Further consultation with relevant Authorities

Further consultation will be done with the DMRE during this EIA phase.



7.3 Summary of issues raised by I&APs

Table 6 below provides a summary of the comments and issues raised relating to the project. Note that some comments have been obtained prior to the commencement of the EA process. These comments were directed at the RAL's PPP site notices that were placed before the commencement of the EA process. RAL and the applicant requested Shangoni to respond to these comments, even though they were not received during the Scoping Phase PPP. This table will be updated once the EIA Phase PPP has been completed.



Table 6: 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.
Comments received by RAL before the EA Process were underway				
Carlos Morei	2020/11/30 (via email to RAL)	Since it has come to my attention (about the notice I got from Imerys Refractory Minerals concerning the closure of the section of road D4134 in Segorong), I found it not in order as it is the only road connecting 8 villages to access R37 and also since it was my only road to access R37 road on time when going to work.	<p>Your comments relating to the AAM D4134 road relocation project have been received. A Background Information Document is attached to provide you with more information regarding the project. To address some of your concerns, please note the following:</p> <ul style="list-style-type: none"> The D4134 road will not be closed, but only relocated. The relocated road will still provide access between the villages / communities and to the D2537. Refer to pages 5 & 6 of the attached document for an illustration of the proposed new location and layout of the road. 	<p>The Background Information Document (“BID”) that was provided to the concerned parties is attached under Annexure D4. This BID also provides more information on the project. Further, details pertaining to the public participation process followed during the Scoping Phase is provided in section 7.2 above.</p>
Malau Mokgotho	2020/11/30 (via email to RAL)	I am opposing the closure of the abovementioned road (D4134) because it links our village with Polokwane.	<ul style="list-style-type: none"> A draft Scoping Report is currently available for review until 19 August 2021. This document provides more information relating to baseline environment and potential impacts associated to the proposed project. A hard copy of the draft Scoping Report is available at the AAM Entrance, and an electronic copy is available to download from the Shangoni website (please follow the following link: https://www.shangoni.co.za/imerys-refractory-minerals-south-africa-pty-ltd-annesley-andalusite-mine-notice-draft-scoping-report-proposed-d4134-road-22-kv-powerline-relocation-project). You may forward any additional comments relating to the project via email to: renate@shangoni.co.za or via fax: +27 (0) 12 807 1014. 	
Phanuel Mokgotho	2020/11/30 (via email to RAL)	I am opposing the closure proposal of the abovementioned road, D4134 connects ward 16 villages with the nearest towns and the villagers use the abovementioned road on a daily basis. I hope you will find this rejection in order.	<ul style="list-style-type: none"> A second 30-day public participation process will follow during the Environmental Impact Assessment (EIA) Phase of the project (estimated to be undertaken during September / October) where additional comments may be provided based on the draft EIA. 	
H.G, Mogofe	2020/11/29 (via email to RAL)	Formal Complaint by the Management of Phafogang Mabulane concerning the closure of Segorong road. The above matter refers that; we as the Management of Phafogang Mabulane in Ward 16, would like to inform the Chief Executive Officer of Roads Agency in	<p>Should you have any additional comments or queries, please do not hesitate to contact me.</p>	



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.
		<p>Limpopo that he did not make the public participation consultations with the Residents in Ward 16 in the relation with the closure of Segorong Road.</p> <p>Moreover, the Management of Phafogang Mabulane was totally rejected about this sour decision and the people at the grass roots level were not approached.</p> <p>Lastly, we would like to put our recommendations to the Chief Executive Officer for introspective about this issue in order to meet the stakeholders who are being affected and those who are being infected about this matter of the closure of Segorong road. They must have been informed for public participations.</p> <p>Please scrutinize the notice that has been attached on this letter as the supporting evidence.</p>		
Comments received during the Scoping Phase PPP				
Malau Mokgotho	16/08/2021	Install culverts where its needed, like next to the plant.	Thank you for your registration letter and comments. Please note that culverts will be constructed to accommodate the drainage line crossings as indicated on the attached plan. The plant is located further south-east and therefore not directly associated with this road relocation project. A stormwater management plan was also developed and will be made available for public review during the Environmental Impact Assessment (“EIA”) Phase, expected to take place in September / October 2021.	The stormwater management plan will be attached to the draft EIAR / EMPr and will be made available for public review. The plan indicating the position of the culverts (as provided to Mr Mokgotho) is also attached to this report under Annexure A.



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.
Joseph Mogofe	20/10/2021	What about patients to Moroke Clinic and will there be an alternative road?	Mine representatives presented the map showing the portion of the road to be affected and the alternative to be put in place.	Discussed as impact and mitigation measures in Section 7.5.1.
Pictures Mnashane	20/10/2021	I thought this was a consultation meeting about road relocation, but since we are already here, I would like to know if there will be any interaction between the mining machines with public vehicles?	There will be interaction and elaborated on the risk management plan the mine will put in place to ensure accident-free flow of traffic.	
		Can the traffic management plan look at job creation?	The mine is already looking at the options available and job creation is a possible outcome.	
Pictures Mnashane	20/10/2021	Will there be a need for a road construction?	The consulting engineers are already appointed and the mine will make use of the existing mining machinery for the construction with only the addition of the compaction roller.	
Mahlako Mahlako	20/10/2021	How are we going to access the graves around the mine?	Mine representatives pointed out where the graves are and that the road relocation will not affect the access to the graves near the old school with emphasis that the graves behind the mine perimeter will now be more easily accessible through the new road.	



7.4 Description on the baseline environment

7.4.1 The type of environment affected by the proposed activity

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, Land Use and Land Capability.
- Chapter E: Vegetation.
- Chapter F: Fauna.
- Chapter G: Surface water.
- Chapter H: Groundwater.
- Chapter I: Air Quality.
- Chapter J: Noise.
- Chapter K: Archaeology and cultural history.
- Chapter L: Sensitive landscapes.
- Chapter M: Visual aspects.
- Chapter N: Regional socio-economic structure.
- Chapter O: Traffic.

Chapter A: Geology

The proposed project area falls within the existing, approved Mining Right boundary of AAM. The underlying geology for the study area will be consistent with the geological baseline of the Mining Right area that has previously been determined. The information for this section was extracted from the *Geohydrological Impact Assessment as input to the Section 24G Rectification*, compiled by Shangoni AquaScience, dated May 2017 and the *Section 24G Technical Supporting Document* compiled by Shangoni Management Services (Pty) Ltd., dated June 2017.

Annesley Andalusite Mine is situated along the north-eastern rim of the Transvaal basin, near the base of the Pretoria group, situated within the metamorphic aureole below intrusive Bushveld Igneous complex. The mine is located in the Timberhall Formation. The ore zone principally comprises of quartz, feldspar, biotite and andalusite hornfels. The Bushveld Igneous Complex covers some 15 000 square kilometres of the old Transvaal Province and in the north-east its thermal metamorphic effects were most penetrative.



Chapter B: Climate

The climate for the proposed project area will be similar to the baseline climate described in previous studies compiled for AAM. As a result, the climate baseline information provided in this section was sourced from the *Section 24G Technical Supporting Document* compiled by Shangoni Management Services (Pty) Ltd., dated June 2017.

Temperature

The mean summer temperature at Annesley Andalusite Mine is 23.3°C, with temperatures rising to 37.4°C in February. The mean winter temperature is 14.5°C with a minimum temperature of 3.6°C. Figure 5 illustrates how temperatures range on a daily basis throughout the year.

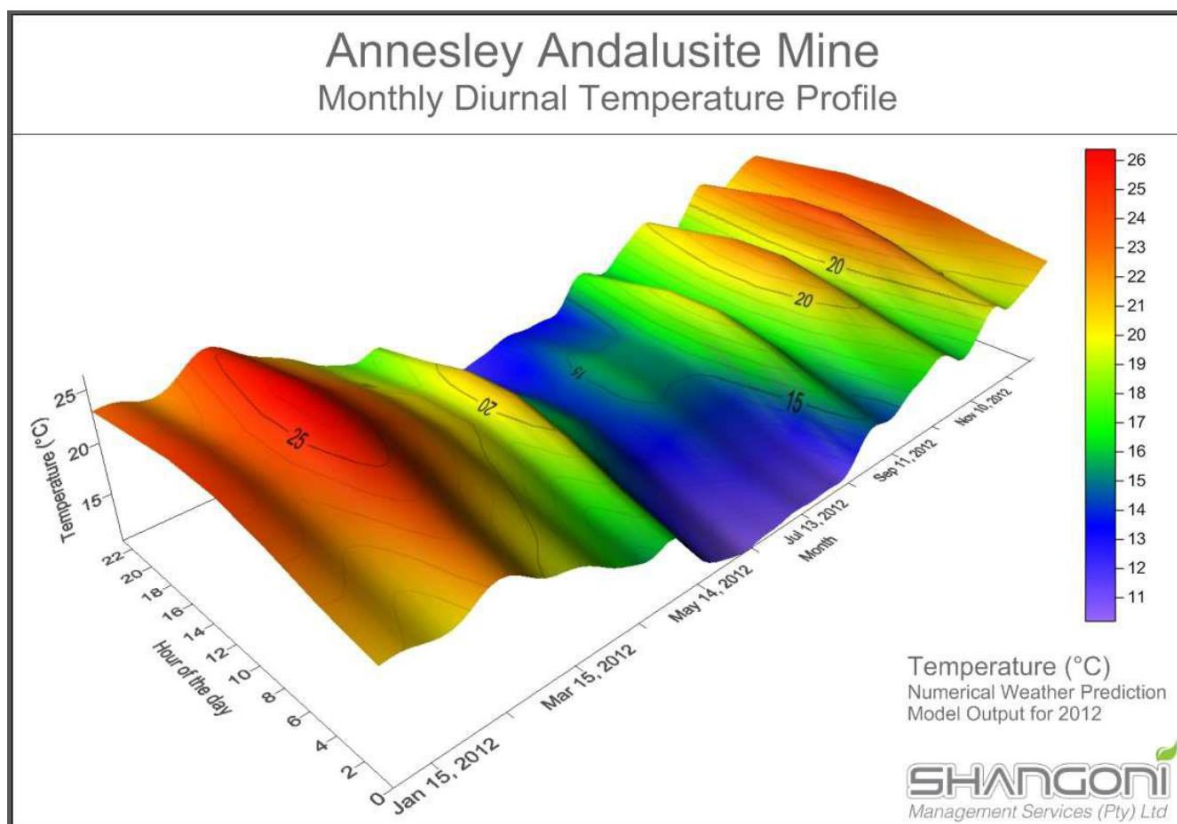


Figure 5: Monthly diurnal temperature profile (Shangoni, 2017)

Rainfall and evaporation

The rainfall regime associated with AAM is highly seasonal and rainfall occurs most of the time as isolated thunderstorms. Precipitation occurring in this south-eastern part of the Limpopo Province is said to be moderate to moderately high. Refer to Table 7 below for the average monthly rainfall and evaporation data for an S-Class Pan, as obtained from weather station B7E006 (located approximately 32 km north from the site at the Tours Dam) with records maintained for a 30-year period (1991 - 2021) and verified by the DWS. Based on the data from weather station B7E006 it is clear that most of the rainfall in this area occurs during summer months (i.e., November to March) while winter months (i.e., May to September) receive very little precipitation. The highest average monthly rainfall was observed during February and the lowest during August. The mean annual precipitation ("MAP") calculated at this



station is approximately 938.1 mm / annum. Evaporation rates are moderately high and remain fairly constant throughout the year, with a mean annual evaporation (“MAE”) calculated at 1 603.5 mm / annum. Refer to Figure 6 and Figure 7 below for a representation of the average monthly precipitation and evaporation rates, respectively.

Table 7: Average annual precipitation and evaporation.

Date	Rainfall (mm)	Evaporation (mm)
January	163	161.3
February	177	137.1
March	120.4	132.6
April	63.3	105.5
May	16.2	109.2
June	5.9	100.6
July	5.5	109.9
August	4.6	128.7
September	20	149.6
October	48.3	158
November	120.2	155.1
December	163.9	150.5
Annual	938.1	1603.5

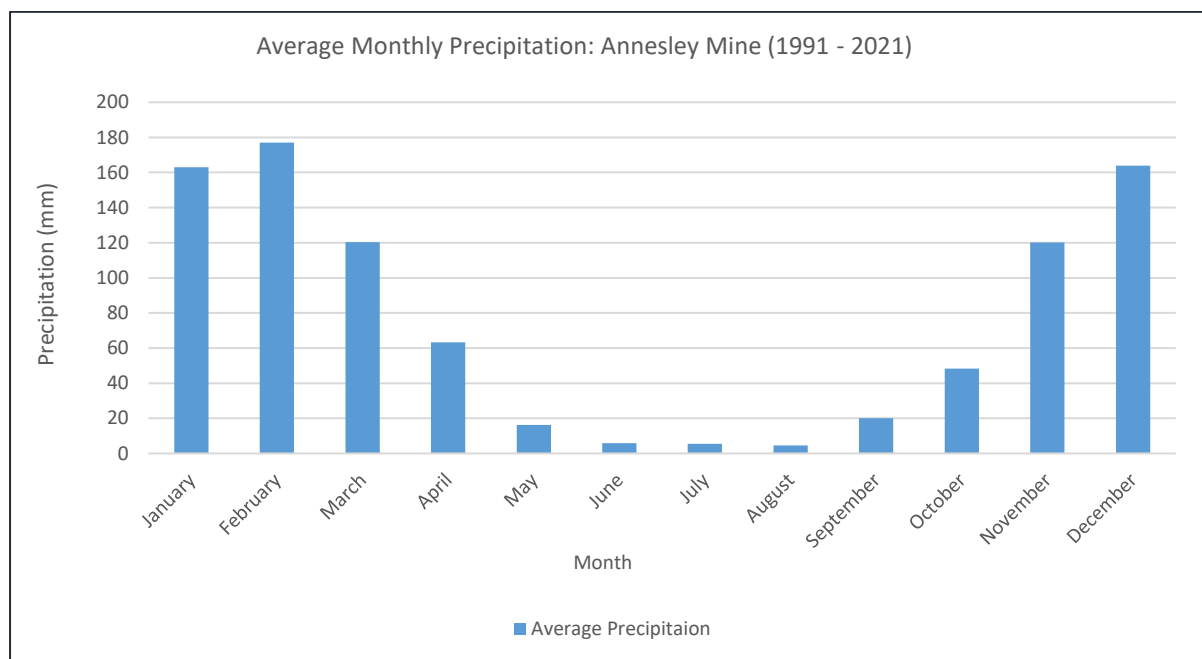


Figure 6: Mean monthly precipitation (1991 – 2021) at station B7E006.



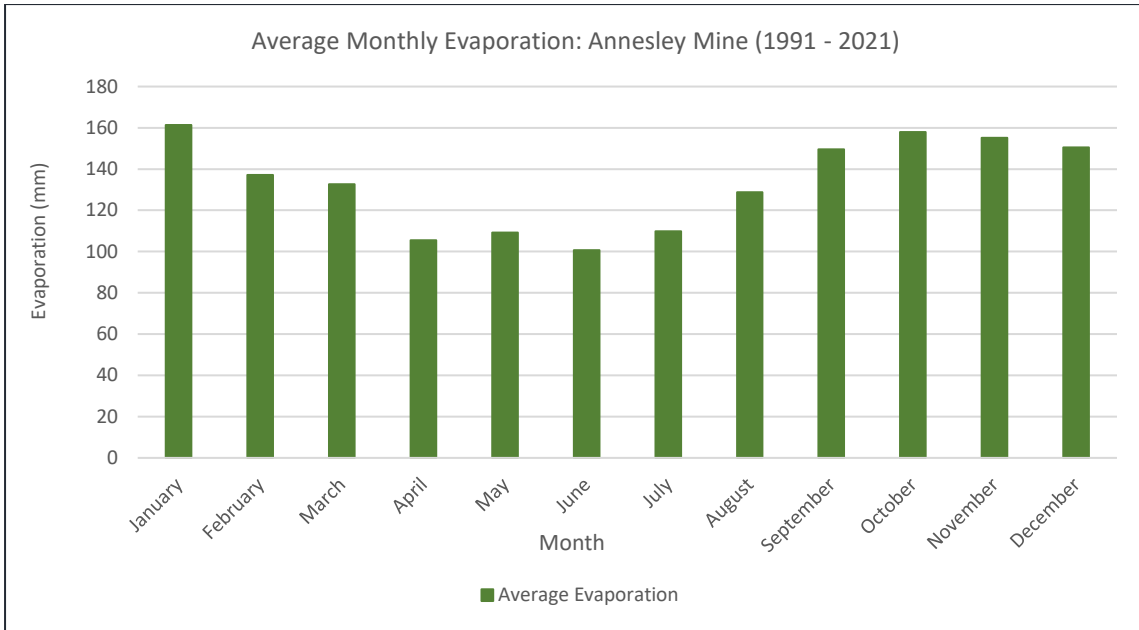


Figure 7: Mean monthly evaporation (1991 – 2021) at station B7E006.

Wind speed and wind direction

The following wind roses display how wind speed and direction were distributed at Annesley Andalusite Mine during 2012. The length of each spoke illustrates the frequency of wind coming from a particular direction. By this we can determine that the predominant wind field throughout the year, except during winter, was from an east north easterly direction experiencing mostly moderate wind speeds between 1.5 m/s and 3.1 m/s. During winter wind was experienced primarily from a west-south westerly direction with some winds also coming from an east-north easterly direction. (Shangoni, 2017)

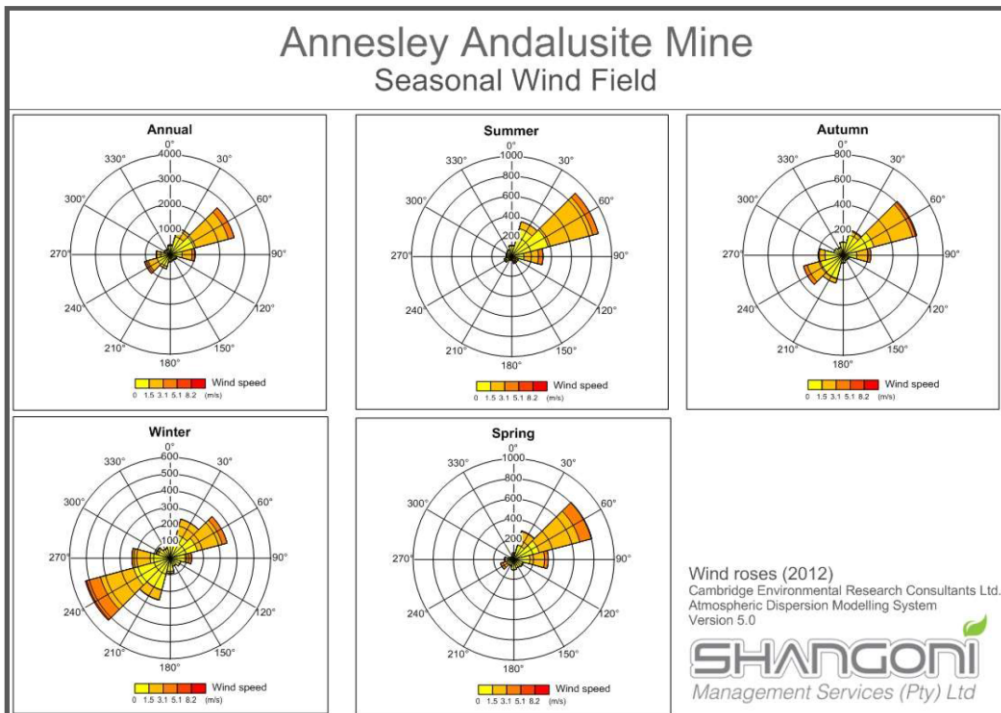


Figure 8: Seasonal wind roses (Shangoni, 2017)



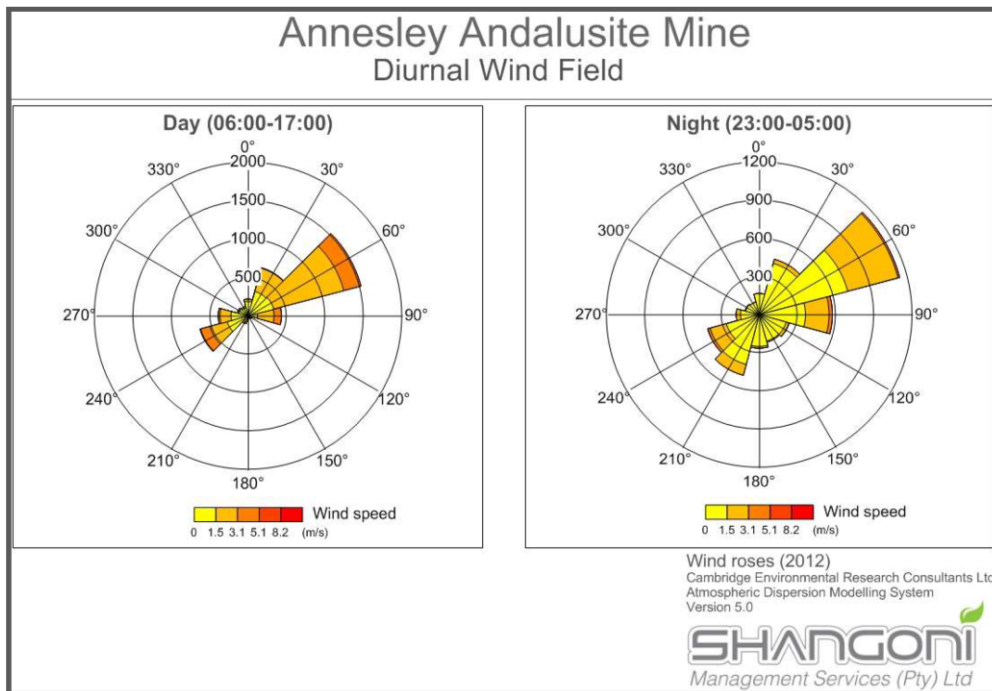


Figure 9: Diurnal wind roses (Shangoni, 2017)

Chapter C: Topography

The proposed project area falls within the AAM Mining Right boundary and as result, share similar topographical characteristics. The topography baseline information below was sourced from the *Section 24G Technical Supporting Document* compiled by Shangoni Management Services (Pty) Ltd., dated June 2017.

The elevation at AAM varies between 780 metres above mean sea level (“mamsl”) in the north to over 1070 mamsl in the south. The mining area is located on the north-eastern slope of the Radingwane Mountain. The ore body outcrops along the lower slopes of the mountain range, close to the valley floor. The quarry area starts at an elevation of 780 mamsl rising up the northern slope of the Radingwane Mountain range to a maximum elevation of 987 mamsl. Although the slope is intersected by a large number of well-defined gullies, no major ravines are present on site. (Shangoni, 2017).

The existing mine facilities are located on an area which is elevated between 840 and 880 metres above mean sea level (“mamsl”). The area can be said to have a medium-level elevation.

Figure 10 shows the regional and local topography of Annesley Andalusite Mine area.

Chapter D: Soils, land use and land capability

The proposed project falls within the AAM Mining Right boundary and as result, have similar soil, land use and land capability characteristics. The following information was sourced from the *Section 24G Technical Supporting Document* compiled by Shangoni Management Services (Pty) Ltd., dated June 2017, as well as the *Annesley Andalusite Mine - Segorong Project Integrated Water and Waste Management Plan*, compiled by Shangoni Management Services (Pty) Ltd., dated May 2006. The AAMs



previous EMPR, *Rhino Minerals (Pty) Ltd. - Havercroft & Annesley Operation*, dated 2008 and compiled by BSS was also consulted.

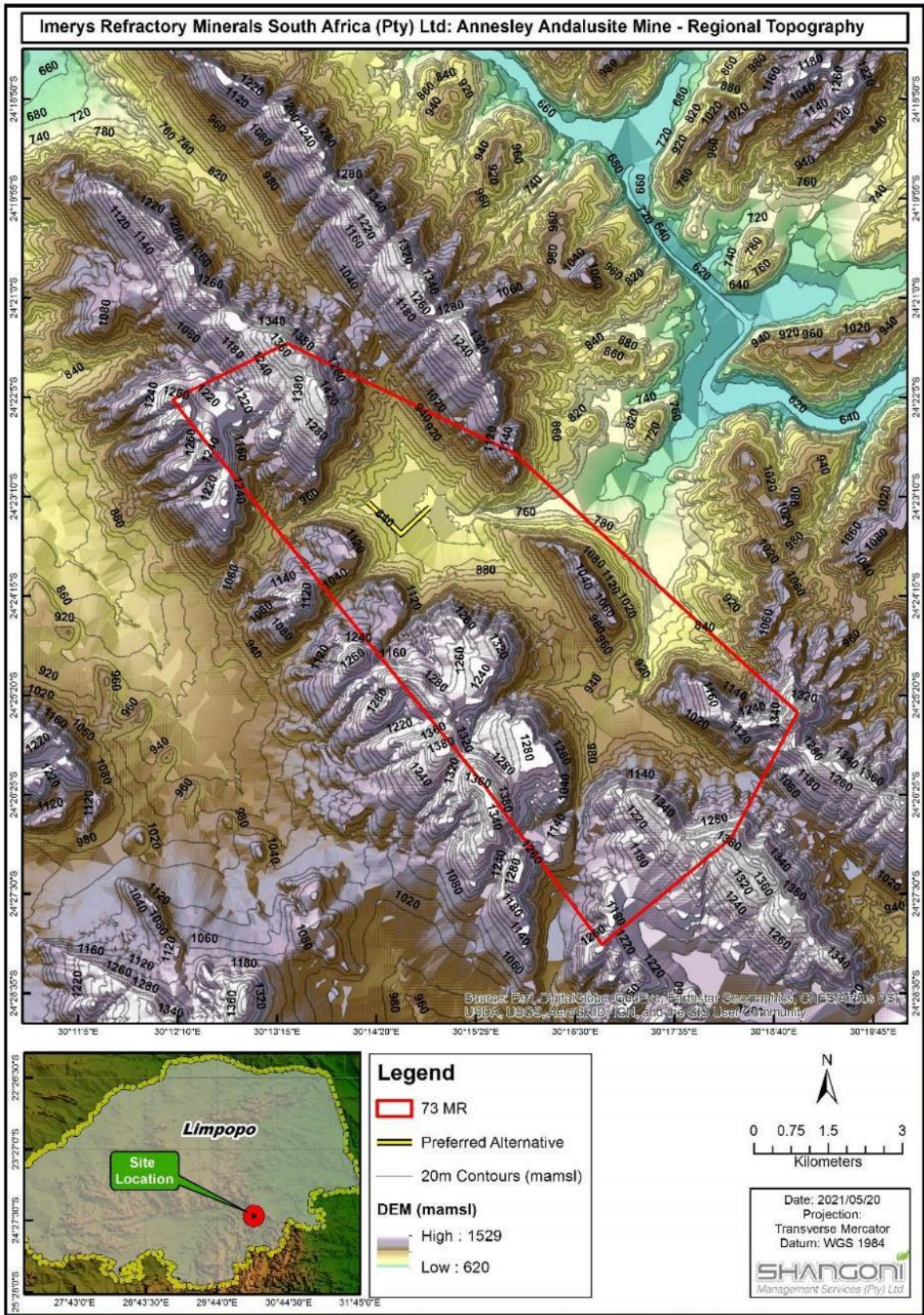


Figure 10: Map showing local topography



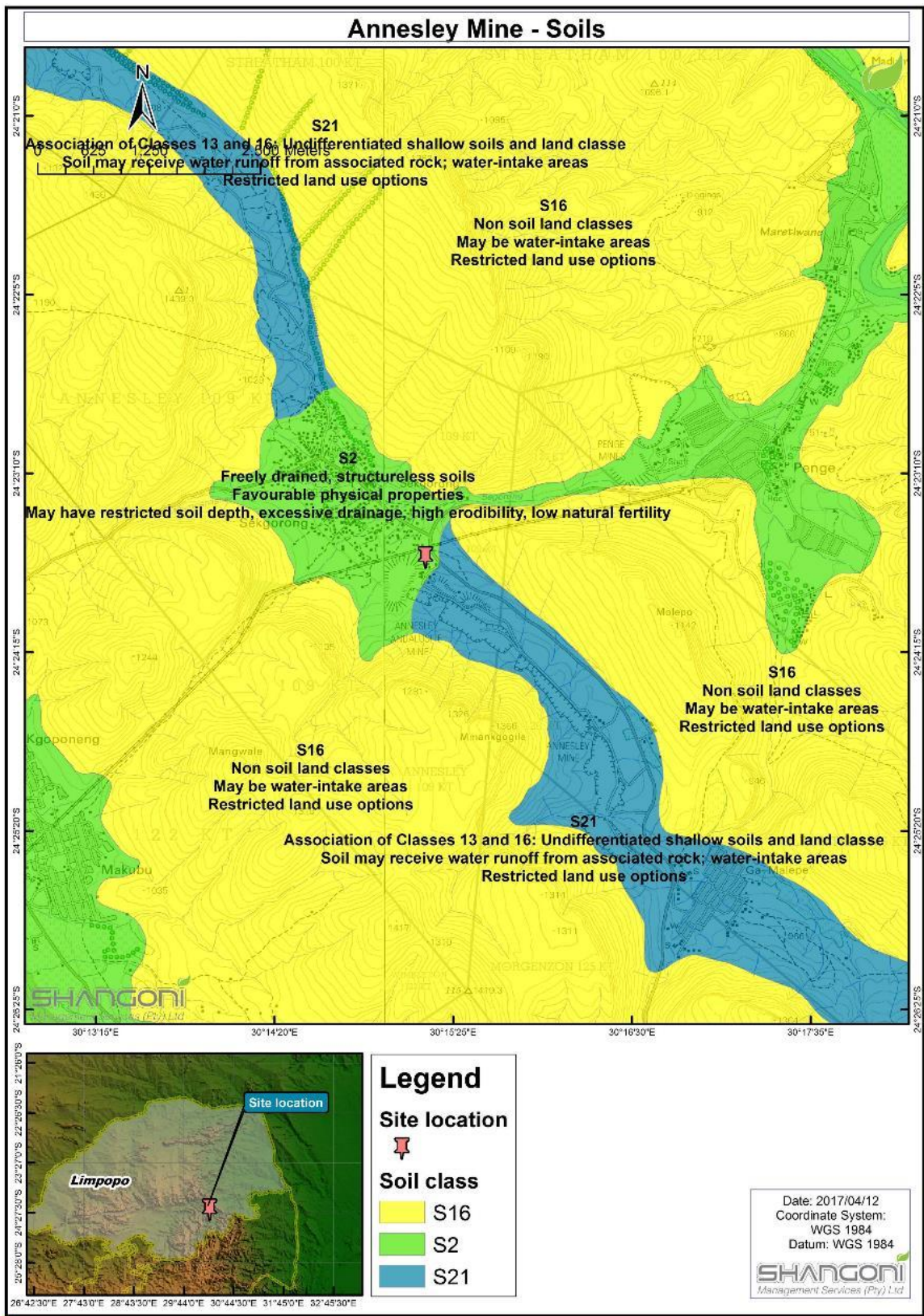


Figure 11: Map showing soil classes

The area on which Annesley Andalusite Mine is located is dominated by rock with limited soils. Red-massive or weak-structured soils with high base status. The soils on the mountain slopes overlying the



ore body are skeletal and only developed in localised potholes and as a component of the scree made up of metaphorphic (hornfels) schists, diabase still material and quartzitic rocks. The major components of the topsoil are weathered silica and clay materials, chiefly loamy biotite and rich in porphyroblasts of staurolite and or garnets and cordierite. The topsoil is generally friable, politic, with an abundance of gravel and pebbles of all sizes. The terrain and types of soil in the area make it prone to erosion.

According to Figure 11 above, the location for the proposed road and powerline relocation is located on the soil classified as S2 class soil that is known to be freely drained and structure less with favourable physical properties. It is said that the soil may have restricted soil depth, excessive drainage, high erodibility and low natural fertility.

An aquatic ecosystem delineation study, *Aquatic ecosystem delineation for on a portion of the farm Annesley 109 KT*, dated July 2016 was conducted by Galago Environmental. In the report compiled, it was stated that no wetland (hydromorphic) soils and anaerobic conditions in the soils were observed, mainly due to the low rainfall on the site.

Figure 12 below shows that the dominant land use type in the proposed location for the proposed project is identified as “Thicket / Dense Bush” as well as “Urban”.

Prior to mining, Annesley Andalusite Mine’s area was classified as wilderness land, as defined by the Chamber of Mines Rehabilitation Guideline. The slope of the majority of the site was considered steep, with soils being less than 250 mm in depth and the volume of rocks larger than 100 mm being more than 50%. The land was considered to be arable land and suitable grazing land. Of which a large portion of the area was also used for that purpose (Shangoni, 2006). There are no records of formal historical agricultural production, only subsistence farming. The region is not ideally suited to large scale agricultural production with the estimated carrying capacity being 15 ha per head of large livestock. The topography of the site is another limiting factor in terms of cultivation (BSS, 2008). As indicated in Figure 12, a portion of the area expected to be affected by the proposed project consists of thicket / dense bush. Some loss to land capability is anticipated as a result of this project due to the transformation of thicket / dense bush to a road and stormwater management infrastructure.

Chapter E: Vegetation

The following information was sourced from the *Biodiversity Baseline and Impact Assessment in Support of the Environmental Authorisation Application for the Proposed Annesley Mine Road Project* compiled by The Biodiversity Company., dated November 2021. In addition, a wetland assessment for the proposed project has been undertaken and findings of the study were provided in Chapter L.

The AAM is located in the Savanna Biome and within the Mixed Bushveld and Sourish Mixed Bushveld veld type (According to Acocks 1975). According to Mucina and Rutherford this area is classified as the Ohrigstad Mountain Bushveld vegetation unit (SVcb 26). This vegetation unit is characterised by open to dense woody layer, with associated woody and herbaceous shrubs and closed to open grass layer. Moderate to steep slopes on mountainsides and sometimes deeply incised valleys; also fairly flat terrain in a few places.



Certain areas of the proposed project site are already disturbed by roads and associated mining activities. Invader plant species such as the Wild tobacco, Spiny cocklebur and Large cocklebur have been noted. The following plant species of ethnobotanical importance and Species of Conservation Concern were recorded in the project area: *Ziziphus mucronata* (Buffalo thorn), *Balanites maughamii* subsp. *Maughamii* (Torchwood), *Sclerocarya birrea* subsp. *caffra* (Marula).

Chapter F: Fauna

The proposed project falls within the Annesley Andalusite Mine boundary. As a result, information for this section was extracted from the *Biodiversity Baseline and Impact Assessment in Support of the Environmental Authorisation Application for the Proposed Annesley Mine Road Project* compiled by The Biodiversity Company, dated November 2021.

A total of thirty-eight (38) bird species were recorded in the project area during the survey based on either direct observation or the presence of visual tracks & signs. Avian diversity within this habitat was relatively poor due to the project area's surrounding land-use. No reptile or amphibian species were recorded in the project area during the survey, this can be attributed to the lack of suitable habitat and a river system that is also ephemeral and the lack of water (albeit standing or flowing) and the past human settlements and mining areas. Four mammal species were observed during the survey based on either direct observation or the presence of visual tracks and signs. These were namely, Slender Mongoose (*Herpestes sanguineus*), Cape Porcupine (*Hystrix africaeaustralis*), Chacma Baboon (*Papio ursinus*) and the Scrub Hare (*Lepus saxatilis*). The only other faunal presence recorded was that of grazing cattle.



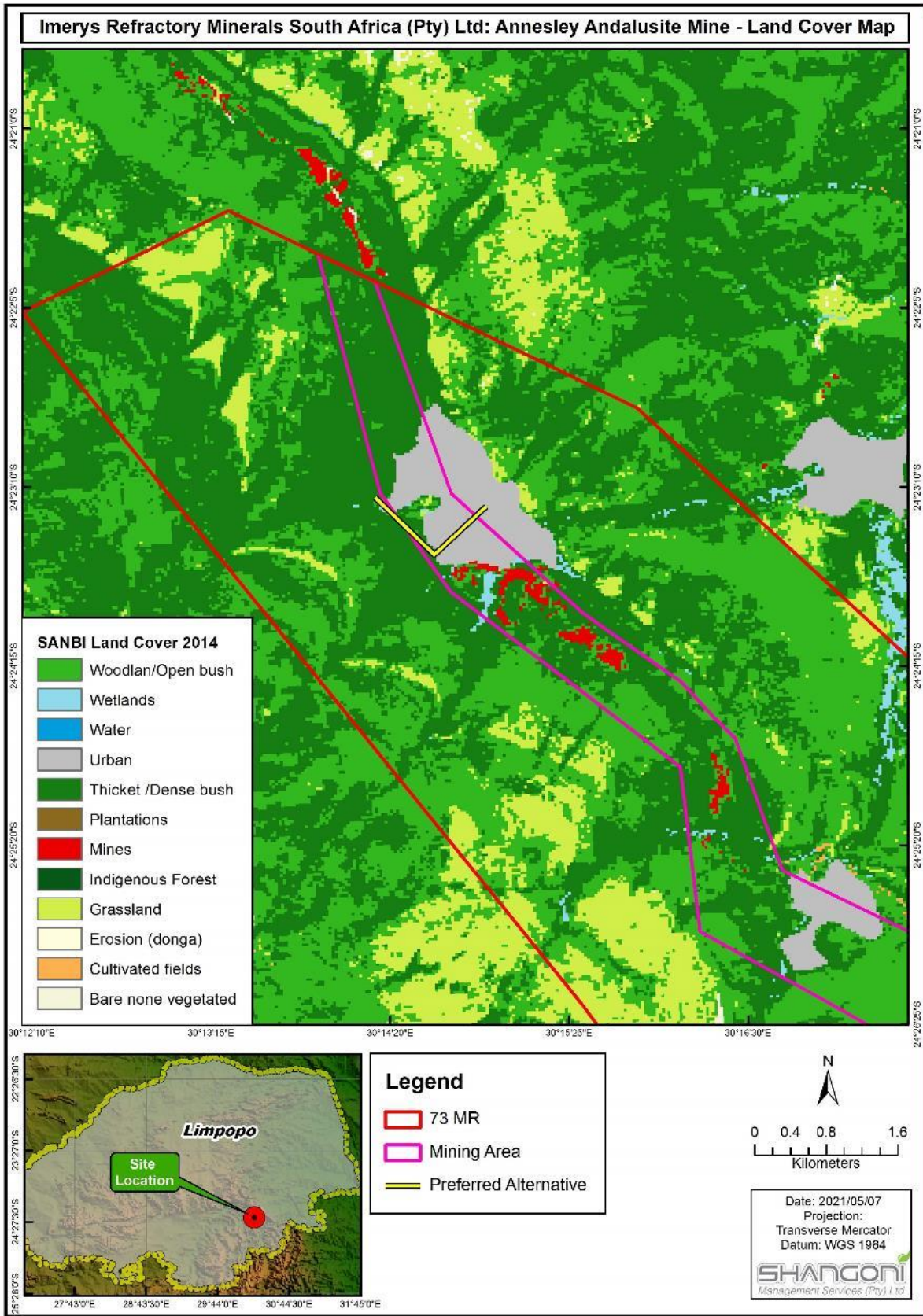


Figure 12: Landcover Map



Chapter G: Surface water

Information for this section was extracted from the *Section 24G Technical Supporting Document* compiled by Shangoni Management Services (Pty) Ltd., dated June 2017 and the *Geohydrological Impact Assessment as input to the Section24G Rectification* compiled by Shangoni AquaScience, dated 2017. Further a Surface Water Assessment (“SWA”), titled, *Surface Water Assessment in support of the Proposed Road and Powerline Relocation Project*, compiled by Shangoni Management Services (Pty) Ltd., dated July 2021 was sourced to supplement the baseline information.

The proposed project area lies in the Primary Catchment of the Olifants River and the Quaternary Catchment referred to as the B71F draining region. The applicable water management area is the Olifants and the responsibility of the Mpumalanga Regional DWS. The quaternary catchment B71F has a mean annual precipitation of 799.91 mm and mean annual runoff of 101.3%.

The area in which the mine is located shows an abundance of non-perennial streams flowing down the escarpment (refer to Figure 13 below). There is no permanent natural surface water on the mining site. The area is drained by several non-perennial water courses. The most southern section of the mine area is drained by several intermittent streams flowing into a larger northern flowing stream that eventually confluences with the Olifants River.

The northern section of the mine is drained by a number of northwest flowing intermittent streams that flow to the Sekgorong River, forming part of the greater Olifants River catchment. An existing river diversion in the northern section of the mine currently diverts the northern drainage line around the opencast pit. Culverts have been constructed within the river diversion to allow free flow of water underneath a narrow service road leading from the main road to the waste rock dump.

Flood peaks and volumes

Three affected sub-catchments were identified (S1, S2, and S3) based on the geographic location of proposed infrastructure, distinct catchment boundaries (either natural or altered), and elevation data. The runoff volume associated with the 1:20-year flood event for sub-catchment S1, was calculated as 210 021 m³. The runoff volume associated with the 1:20-year flood event for sub-catchment S2 was calculated as 4 166 m³. The runoff volume associated with the 1:20-year flood event for sub-catchment S3 was calculated as 5 474 m³.

Chapter H: Groundwater

Information provided in this section was extracted from the *Annesley Andalusite Mine – Segorong Project Integrated Water and Waste Management Plan*, compiled by Shangoni Management Services, dated 2012 and the *Geohydrological Impact Assessment as input to the Section24G Rectification*, compiled by Shangoni AquaScience, dated 2017. This baseline description therefore applies to the entire area within the Mining Right boundary at the Annesley Andalusite Mine including the proposed project area.



According to the published 1:250 000 geological map (2430 Pelgrims Rest), the Mining Right area is underlain by the Timeball Hill Formation that forms part of the Pretoria Group and mainly comprises of andesitic lava, shale and quartzite. A geological map indicates the presence of several regional linear structures, comprising of NESW striking dolerite dykes and NW-SE striking diabase dykes. The drainage line through the mine area runs parallel to the regional orientation of the diabase dykes. They are usually deeply weathered and deep gullies mark their position on the surface. Their effect on the ore appears to be minimal.

A minimum of four distinct diabase sills, irregularly weathered and probably of Bushveld Igneous Complex origin, are intrusive along bedding planes in the vicinity of and within the ore body. They vary in thickness from 0.5 m to 5 m and appear to upwardly transgress through the ore body from east to west. The ore above and below these sills, display alteration through contact metamorphism. Only minor faulting and other structural deformation have been observed.

Groundwater occurrence favours weathered shale, brecciated or jointed zones and especially the contact zone between intrusive diabase sheets and shale. These contact zones would usually act as targets for groundwater exploration. To the contrary it must be stated that little groundwater seepage from the contact zones between shales and diabase/dolerite dykes intercepted in the mining area occur. Small volumes of water accumulate at the base of the open quarries. No active dewatering takes place in the open casts. The contact between the diabase and shale where fracturing usually takes place and act as preferential flow paths for groundwater may have been metamorphosed with no distinct contact and consequently, little fracturing. Future exploratory drilling on these contact zones will shed more light on this issue.



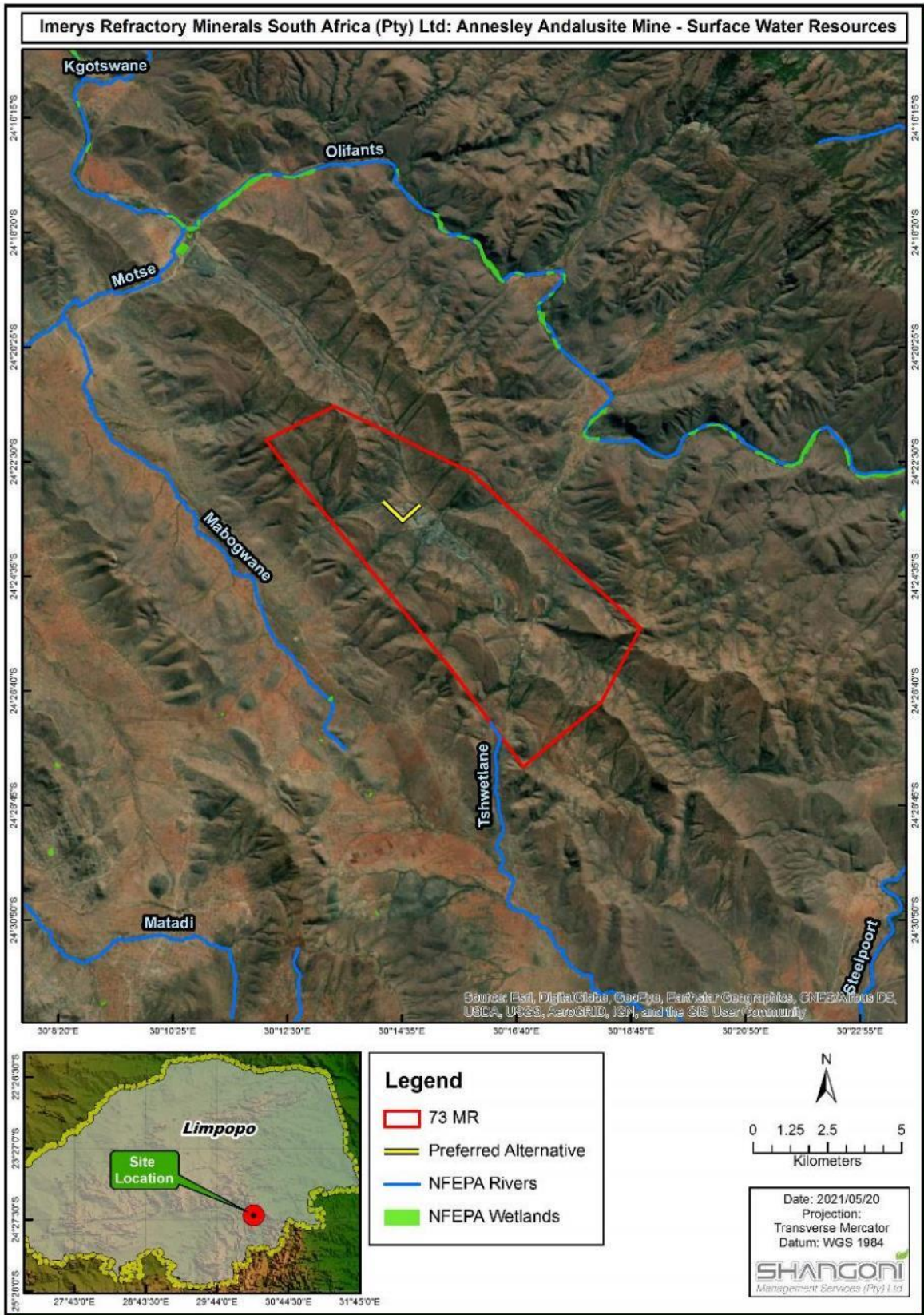


Figure 13: Surface water resources associated with the proposed project



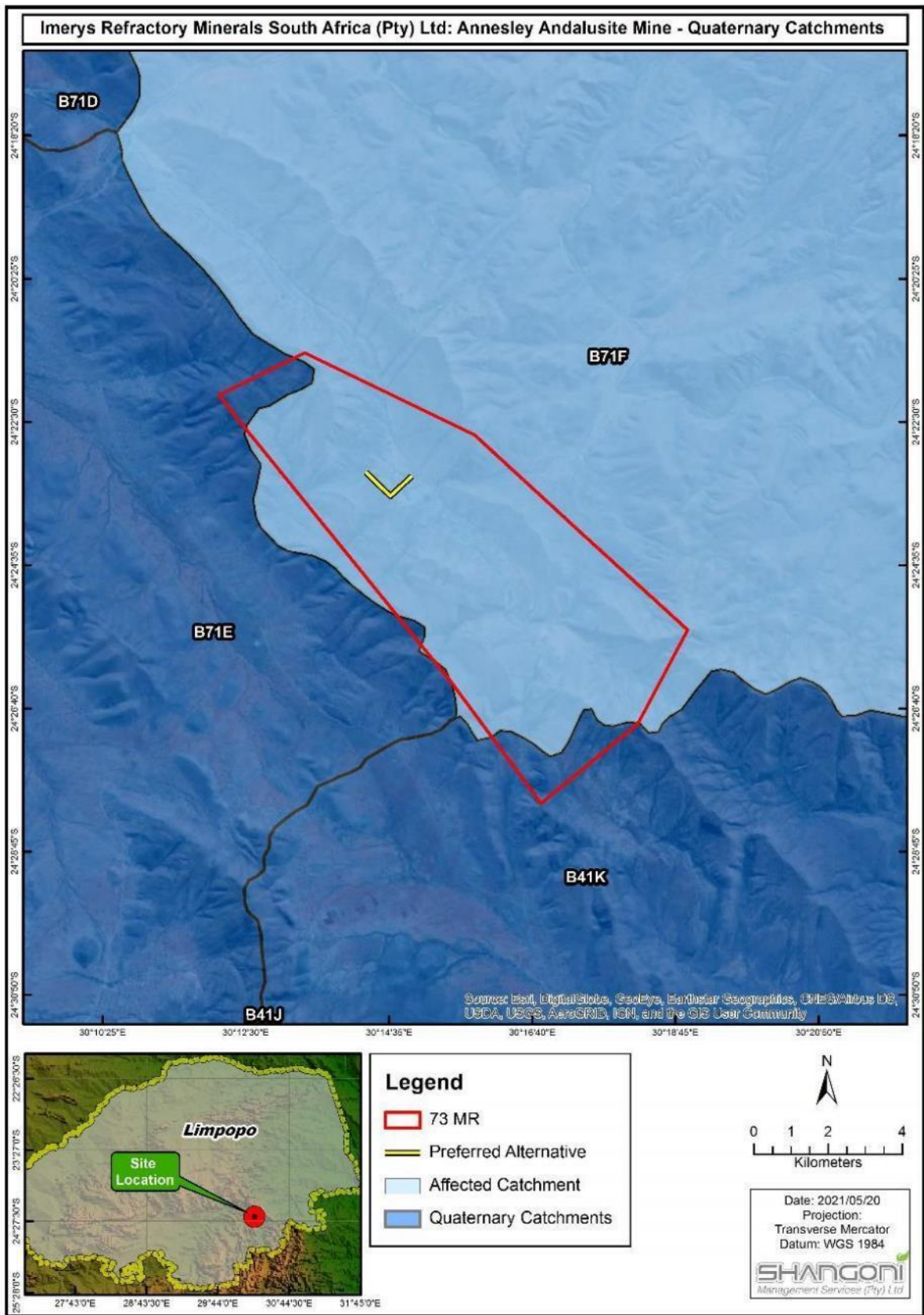


Figure 14: Catchments associated with proposed project



Shangoni Management Services (Pty) Ltd. also performed a geochemical study in 2014 on four mine residue deposit (“MRD”) samples to identify contaminants of concern and risks pertaining to day-to-day operation of the mine. Stormwater/leachate emanating from these MRDs are directed towards the pollution control and other water management infrastructure. A summary of the geochemical assessment is discussed below.

The waste locations sampled were:

- Overburden.
- HMS Waste.
- Primary Waste.
- Slimes Slurry (tailings).

The following tests were included in the assessment:

- Aqueous extraction. This procedure indicates which chemical constituents may be solubilised by deionised water.
- Static acid base accounting (“ABA”). Static tests are the analytical tests used as a screening criterion of the samples, used to determine the difference between the acid-generating capability and the acid-neutralising potential of the samples. Originally developed for the coal mining industry, this procedure provides information on potential of solids to generate or neutralise acid formation and is correlated to the concentration of sulphides and neutralising minerals.

The results of the ABA analyses are displayed in Table 8 and rock classification guideline in Table 9. According to these results, all of the samples are classified as a Type III rock, which according to the guidelines imply that they are non-acid forming. This is largely due to the low almost absent sulphur content. Although the HMS waste calculated a Neutralising Potential Ratio (NPR), of 1:1.60, the very low sulphur content of the waste resulted in a Type III classification.

Table 8: Results of acid-base accounting

Acid – Base Accounting Modified Sobek (EPA-600)	Primary Waste	Overburden	Slimes	HMS Waste
pH	7.5	8.0	7.9	8.0
Total Sulphur (%) (LECO)	0.02	0.01	0.02	0.01
Acid Potential (AP) (kg/t)	0.625	0.313	0.625	0.313
Neutralization Potential (NP)	7.00	2.50	5.50	0.500
Nett Neutralization Potential (NNP)	6.38	2.19	4.88	0.187
NPR (NP: AP)	11.20	8.00	8.80	1.60



Acid – Base Accounting Modified (EPA-600)	Sobek	Primary Waste	Overburden	Slimes	HMS Waste
Rock Type	III	III	III	III	III

Table 9: Rock Classification

TYPE I	Potentially Acid Forming	Total S(%) > 0.25% and NP:AP ratio 1:1 or less
TYPE II	Intermediate (uncertain)	Total S(%) > 0.25% and NP:AP ratio 1:3 or less
TYPE III	Non-Acid Forming	Total S(%) < 0.25% and NP:AP ratio 1:3 or greater

Chapter I: Air Quality

Information for this section was extracted from the *Air Quality Impact Assessment, Dustfall Monitoring Report*, compiled by Shangoni Management Services (Pty) Ltd. dated April 2021.

The main activity in the Burgersfort, Steelpoort and Orighstad areas is the mining of chrome and platinum. There are also three chrome smelters in the area. Therefore, the area is likely to have air pollutants such as sulphur dioxide, nitrous oxides, chromium (VI) and particulate matter. Heavy traffic also occurs in the area due to the transportation of minerals which introduces a lot of pollution from the vehicles. Other pollutants such as pesticides can also emanate from the farms around Orighstad, the extent of which has not yet been determined. The existing mining activities involve material handling by excavators and front-end loaders, hauling, material transfer, conveying, crushing, screening and dumping. Mining activities are sources of dust and fine particulates (PM10 and PM2.5) and to lesser extent combustion emissions from vehicles and mobile equipment.

Chapter J: Noise

No baseline values were determined as the area is classified as rural and the statutory requirement for such areas is known to be 45dB. The only source of noise beyond the boundaries of the mine is expected to be low volume traffic noise from public roads.

Chapter K: Archaeology and Cultural History

A Heritage Impact Assessment was undertaken in 2009 as part of the then Rhino Minerals Segorong re-development project. The report titled *Status Quo Report for the proposed exhumation and reburial of human burials identified during the Phase 1 Archaeological and Heritage Impact Assessment study for the proposed Segorong Re-development Project in Greater Tubatse Municipality Sekhukhune District in Limpopo Province*, was compiled by Nzumbululo Heritage Solutions. Extracts of the report are provided in the section below.

Four hundred and seventy-one (471) graves were identified within the mining area. These graves were concentrated on more than (16) burial grounds. A proportion of the graves were older than 60 years



and as such they fell within the jurisdiction of the National Heritage Resources Act (NHRA) 25 of 1999. As such, relevant permits had to be secured from the Graves and Burial Unit of the South African Heritage Resources Agency (“SAHRA”). After obtaining the necessary permits, the graves were relocated.

A general site visit was undertaken as part of the proposed project. During the site inspection, a number of old historic remnants were noticed in areas adjacent to the proposed project area

Chapter L: Sensitive Landscapes

The AAM Mining Right area falls predominantly within a Critical Biodiversity Area 1 (“CBA 1”) as per the Limpopo Conservation Plan. The project area partially extends over an Ecological Support Area (“ESA 1”). The project area also falls within the Sekhukune Norite Bushveld vegetation unit that is an Endangered ecosystem as per NEMBA.

A Wetland study, *Wetland and Watercourse Delineation and Assessment Imerys Andalusite Annesley Mine Road Relocation, Limpopo Province* dated June 2021 was undertaken by WCS Scientific (Pty) Ltd. As part of this assessment, a survey of the study area was undertaken in May 2021 to establish the extent and nature of watercourses intersecting and lying in close proximity to the road route alternatives, in order to determine what impact the road relocation will have on the water resource. No wetland habitat was found to occur along, or in close proximity to, the three road route alternatives. However, riparian habitat, associated with the non-perennial Mamoshashe River, and several ephemeral to seasonal stream channels were identified and delineated crossing the road route alternatives or lying in close proximity to their alignments. The delineated watercourses are illustrated in Figure 15.

The road routes run through a mountainous area, with steep mountain slopes to the west and north of the site area, and a number of watercourses drain from the more mountainous areas, across the study area, towards the Segorong River which flows from north to south, to the east of the study area. These watercourses range in size from small ephemeral streams with a channel width of less than 2 metres to the larger seasonal Mamoshashe River. These rivers and streams were classified according to the nature of their flows into either “A”, “B” or “C” type channels which represent ephemeral, seasonal and perennial systems respectively (van Deventer, Teixeira-Leite & Macfarlane, 2014). A description of the classification system used is detailed in Table 10 below.

Table 10: Classification of channels according to nature of flows (taken from van Deventer, Teixeira-Leite & Macfarlane, 2014).

	CHANNEL SECTION (CLASS)		
	“A” type	“B” type	“C” type
	Ephemeral systems	Weakly ephemeral to seasonal systems	Perennial systems
Description	A watercourse that has little to no riparian habitat and no soil hydromorphy (i.e. strongly ephemeral systems).	A watercourse with riparian vegetation/habitat and intermittent base flow (i.e. weakly ephemeral to non-	A watercourse with permanent-type riparian vegetation/habitat, permanent base flow and



	Signs of wetness rarely persist in the soil profile	perennial/seasonal systems). These channels show signs of wetness indicating the presence of water for significant periods of time.	permanent inundation (i.e. perennial systems).
Hydrology	A-section channels are situated well above the zone of saturation (no direct contact between surface water system and ground water system) and hence do not carry base-flows. They do however carry stormwater runoff following intense rainfall events (ephemeral), but this is generally short-lived.	Channel bed situated within the zone of the seasonally fluctuating regional water table (i.e. intermittent base flow depending on water table). Periods of no flow may be experienced during dry periods, with residual pools often remaining within the channel.	Water course is situated within the zone of the permanent saturation, meaning flow is all year round except in the case of extreme drought.
Topographical Position	Valley head (upper reaches of catchments). Channel type also linked to steep slopes which are responsible for water leaving the system rapidly.	Mid-section of valley (middle reaches of catchments).	Valley bottom areas (middle to lower reaches of catchments).

Present Ecological State (“PES”) and Ecological Importance and Sensitivity (“EIS”) Assessments

Currently, impacts affecting the streams and rivers centre around past vegetation disturbance, erosion, loss of riparian habitat in the areas currently being mined and flow, bed and channel modifications associated with the flow diversions within the mine.

As a result of these impacts, none of the watercourses were found to be in a pristine condition and the majority are considered to be Moderately Modified (PES of C) to Largely/Seriously Modified (PES of D/E). Stream channel A3 is considered to be the most impacted (PES D/E) due to evidence of extensive erosion and apparent complete vegetation removal prior to mining and current disconnection of flows from the downstream water resource as a result of opencast mining.

The Present Ecological State of each delineated stream/river is detailed in Table 11 below. In terms of EIS, the watercourses range from Low/Marginal to Moderate EIS. The Mamoshashe River, due to its larger size, the greater extent of riparian habitat supported, its seasonality, and current condition, is expected to support greater species richness and a greater diversity of aquatic habitat types and features. Although the river is significantly disturbed where it lies in close proximity to the mine, its upper reaches and catchment remain largely intact with only limited impact associated with linear road infrastructures and assumed livestock grazing. As such, much of the river and its riparian habitat provide good quality habitat and refuges for aquatic species and an important water resource during flow periods. Due to diversion of the river and the interruption in habitat caused as a result, the rivers importance as a migratory corridor has been affected. The smaller stream channels, given their predominantly ephemeral nature, extensive history of past disturbance, small size and limited riparian habitat support, were found to be of Low/Marginal EIS.



Table 11: Results of the PES and EIS assessments for the watercourses delineated on site

Name	Type	PES Category	EIS Category
Mamoshashe river	Riparian B Channel	D	Moderate
A1	Riparian A Channel	C	Low/Marginal
A2	Riparian A Channel	C/D	Low/Marginal
A3	Riparian A Channel	D/E	Low/Marginal



Figure 15: Watercourse features identified and delineated within the study area (WCS Scientific, 2021)



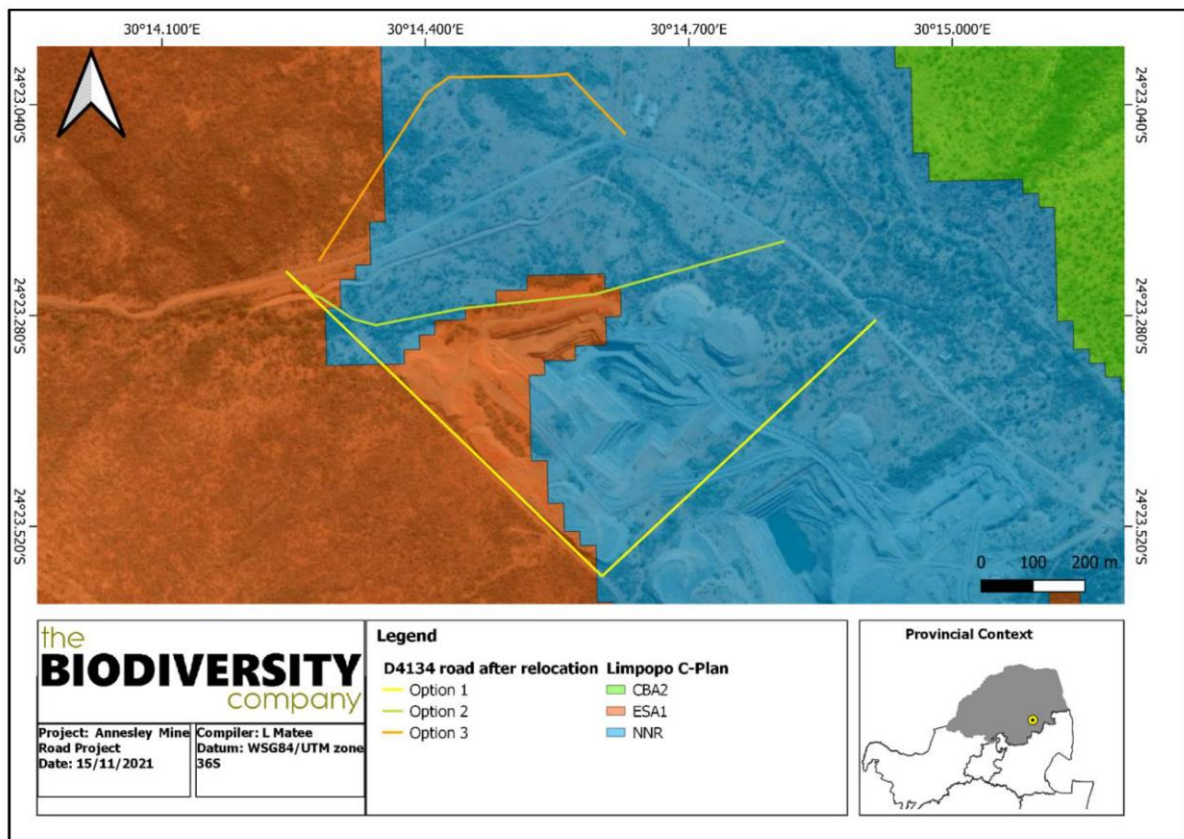


Figure 16: Map illustrating the locations of Critical Biodiversity Areas proximal to the proposed project area (source: Biodiversity area)

Chapter M: Visual aspects

A Visual Impact Assessment has not been undertaken for the proposed project. Current (and previous) visual aspects are based on observations made on site and available google and survey imagery. Due to the topography within the Mining Right area, operations at AAM are only visible from the Penge access road, adjacent to the mine. Current mining operations extend approximately 5 km along the Penge road.

Chapter N: Regional socio-economic structure

Information for this section was extracted from the *Sekukhune District Municipality Integrated Development Plan, 2021 – 2022* and the *Greater Tubatse Local Municipality - Municipal Profile* dated 2013. The AAM is situated within the Greater Tubatse Local Municipality (“GTLM”). GTLM is located in the Limpopo Province, within the Greater Sekhukhune District Municipality (“SDM”). The municipality is almost 460 398 ha in extent, of which 5% is developed. Agriculture is a major land use in Greater Tubatse (in terms of geographic area) with 47% of land in the municipal area consumed. Mining, although a very important economic industry, consumes only about 2% of the surface area of Greater Tubatse. More than 40% of the municipality is currently vacant/ undeveloped. The dominant economic sector in Greater Tubatse is mining, which contributes to more than 55% of the GVA of the municipality.



The industry employs more than 51% of residents within the Municipality. All other economic sectors contribute less than 15% each of the GVA of Greater Tubatse.

Population and households

Since 1996, the number of households in the district has been on an upward trend. In 2011, there were 263 802 households in the district. The average household size is 4.1 in 2011 and was 5,3 in 1996. The provincial household average size is 3.8 which mean Sekhukhune household average size is still relatively high by comparison.

Table 12: Population and households

Municipalities	Population			Number of households			Average household size		
Greater Tubatse	227 127	264 258	264 258	42 427	53 756	83 199	5,4	4,9	4,0
Sekhukhune	907 137	942 993	1076 840	171 908	195 285	263 802	5,3	4,8	4,1

Unemployment estimate for the region

There has been a rapid improvement in the household income distribution profile in Limpopo during the past ten years, mainly as a result of social grants. Households living in poverty, with annual incomes ranging from 0 to R19.600 per year, shrank as a proportion of total households from 86% in 2001 to 56.5% in 2011. This group is unable to afford any contribution towards the cost of municipal services. The corresponding proportion of households in this income group for Limpopo Province in 2011 was 55.6%, which is only slightly better than the situation in Sekhukhune District.

The intermediate group, with incomes ranging from R19.601 per year to R153.800 per year, used to comprise 13% of all households in 2011, but has increased to 38%. This group can afford to make meaningful contributions to the cost of municipal services. The high-income group, who can afford to pay the full cost of municipal services, has increased from less than 1% of all households in 2011, to 5.5% in 2011. The income distribution profile is unlikely to keep improving at the same pace as the last ten years, because the social grant programme is already fully taken up. Further improvements will depend on new job creation (GSA 2014).

The SDM like any other District in South Africa is experiencing a decline in formal job opportunities because of the general global economic meltdown. This has led to an escalating unemployment particularly among the economically active population of 18 years and above. Unemployment rate has encouraged the fast growth of informal sector in the district.

Chapter O. Traffic

A Traffic Impact Assessment ("TIA") was undertaken by EDL Engineers (Pty) Ltd in May 2021, and the final report compiled in August 2021. As such, the following information was sourced from the *Traffic Impact Assessment Report, Rev 2* dated August 2021. The TIA indicated the following roads and streets relevant to the study area:



District Road D2537: This road functions as a Rural Minor Arterial (Class 3) road. This road is a surfaced single carriageway road with no median and one lane in each direction. Manually undertaken traffic counts indicate that this road carries traffic volumes of between 15 and 35 vph per direction, at the intersection with the D4134, during the weekday morning (AM) and afternoon (PM) peak hours.

District Road D4134: This road functions as a Rural Collector (Class 4) road. This road is a district road linking road D2537 near Penge and the R37 to the west. This road was partially surfaced between 2008 and 2013, the portion to be re-aligned is a gravel road of approx. 6 m wide. This road has a 'Stop' condition with D2537 having the right-of-way. Manually undertaken traffic counts indicate that this road carries traffic volumes of between 5 and 20vph per direction, at the location of the proposed road diversion, during the weekday morning (AM) and afternoon (PM) peak hours.

7.4.2 Description of the current land uses

According to a review of recent historical Google Earth imagery, the area supported an extensive rural community up to approximately 2013/2014. It is evident from the imagery that much of the natural vegetation, including most of the riparian vegetation, had been cleared at that time to facilitate building of numerous homesteads and to allow subsistence agriculture. With homesteads and subsistence farming as the dominant land use until recently, large areas of vegetation had been cleared or grazed by livestock. With the imminent expansion of mining, the local community was relocated, and denuded areas have subsequently had a chance to revegetate to a degree. Currently, mining is the predominant land use within the proposed project area, with small areas of thicket/ dense vegetation as depicted in Figure 16 above.

7.4.3 Description of specific environmental features and infrastructure on the site

The specific environmental features on site related to land use, flora, fauna, wetlands and surface water have been described in the relevant chapters in Section 7.4 of Part A. In addition to the above, existing infrastructure on site consist of waste rock- and overburden dumps, roads and existing stormwater management infrastructure.

7.4.4 Environmental and current land use map

Refer to Figure 12 above for an indication of the current land use and land cover.

7.5 Impacts and risks identified

The following section contains all the potential impacts and risks identified for the proposed project and were sourced from the specialist studies conducted for the project. The methodology used to determine the risks is detailed in section 7.6 below.



7.5.1 Impacts and risks associated with the proposed D4134 Road and 22 kV Powerline Relocation Project

Table 13: Impacts and risks identified for the proposed D4134 Road and 22 kV Powerline Relocation Project

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	
1	Geology	No impact to geology is anticipated as a result of the proposed AAM proposed D4134 Road and 22 kV Powerline Relocation Project.													
2a	Topography	Alteration of the natural topography and drainage patterns.	Option 1 (preferred route)		Partially reversible	Medium Degree	Construction and Operational	Refer to Table 3 for the areas associated with the activities.	3	2	Medium	Control	2	1	Low
2b			Option 2 (shortest route)	The project area footprint (3.3 ha) will be levelled and compacted during the construction phase. These construction and operation of the activities will influence the nature of the topography. Changes to the topography of the site will increase the amount of run-off from site.	Partially reversible	Medium Degree			3	2	Medium		2	2	Low
2c			Option 3 (northern route)		Partially reversible	Medium Degree			4	2	High		3	2	Medium
3a	Soils, land use and land capability	Clearing and stockpiling of soil.	All route options <i>(Due to the similarity of current soil, land use and land capability conditions in all three options, there will be no distinction in the impact rating between the three options.)</i>	The removal of topsoil may result in the mixing of the horizons of the soil that will have an impact on the fertility and production potential of the soil.	Partially reversible	Low Degree	Construction and Operational	Refer to Table 3 for the areas associated with the activities.	2	2	Low	Control, minimise	2	1	Low
3b				The stockpiling of topsoil may result in a decrease in the fertility of the soil and the leaching of minerals due to exposure of the soil to elements.	Partially reversible	Low Degree			2	2	Low		2	1	Low
3c				A loss of microbes and viable seed may occur as a result of the stockpiling of topsoil.	Partially reversible	Low Degree			2	2	Low		2	1	Low
3d				The land use and land capability will be permanently altered due to the construction and operation of the relocated road and powerline.	Partially irreversible	Medium Degree			3	2	Medium		2	2	Low
3e				The relocation of the D4134 road and 22 kV powerline may impact on soil in terms of compaction and possible spillages from machinery as well as spillages during the operational phase.	Partially reversible	Low Degree			2	2	Low		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
3f			Ineffective erosion control along the relocated D4134 road and stockpile areas may lead to siltation of downstream water resources and scouring of soil.	Partially reversible	Low Degree	Construction and Operational	Refer to Table 3 for the areas associated with the activities.	2	2	Low	Control, minimise	2	1	Low
4a	Biodiversity	Clearing and/or disturbance of indigenous vegetation	Option 1 (preferred route)	Partially irreversible	High Degree	Construction and operational	Refer to Table 3 for the areas associated with the activities.	4	3	Medium	Avoid, control	3	1	Low
4b			Option 2 (shortest route)	Partially irreversible	High Degree			4	3	Medium		3	1	Low
4c			Option 3 (northern route)	Partially irreversible	High Degree			4	3	Medium		3	1	Low
4d			Option 1 (preferred route)	Partially irreversible	High Degree	Construction and operational	Refer to Table 3 for the areas associated with the activities.	4	3	Medium	Avoid, control	3	1	Low
4e			Option 2 (shortest route)	Partially irreversible	High Degree			4	3	High		3	3	Medium
4f			Option 3 (northern route)	Partially irreversible	High Degree			3	4	High		3	3	Medium
4g			Option 1 (preferred route)	Largely reversible	Low Degree	Construction and operational	Refer to Table 3 for the areas associated with the activities.	5	2	Medium	Avoid, control	4	1	Low
4h			Option 2 (shortest route)	Largely reversible	Low Degree			5	3	High		4	2	Medium



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
4i			Option 3 (northern route)	Largely reversible	Low Degree			5	3	High		4	2	Medium
5a	Surface water	Use of waste rock and overburden material to construct the road.	All route options <i>(Due to the similarity of current surface water conditions in all three options, there will be no distinction in the impact rating between the three options.)</i> The use of waste rock material may detrimentally impact on watercourses	Largely reversible	Low Degree	Construction	Refer to Table 3 for the areas associated with the activities.	1	1	Low	Control	1	1	Low
5b		Grading, clearing and stripping vegetation and soil	All route options <i>(Due to the similarity of current surface water conditions in all three options, there will be no distinction in the impact rating between the three options.)</i> Deterioration of surface water quality due to an increase in sedimentation or other pollutants, affecting the use of surface water as a natural resource.	Partially reversible	Medium Degree	Construction	Refer to Table 3 for the areas associated with the activities.	3	2	Medium	Avoid, control	2	1	Low
5c		Use of hazardous materials	All route options <i>(Due to the similarity of current surface water conditions in all three options, there will be no distinction in the impact rating between the three options.)</i> Deterioration of water quality due to chemical contamination affecting the use of surface water as a natural resource.	Reversible	Medium degree	Construction	Refer to Table 3 for the areas associated with the activities.	3	2	Medium	Avoid, mitigate	2	1	Low
5d		Operation of D4134 Provincial Road	All route options <i>(Due to the similarity of the current surface water baseline conditions in all three options, there will be no distinction in the impact rating between the three options.)</i> Deterioration of surface water quality due to increased erosion, sedimentation and contamination of clean water runoff with affected mine water, affecting the use of surface water as a natural resource. There will be a decrease in clean water runoff reporting to the larger catchment area if runoff overflows into the open quarry, reducing the availability of water to downstream users.	Partially reversible	Medium Degree	Operational	Refer to Table 3 for the areas associated with the activities.	3	3	Medium	Avoid, mitigate	1	2	Low
				Partially reversible	Medium Degree	Operational	Refer to Table 3 for the areas associated with the activities.	3	3	Medium	Avoid, mitigate	1	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	
6	Groundwater	Groundwater contamination	All route options <i>(Due to the similarity of the current baseline groundwater conditions in all three options, there will be no distinction in the impact rating between the three options.)</i> Groundwater quality may be impacted in the event of a spillage of chemicals or hydrocarbon materials (e.g. oil spill from vehicles and machinery).	Partially reversible	Medium Degree	Construction and operational	Refer to Table 3 for the areas associated with the activities.	3	2	Medium	Control, avoid, mitigate	2	1	Low	
7	Air quality	Construction and earthmoving activities as well as the use of the D4134 road.	All route options <i>(Due to the similarity of the prevailing wind direction in all three options, the impact rating for all three options will be same.)</i> During the construction phase of the proposed project, dust (particulate matter, PM10 and PM2.5) may be generated and may have an impact on the ambient air quality of the area. Dust will also be generated during the operational phase due to the use of the D4134 road by the public.	Reversible	Low degree	Construction and operational	Refer to Table 3 for the areas associated with the activities.	3	2	Medium	Control	2	1	Low	
8	Noise and vibration	Construction and earthmoving activities as well as the use of the D4134 road.	All route options <i>(Due to the similarity of the prevailing wind direction in all three options, the impact rating for all three options will be same.)</i> Increased noise levels are anticipated during the construction phase. Noise impacts of low significance will continue during the operational phase due to the use of the D4134 road by the public.	Reversible	Low degree	Construction and operational	Refer to for the areas associated with the activities.	2	2	Low	Control	1	1	Low	
9	Sites of Archaeological and Cultural Importance ¹	Graves that were previously identified that would have been affected by mining activities, were relocated. As a result, no additional impacts to sites of archaeological and cultural importance are anticipated. . It is recommended that construction activities associated with this project should cease if any sites of historic or cultural importance be noticed within the development footprint. The relevant authorities should be notified and a buffer area should be maintained around existing known sites of archaeological and cultural importance.													
10a	Sensitive landscapes (Watercourses-Riparian and instream habitat)	Construction of a public access road and powerline	All route options <i>(Due to the similarity of the baseline watercourse and instream habitat at all three options, the impact rating for all three options will be same.)</i>	Riparian and Instream Habitat Disturbance	Irreversible	Medium Degree	Construction (permanent loss)	<1ha	5	3	High	Avoid, remedy	5	3	High
10b				Flow Impoundment and Concentration	Reversible	Low Degree	Construction, Operational	<1ha, but dependent on crossing design.	4	3	High		3	2	Medium
10c				Soil Erosion	Reversible	Low Degree	Construction	<1ha, but dependent on crossing design.	4	2	Medium		3	2	Medium



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
11d			Increased Sediment Input and Turbidity	Reversible	Low Degree	Construction	Downstream resource. water	4	3	High		3	2	Medium
11e			Water Quality Deterioration	Reversible	Low Degree	Construction, Operational	Downstream resource. water	4	4	High		3	3	Medium
12	Visual	Visibility of mining activities from the D4134 road	Option 1 (preferred route)	Reversible	Low degree	Construction and operational	Refer to Table 3 for the areas associated with the activities.	3	2	Medium	Control, mitigate	2	2	Low
			Option 2 (shortest route)	Reversible	Low degree			3	2	Low		2	2	Low
			Option 3 (northern route)	Reversible	Low degree			2	2	Low		1	2	Low
13	Socio-economic	Construction and use of infrastructure associated with the proposed project	All route options.	N/A		Construction and operational	Local and regional	Positive impact			N/A	Positive impact		
14	Traffic	Traffic congestion and extended travel time.	All route options <i>(Traffic counts for all three options were assumed to be same and as such no differentiation in the impacts are expected)</i>	Reversible	Low degree	Construction, operational.	Local roads	3	3	Medium	Control	2	2	Low



Table 14: Identified cumulative impacts

Environmental component (Aspects affected)	Potential Impact description
Soil, land use and land capability	The soil characteristics, land use and land capability of the proposed project area is currently associated with mining activities. The proposed project will have a further contribution to land use and land capability transformation as subsequently have a low cumulative impact (low) on the soil, land use and land capability of the area.
Biodiversity	The proposed development will result in further loss of floral habitat, diversity, and potential loss of floral SCC in the area.
Surface water	Natural flow of water has already been affected by mining activities within the vicinity. The proposed road relocation and associated stormwater management infrastructure will further alter the natural drainage patterns and flow within the catchment.
Air quality	Fuel combustion by vehicles and mobile equipment used in the construction phase in the surrounding area will result in a cumulative air quality impact.
Noise	Noise impacts from the construction activities as well as the mining activities in the area will result in a cumulative noise impact.
Sensitive landscapes	The proposed and existing mining activities in the area, as well as the agricultural activities conducted in the area, may cumulatively have an impact on the watercourses, riparian and instream habitat.
Visual	The area directly adjacent to the proposed 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.

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

7.6.1 Methodology applied for the proposed D4134 Road and 22 kV Powerline Relocation Project

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 take into account 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 16 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.

7.7 Positive and negatives that the proposed activity (in terms of the initial site layout) and alternatives will have on the environment and community affected

7.7.1 D4134 Road, Powerline and Stormwater Management Infrastructure: Layout Alternatives

Three alternatives in terms of the route location and layout were investigated during the feasibility phase of the project (refer to Figure 17 below). Option 1 is the preferred route layout and extends south of the current D4134 route and passes the overburden dumps where after it turns east over a dyke. Option 2 is the shortest route, situated south of the existing road. Option 3 extends north of the existing road and curves back to the existing road. The “no-go” alternative was also assessed and requires the road and powerline to remain in its current location. The “no-go” alternative will prevent mining activities from extending towards the north of the mining right area. The proposed powerline and stormwater management infrastructure will be constructed parallel to the D4134 road to ensure that the disturbance footprint is kept to a minimum. As a result, no separate alternatives are considered for the powerline and stormwater management infrastructure.

The positive and negative implications of the preferred layout of the D4134 road, 22 kV powerline and stormwater management infrastructure as well the alternatives identified have been provided below and assessed in terms of the environmental, economical and social aspects.



Table 18: Advantage and disadvantages of the proposed activities and preliminary identified alternatives

Alternative	Advantages	Disadvantages
Alternatives for the AAM proposed D4134 Road and 22 kV Powerline Relocation Project		
Layout Option 1 (preferred)	<p>Environmental: Of the three layout options, Option 1 (preferred option) is anticipated to have the lowest environmental impact. This is mainly due to the following:</p> <ul style="list-style-type: none"> • There are some existing culverts in place where the road is anticipated to cross drainage lines / river diversions. • The proposed location of the road and powerline will extend over partially disturbed areas (as a result of current mining activities). 	<p>Environmental: Clearance of vegetation in a Ecological Support Area.</p>
	<p>Economical: The location of the preferred alternative would be the most economical option in the long term, compared to the other two alternatives. The road and powerline would not have to be relocated in the future (as opposed to the other options) and is likely to remain until after closure.</p>	<p>Economical: Due to the length of the preferred option, the cost to relocate the road and powerline would likely be the highest.</p>
	<p>Social: Continued contribution to the socio economy in the area as mining can continue.</p>	<p>Social: None identified.</p>
Layout Option 2	<p>Environmental: Decreased impact footprint and habitat destruction. No high significant impacts that cannot be mitigated to an acceptable level.</p>	<p>Environmental: Negative environmental impacts will occur; however, impacts can be mitigated to an acceptable level. Several watercourse crossing would have occurred and additional culverts would have to be constructed to accommodate the stream crossings.</p>
	<p>Economical: This route is the shortest of all the alternatives and will likely have the lowest construction costs.</p>	<p>Economical: The road and powerline would have to be relocated again in the future due to mining activities progressing towards the north.</p>
	<p>Social: Continued contribution to the socio economy in the area as mining can continue.</p>	<p>Social: None identified.</p>
Layout Option 3	<p>Environmental: Decreased impact footprint and habitat destruction. No high significant impacts that cannot be mitigated to an acceptable level.</p>	<p>Environmental: Negative environmental impacts will occur; however, impacts can be mitigated to an acceptable level. Several watercourse crossing would have occurred and additional culverts would have to be constructed to accommodate the stream crossings.</p>



Alternative	Advantages	Disadvantages
	Economical: This alternative is a shorter route, and will result in lower construction costs.	Economical: The road and powerline would have to be relocated for second time in the future due to mining activities progressing towards the north. This will lead to additional costs.
	Social: Continued contribution to the socio economy in the area as mining can continue.	Social: None identified.
"No-go" Alternative	Environmental: The "no-go" alternative will not result in any environmental impacts (additional to the existing impacts associated with the current road and powerline location and payout).	Environmental: None identified.
	Economical: The "no-go" alternative will not incur any costs as the current location and layout of the road and powerline will remain.	Economical: Should the mine not relocate the road and powerline, mining activities will not be able to extend towards the north. As a result, mining resources and jobs will be lost due to the mine reaching the end of life sooner than anticipated.
	Social: None identified.	Social: Job losses can be anticipated and mine will no longer be able to contribute to the socio economy in the area.

7.7.2 Type of Activity

The mine has approval to extend mining operations to the north of the mining area and as a result, the existing road and powerline will need to be relocated in order to access the resources. No alternatives in terms of the type of activity were considered for this project.

7.7.3 Technology to be used

The mine proposes to make use of equipment and material available on site to relocate the D4134 road and 22 kV powerline. This forms part of the "BATNEEC" (Best Available Technology Not Entailing Excessive Costs) approach. No alternatives in terms of technology were considered for this project.



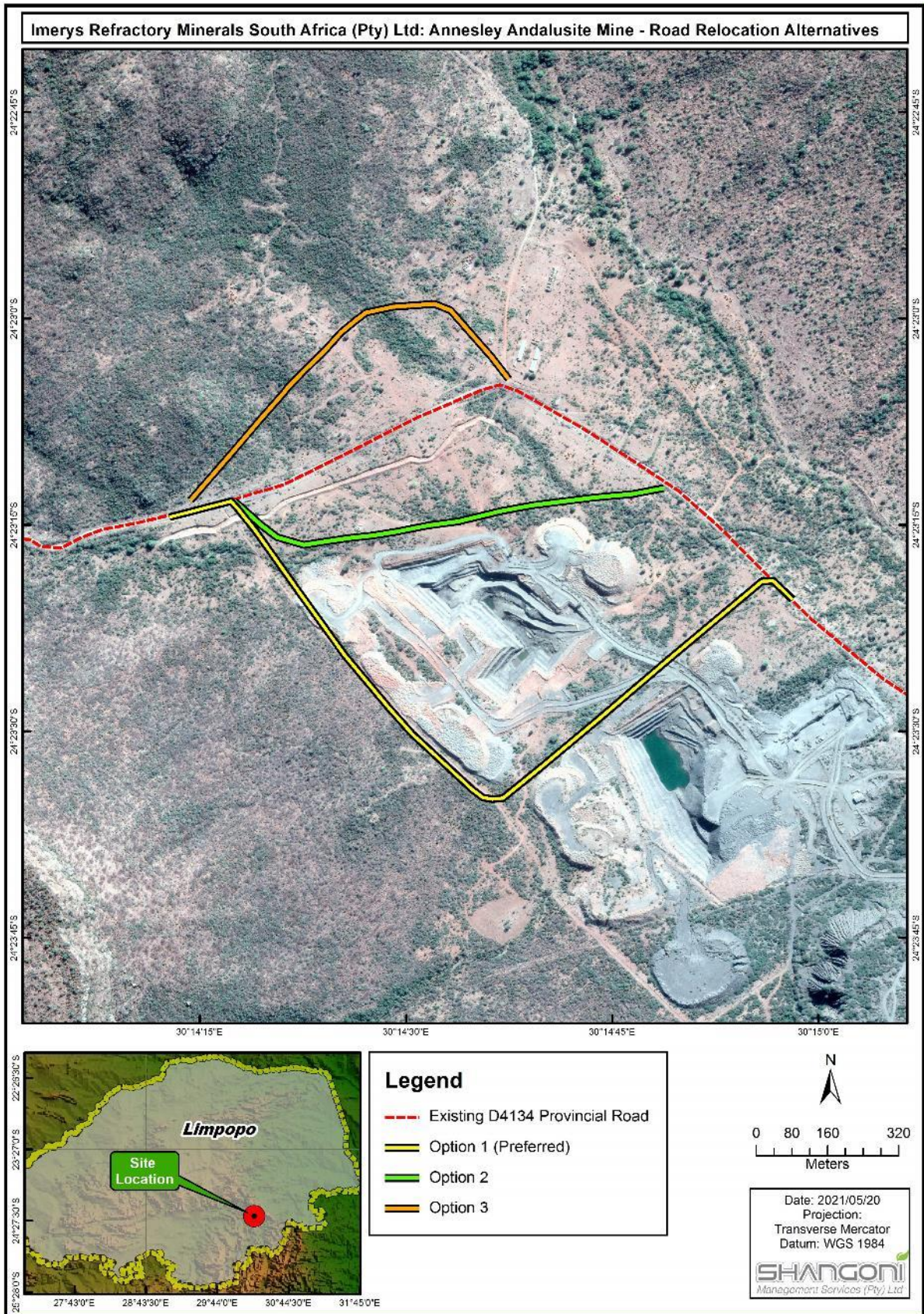


Figure 17: Alternatives considered for the proposed D4134 Road and 22 kV Powerline Relocation Project.



7.8 Possible mitigation measures that could be applied and the level of risk

The impact management measures and level of risk have been included under Section 7.5 of Part A and Section 1.4 of Part B. The table below provides for a summary of the issues and concerns as raised by affected parties and an assessment of the mitigations or site layout alternatives available to accommodate or address their concerns, together with an assessment of the impacts or risks associated with the mitigation or alternatives considered.

Table 19: Summary of issues and concerns raised by I&APs

Concerns as raised by affected parties	Mitigation measures or site alternative
No concerns have been raised thus far regarding the project or layout aspects, for which additional alternatives considerations (to those already identified) are required. Refer to Table 6 for comments received as part of the Scoping Phase PPP. For concerns identified as part of the EIAR / EMPr phase, such will be included in this table at finalisation of this report.	

7.9 Motivation where no alternative sites were considered

Alternatives were considered, assessed and discussed in this report. Refer to sections 7.5 and 7.7 in Part A above.

7.10 Final site layout plan

The outcome of the final site selection is discussed in section 13 of Part A and the final layout plan included in section 11.2 of Part A.

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 7.5 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 7.6 of Part A.

9 Assessment of each identified potentially significant impact and risk

Refer to the full risk assessment table provided in section 7.5 (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 impact 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)
Wetland delineation study		
Traffic impact assessment		
Biodiversity Assessment		

11 Environmental impact statement

11.1 Summary of the key findings of the environmental impact assessment

A summary of the high significant impacts (pre-mitigation) include: the impact of the construction activities on sensitive landscapes (watercourses, riparian and instream habitat) disturbance to the floral and faunal ecology through the clearance of vegetation, the impact from alteration of the topography, should Option 3 be implemented. Mitigation and management measures for the predicted impacts are included in Part B of this 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). All high significance impacts pre-mitigation will be lowered to medium and low significance impacts post-mitigation, except for riparian and instream habitat disturbance, which will remain high post-mitigation..

11.2 Final site map

Figure 3 depicts the final site map of 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 table below summarises the impact management outcomes for the proposed project for inclusion in the EMPr as well as for inclusion as conditions of authorisation.



Table 21: Impact management outcomes

Aspect affected	Impact management outcome	Standard to be achieved
Topography, soils, land use and land capability	<p>Disturbance to the natural topography should be limited to the construction footprint of the road, pylon locations and stormwater management infrastructure as far as possible.</p> <p>Preserve sufficient soil for future rehabilitation purposes.</p>	<p>Principles in the MPRDA, 2002, NEMA, 1998, NEM:WA, 2008, Regulations there under and amendments thereto.</p> <p>National Norms and Standards for the Remediation of Contaminated Land and Soil Quality (GNR.331 of 2014), thereunder.</p>
Biodiversity	<p>All construction activities must be carried out according to the generally accepted environmental best practice and the spatial footprint must be kept to a minimum.</p> <p>Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, should under no circumstances be fragmented or disturbed further. Clearing of vegetation should be minimized and avoided where possible. All activities must be restricted within the development footprint sensitivity areas. No loss of areas surrounding the development area. It is recommended that areas to be developed be specifically demarcated so that during the construction phase, only the demarcated areas be impacted upon (including fencing off the defined project area);</p> <p>All laydown, chemical toilets etc. should be restricted to low sensitivity areas. Any materials may not be stored for extended periods of time and must be removed from the project area once the construction/closure phase has been concluded. Buildings should preferably be prefabricated or constructed of re-usable/recyclable materials. No storage of vehicles or equipment will be allowed outside of the designated project areas.</p> <p>It is recommended that the supervisor of the vegetation clearing contractors receive adequate training as to the presence, identity, and management of species of conservation importance, and that a botanical specialist/ECO (Environmental Control Officer) be appointed during vegetation clearing to conduct monthly on-site audits of the vegetation clearing process</p> <p>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</p>	<p>NEM:BA (2004) and the regulations thereunder.</p> <p>Mining and Biodiversity Guideline: Mainstreaming biodiversity into the mining sector.</p> <p>Environmental Conservation Act, 1989 (Act No 73 of 1989).</p> <p>National Veld and Forest Fire Act, 1998 (Act No 101 of 1998).</p> <p>National Environmental Management: Protected Areas Act (NEM:PAA) (Act No 57 of 2003).</p>



Aspect affected	Impact management outcome	Standard to be achieved
	<p>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 during construction unless necessary. All contaminated soil/yard stone shall be treated in situ or removed and be placed in containers</p> <p>Leaking equipment and vehicles must be repaired immediately or be removed from the project areas to facilitate the repair</p> <p>A fire prevention and emergency response plan needs to be complied and implemented to restrict the impact fire might have on the project area and it's immediate surrounding.</p> <p>Alien and Invasive Plant ("AIP") species should be managed using the existing mine AIP management plan. Removal AIPs should preferably commence during the pre-construction phase and continue throughout the construction and operational phases. AIPs should be cleared within the project area before any vegetation clearing activities commence, thereby ensuring that no AIP propagules are spread, or soils contaminated with AIP seeds during the construction phase; and the existing mine AIP Management/Control Plan should be implemented by a qualified professional. No chemical control of AIPs to occur without a certified professional.</p> <p>Ensure that all site personnel have a basic level of environmental awareness training. A signed register of attendance must be kept for proof. Discussions are required on sensitive environmental receptors within the project area to inform contractors and site staff of the presence of SSC, their identification, conservation status and importance, biology, habitat requirements and management requirements the Environmental Authorisation and within the EMPr. The avoidance and protection of the surrounding watercourses and riparian areas must be included into a site induction. Contractors and employees must all undergo the induction and be made aware of the areas to be avoided.</p> <p>A Stormwater Management Plan must be developed to control runoff and prevent erosion of the site and its surroundings.</p>	



Aspect affected	Impact management outcome	Standard to be achieved
	<p>Appropriate stormwater structures alongside a stormwater management plan must be designed to minimise erosion of the surrounding environment and sedimentation of surrounding watercourses.</p> <p>Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion during flood events. This will also reduce the likelihood of encroachment by alien invasive plant species.</p> <p>Dust-reducing mitigation measures as per existing mine procedures must be strictly adhered to, for the road and any burrow pits (if any are required). This includes wetting of exposed soft soil surfaces.</p> <p>Mitigation measures include limiting the footprint area, restricting the footprint area to areas of lower sensitivity as far as practicable, and adherence to the DAFF permit guidelines</p> <p>Restricting the footprint area to areas of lower sensitivity as far as practicable, and adherence to the DAFF permit guidelines</p>	
Surface water	<p>To prevent erosion and siltation of watercourses.</p> <p>To prevent surface water quality deterioration.</p>	National Water Act, 1998 and associated Regulations.
Groundwater	To limit groundwater quality deterioration.	
Air quality	Prevent the deterioration of air quality.	<p>National Environmental Management: Air Quality Act (Act No 39 of 2004); Regulations there under and amendments thereto.</p> <p>GG 36974, R827, National Dust Control Regulations, 1 November 2013.</p>
Noise and vibration	Limit the generation of noise through the various activities to prevent the causing of any possible disturbance of fauna or communities as a result.	<p>Relevant sections of the National Environmental Management: Air Quality Act (Act No 39 of 2004); Regulations there under and amendments thereto.</p> <p>SABS Code of Practice 0103 of 2008: The measurement and rating of environmental noise with respect to land use, health, annoyance and to speech communication.</p> <p>SABS Code of Practice 0328 of 2008: Environmental Noise Impact Assessments.</p>
Sensitive landscapes	Minimise the impact on sensitive landscapes, riparian and instream habitat.	National Water Act, 1998 and associated Regulations.



Aspect affected	Impact management outcome	Standard to be achieved
Visual	To limit visual impacts.	National Environmental Management Act (NEMA) (Act 107 of 1998).
Socio-economic	To maximise economic opportunities for local employment and development.	Mineral and Petroleum Resources Development Act (MPRDA) (Act 28 of 2002). Social and Labour Plan.
Traffic	Prevent / manage any impacts on traffic.	Standards of the COTO Traffic Impact and Site Traffic Assessments and Requirements Manual. National Environmental Management Act (NEMA) (Act 107 of 1998).

13 Final proposed alternatives

Refer to section 7.1 of part A for the alternatives considered. Option 1 is the preferred option in terms of project layout.

14 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
Wetland and Watercourse Delineation and Assessment, compiled by WCS Scientific (Pty) Ltd, dated May 2021.	Wetland boundaries reflect the ecological boundary where the interaction between water and plants influences the soils, but more importantly the plant communities. The depth to the water table where this begins to influence plant communities is approximately 50 centimetres. This boundary, based on plant species composition, can vary depending on antecedent rainfall conditions, and can introduce a degree of variability in the wetland boundary between years and/or sampling period. The wetland systems were mapped from the most recent aerial imagery available at a scale of 1:5000 wherever possible and where the imagery was of sufficient resolution for this purpose. Due to the extent of the area and the mapping scale used, the actual extent of the boundaries of these systems may be underestimated or overestimated in places. This may range from metres to tens of metres but generally is regarded as being of sufficient accuracy for the purposes of this study. Delineation of the watercourses was made more challenging by the apparent history of human disturbance and erosion within the area. Prior to mining, the area supported a small, but widely spread rural community. Inhabited plots of land appear to have been cleared of vegetation, resulting in impacts to the riparian or watercourse vegetation where plots extended close to these vegetation types. Erosion has occurred along natural drainage lines and low-lying areas of the landscape. The alteration to natural vegetation patterns and topography resulting from the human habitation and erosion limited the confidence in the riparian boundaries mapped.



Specialist study	Assumptions and limitations
	<p>The water use risk assessment was based on the project description and proposed development and activity descriptions as detailed and illustrated in the wetland and water course delineation report.</p> <p>Reference conditions are unknown. This limits the confidence with which the (PES) is assigned.</p>
Surface water impact assessment	<p>Stormwater control recommendations are based on industry experience and best practice. Final designs for construction should be authorised by an approved engineer.</p> <p>Contour and elevation data as provided during the analysis are assumed to be accurate and representative of the site and catchment areas.</p> <p>Upstream catchment activities are interpreted according to common practices and no detailed insight is available on possible stormwater measures beyond the site. The assessment does not guarantee the integrity of downstream infrastructure in the event of release or discharge from site.</p> <p>The measures proposed as part of the stormwater management section of the report do not impose preference as this is an operational document to assist in the complete management of clean and dirty surface water in the vicinity of the operation.</p> <p>The measures proposed in the stormwater management plan section of the report do not specifically cover considerations relevant to stormwater management for the purpose of safety, like mine flooding and loss of life; the primary focus being environmental management and the identification of potential environmental concerns.</p> <p>It is assumed that the end user of the proposed provincial road will be the Road Agency Limpopo (“RAL”) as it is anticipated that all licences and responsibilities will be transferred from AAM to RAL after completion of the Project.</p> <p>Whilst every endeavour has been made to ensure that information provided is correct and relevant, the surface water impact assessment 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.</p>
Traffic assessment	No assumptions or limitations specified.
Biodiversity Assessment	<p>The assessment area was based on the area provided by the client and any alterations to the area and/or missing GIS information pertaining to the assessment area would have affected the area surveyed;</p> <p>Only a single-season survey was conducted for the respective studies, this would constitute a wet season survey;</p> <p>This assessment has not assessed any temporal trends for the project;</p> <p>Whilst every effort is made to cover as much of the site as possible, representative sampling is completed and by its nature, it is possible that some plant and animal species that are present on site were not recorded during the field investigations; and;</p> <p>The GPS used in the assessment has an accuracy of 5 m and consequently, any spatial features may be offset by 5 m.</p>



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

15.1 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 in order for it to be considered justifiable².

From all specialists' opinions, the proposed project is not considered a fatal flaw to the environment should the mitigation measures be implemented.

15.2 Conditions that must be included in the authorisation

Although the proposed project is expected to create some negative impacts, the EAP is of opinion that social and economic benefits will also be derived from the proposed project. Except for riparian and instream habitat disturbance that will remain high post-mitigation, impacts associated with the proposed project have a medium to low environmental impact significance if the recommended mitigation measures are effectively implemented. Conditions that must be included in the authorisation.

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

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

- The proposed 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 and the 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 proposed project.
- It is also proposed that, after construction has been completed, the EA be transferred to the RAL as they will be the end user and responsible entity after construction.

² Guideline on need and desirability in terms of the Environmental Impact Assessment (EIA) Regulations, 2010 (GN 891 of 20 October 2014)



16 Period for which Environmental Authorisation is required

If authorised, the relocated D4134 road, 22 kV powerline and stormwater management infrastructure will remain after closure of the mine, as the public will still need access to the road even after mining operations had ceased. The period for which environmental authorisation is required is indefinitely.

17 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.

18 Financial provisions

18.1 Explain how the aforesaid amount was derived.

The current financial provision for Annesley Mine will not be affected or deviated from as a result of this project. This is due to the fact that the road will remain post closure and will not be decommissioned or rehabilitated by the mine after closure.

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

As indicated in 18.1 above, the existing financial provision for 2021 will remain and will not be changed.

19 Deviations from the approved scoping report and plan of study

No deviations from the approved scoping report and plan of study have been undertaken.

20 Other information required by the competent authority

No specific information has been requested by the competent authority as yet.



20.1 Compliance with the provisions of section 24(4)(a) and (b) read with section 24(3)(a) and (7) of the National Environmental Management Act 107 of 1998

20.1.1 Impact on the socio-economic conditions of any directly affected person

Results of investigation, assessment and evaluation of impact on any directly affected person	Reference to where mitigation is reflected
The SLP reflects that the mine is actively involved in the community whereby funds are made available for the development of local infrastructure and social upliftment.	Section 7.5

20.1.2 Impact on any national estate referred to in section 3(2) of the National Heritage Resources Act 25 of 1999

Results of investigation, assessment and evaluation of impact on any national estate	Reference to where mitigation is reflected
A Heritage Impact Assessment was not undertaken as part of this project; however; the existing Heritage Impact Assessment previously undertaken for the mine, was sourced and incorporated in this report. If any palaeontological material or heritage resources are exposed during construction activities, all construction activities must cease, a 30 m no-go barrier constructed and the SAHRA contacted for further investigation.	Refer to Chapter K.

21 Other matters required in terms of section 24(4) (a) and (b) of the Act

No other matters required in terms of section 24(4) (a) and (b) have been identified. An impact assessment for the proposed project has been undertaken and include consultation with and participation of interested and affected parties. Applying the hierarchical approach to impact management was firstly considered to avoid negative impacts, but where avoidance was not possible, to better mitigate and manage negative impacts. Where impacts were found to be potentially significant, various mitigation measures to manage and monitor the impacts of the project have been proposed. Furthermore, the environmental impact statement (Part A, section 11) summarises the key findings of the environmental impact assessment and negative implications of the proposed project.



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 a map that superimposes the proposed D4134 road and 22 kV powerline relocation project.



1.4 Description of the impact management outcomes and actions

Table 24: Measures to rehabilitate the environment affected by the proposed project

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	
1	Geology	No impact to geology is anticipated as a result of the proposed AAM proposed D4134 Road and 22 kV Powerline Relocation Project.							
2a	Topography	Surface infrastructure	Option 1 (preferred route)	The project area footprint (3.3 ha) will be levelled and compacted during the construction phase. These construction and operation of the activities will influence the nature of the topography. Changes to the topography of the site will increase the amount of run-off from site.	Construction, Operational.	Control	Disturbance to the natural topography should be limited to the construction footprint of the road, pylon locations and stormwater management infrastructure as far as possible. A disturbance distance (including the road servitude) of 30 m is anticipated.	<i>Outcome:</i> Ensure minimum change in topography. <i>Standard:</i> Principles in the MPRDA, 2002, NEMA, 1998, NEM:WA, 2008, Regulations there under and amendments thereto.	Construction phase
2b			Option 2 (shortest route)						
2c			Option 3 (northern route)						
3a	Soils, land use and land capability	Clearing and stockpiling of soil.		The removal of topsoil may result in the mixing of the horizons of the soil that will have an impact on the fertility and production potential of the soil.	Construction, Operational.	Control, minimise	Soil must be stripped and stockpiled for future rehabilitation purposes. Additional related mitigation measures include pollution prevention and limiting site clearance to designated footprint areas. Contain spillage; excavate and dispose soil if required. Utilisation of spill kits and/or excavation of affected soil with subsequent disposal at a licensed disposal site is vital. Compilation and implementation of an effective stormwater design report specific to this site, to minimise runoff, erosion and sedimentation. Stormwater channels should have necessary energy dissipators to slow the water flow and limit erosion.	<i>Outcome:</i> Preserve sufficient soil for future rehabilitation purposes. <i>Standard:</i> Principles in the MPRDA, 2002, NEMA, 1998, NEM:WA, 2008, Regulations there under and amendments thereto. National Norms and Standards for the Remediation of Contaminated Land and Soil Quality (GNR.331 of 2014), thereunder.	Construction phase
3b				The stockpiling of topsoil may result in a decrease in the fertility of the soil and the leaching of minerals due to exposure of the soil to elements.					
3c			All route options (Due to the similarity of current soil, land use and land capability conditions in all three options, there will be no distinction in the impact rating between the three options.)	A loss of microbes and viable seed may occur as a result of the stockpiling of topsoil.					
3d				The land use and land capability will be permanently altered due to the construction and operation of the relocated road and powerline.					
3e				The relocation of the D4134 road and 22 kV powerline may impact on soil in terms of compaction and possible spillages from machinery as well as spillages during the operational phase.					
3f				Ineffective erosion control along the relocated D4134 road and stockpile areas may lead to siltation of downstream water resources and scouring of soil.					
4a	Biodiversity	Clearing and/ or disturbance of	Option 1 (preferred route)	Loss of flora specimens due to clearing of areas for development, which may include protected (and endangered)	Construction, Operational.	Avoid, control	All construction activities must be carried out according to the generally accepted environmental best practice and the spatial footprint must be kept to a minimum.	<i>Outcome:</i>	Construction 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			
4b	indigenous vegetation	Option 2 (shortest route)	species. These areas are of value as they serve as links to allow the migration of flora between areas on an ecosystem scale.			Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, should under no circumstances be fragmented or disturbed further. Clearing of vegetation should be minimized and avoided where possible. All activities must be restricted within the development footprint sensitivity areas. No loss of areas surrounding the development area. It is recommended that areas to be developed be specifically demarcated so that during the construction phase, only the demarcated areas be impacted upon (including fencing off the defined project area);	Restricting the footprint area to areas of lower sensitivity as far as practicable, and adherence to the DAFF permit guidelines. <i>Standard:</i> NEM:BA (2004) and the regulations thereunder. Mining and Biodiversity Guideline: Mainstreaming biodiversity into the mining sector. Environmental Conservation Act, 1989 (Act No 73 of 1989). National Environmental Management: Protected Areas Act (NEM:PAA) (Act No 57 of 2003).				
4c		Option 3 (northern route)									
4d		Option 1 (preferred route)	The transformation of land increases the fragmentation of habitats and reduces the linkage role that this undeveloped land fulfils between different areas of biodiversity.						Construction, Operational.	Avoid, control	
4e		Option 2 (shortest route)									
4f		Option 3 (northern route)									
4g		Option 1 (preferred route)	Increase in alien species proliferation.						Construction, Operational.	Avoid, control	All laydown, chemical toilets etc. should be restricted to low sensitivity areas. Any materials may not be stored for extended periods of time and must be removed from the project area once the construction/closure phase has been concluded. Buildings should preferably be prefabricated or constructed of re-usable/recyclable materials. No storage of vehicles or equipment will be allowed outside of the designated project areas.
4h		Option 2 (shortest route)	Potential ineffective rehabilitation of disturbed areas may result in alien and invasive plant proliferation, which might spread to surrounding undisturbed								



4i			Option 3 (northern route)	areas and will result in loss of habitat biodiversity.		<p>presence, identity, and management of species of conservation importance, and that a botanical specialist/ECO (Environmental Control Officer) be appointed during vegetation clearing to conduct monthly on-site audits of the vegetation clearing process</p> <p>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 during construction unless necessary. All contaminated soil/yard stone shall be treated in situ or removed and be placed in containers</p> <p>Leaking equipment and vehicles must be repaired immediately or be removed from the project areas to facilitate the repair</p> <p>A fire prevention and emergency response plan needs to be compiled and implemented to restrict the impact fire might have on the project area and it's immediate surrounding.</p> <p>Alien and Invasive Plant ("AIP") species should be managed using the existing mine AIP management plan. Removal AIPs should preferably commence during the pre-construction phase and continue throughout the construction and operational phases. AIPs should be cleared within the project area before any vegetation clearing activities commence, thereby ensuring that no AIP propagules are spread, or soils contaminated with AIP seeds during the construction phase; and the existing mine AIP Management/Control Plan should be implemented by a qualified professional. No chemical control of AIPs to occur without a certified professional.</p> <p>Ensure that all site personnel have a basic level of environmental awareness training. A signed register of attendance must be kept for proof. Discussions are required on sensitive environmental receptors within the project area to inform contractors and site staff of the presence of SSC, their identification, conservation status and importance, biology, habitat requirements and management requirements the Environmental Authorisation and within the EMP. The avoidance and protection of the surrounding watercourses and riparian areas must be included into a site induction. Contractors and employees must all undergo the induction and be made aware of the areas to be avoided.</p> <p>A Stormwater Management Plan must be developed to control runoff and prevent erosion of the site and its surroundings. Appropriate stormwater structures alongside a stormwater management plan must be designed to minimise erosion of the surrounding environment and sedimentation of surrounding watercourses.</p> <p>Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion during flood events. This will also reduce the likelihood of encroachment by alien invasive plant species.</p>		
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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
						<p>Dust-reducing mitigation measures as per existing mine procedures must be strictly adhered to, for the road and any burrow pits (if any are required). This includes wetting of exposed soft soil surfaces.</p> <p>Mitigation measures include limiting the footprint area, restricting the footprint area to areas of lower sensitivity as far as practicable, and adherence to the DAFF permit guidelines.</p>		
5a	Surface water	Use of waste rock and overburden material to construct the road.	All route options <i>(Due to the similarity of current surface water conditions in all three options, there will be no distinction in the impact rating between the three options.)</i> The use of waste rock material may detrimentally impact on watercourses	Construction	Control	<p>Disturbed areas to be limited to the footprint as depicted in the layout plan.</p> <p>The laydown areas for the construction site must be kept as small as reasonably possible.</p> <p>All vehicle and equipment usage should be limited to designated areas only.</p> <p>Where possible, construction activities should be scheduled to coincide with the dry season.</p> <p>Treat all hydrocarbon spills as hazardous waste and dispose of accordingly.</p>	<p><i>Outcome:</i> To prevent erosion and siltation of watercourses. To prevent surface water quality deterioration. <i>Standard:</i> National Water Act, 1998 and associated Regulations.</p>	Construction phase
5b		Grading, vegetation clearing and soil stripping	All route options <i>(Due to the similarity of current surface water conditions in all three options, there will be no distinction in the impact rating between the three options.)</i> Deterioration of surface water quality due to an increase sediment or other pollutants, affecting the use of surface water as a natural resource.	Construction	Avoid, control	<p>Emergency spill kits should be available and spills should be cleaned up quickly with an approved absorbent material.</p> <p>All mixing practices should be conducted on impermeable surfaces.</p> <p>Regular maintenance should be conducted on all vehicles and equipment used during the construction phase to ensure they are always in a good working order.</p> <p>Store fuel, oil, and other hazardous substances in designated bunded areas able to contain 110% of the storage capacity.</p>		
5c		Use of hazardous materials	All route options <i>(Due to the similarity of current surface water conditions in all three options, there will be no distinction in the impact rating between the three options.)</i> Deterioration of water quality due to chemical contamination affecting the use of surface water as a natural resource.	Construction	Avoid, mitigate	<p>Refuelling of vehicles to take place on an impermeable surface fitted with a sump to contain any spillages.</p> <p>Stormwater infrastructure associated with the proposed provincial road (i.e., all culverts and clean water channels) should be sized to accommodate for the 1:20-year flood event. This will ensure that no clean runoff enters the mining area under normal rainfall conditions and that spillages are limited to rainfall events greater than a 1:20-year flood.</p>		
5d		Operation of D4134 Provincial Road	All route options <i>(Due to the similarity of the current surface water baseline conditions in all three options, there will be no distinction in the impact rating between the three options.)</i> Deterioration of surface water quality due to increased erosion, sedimentation and contamination of clean water runoff with affected mine water, affecting the use of surface water as a natural resource.	Operational	Avoid, mitigate	<p>The clean water channels will be earth / natural gravel lined to encourage groundwater infiltration. In areas where the channel slope is greater than 2%, the channel will be stone pitched to prevent erosion while still allowing for groundwater infiltration.</p> <p>Erosion prevention measures (i.e., gabions, cement, or rock) should be installed at all culvert inlets / outlets and at the clean water channel outlet. It is also recommended that the soil be compacted and vegetation growth be encouraged at these areas to stabilise the ground and further prevent erosion.</p> <p>Roads should be constructed and managed in such a manner as to disperse runoff and to prevent the concentration of stormwater flow.</p> <p>AAM should develop and implement a maintenance schedule to ensure that the integrity and functionality of all stormwater management infrastructure (i.e., all culverts and clean water channels) are maintained at all times.</p>		



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
6	Groundwater	Groundwater contamination	All route options <i>(Due to the similarity of the current baseline groundwater conditions in all three options, there will be no distinction in the impact rating between the three options.)</i> Groundwater quality may be impacted in the event of a spillage of chemicals or hydrocarbon materials (e.g. oil spill from vehicles and machinery).	Construction and operational	Control, avoid, mitigate	Options for reducing the source of contaminants (normal vehicular traffic) are limited and not feasible to implement. It is recommended that stormwater arising from the road surface be discharged into vegetated swales rather than directly into adjacent wetland or water resources. Emergency response to spillages of hazardous substances along the route should also be well defined and implemented.	<i>Outcome:</i> To limit groundwater quality deterioration. <i>Standard:</i> National Water Act, 1998 and associated Regulations.	Construction phase
7	Air quality	Construction and earthmoving activities as well as the use of the D4134 road.	All route options <i>(Due to the similarity of the prevailing wind direction in all three options, the impact rating for all three options will be same.)</i> During the construction phase of the proposed project, dust (particulate matter, PM10 and PM2.5) may be generated and may have an impact on the ambient air quality of the area. Dust will also be generated during the operational phase due to the use of the D4134 road by the public.	Construction and operational	Control, avoid, mitigate	Dust management to be done on all cleared areas and the unpaved roads. Construction equipment to be selected in such a manner as to minimise emissions and equipment to be serviced at regular intervals.	<i>Outcome:</i> Prevent the deterioration of air quality. <i>Standard:</i> 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.	Construction phase
8	Noise and vibration	Increase in noise levels and disturbance.	All route options <i>(Due to the similarity of the prevailing wind direction in all three options, the impact rating for all three options will be same.)</i> Increased noise levels are anticipated during the construction phase. Noise impacts of low significance will continue during the operational phase due to the use of the D4134 road by the public.	Construction	Control	Construction activities are to be kept to working daylight hours.	<i>Outcome:</i> Limit the generation of noise through the various activities to prevent the causing of any possible disturbance of fauna or communities as a result. <i>Standard:</i> Relevant sections of the National Environmental Management: Air Quality Act (Act No 39 of 2004); Regulations there under and amendments thereto. SABS Code of Practice 0103 of 2008: The measurement and rating of environmental noise with respect to land use, health, annoyance and to speech communication. SABS Code of Practice 0328 of 2008: Environmental Noise Impact Assessments.	Construction phase
9	Sites of Archaeological and Cultural Importance ³	Graves that were previously identified that would have been affected by mining activities, were relocated. As a result, no additional impacts to sites of archaeological and cultural importance are anticipated. It is recommended that construction activities associated with this project should cease if any sites of historic or cultural importance be noticed within the development footprint. The relevant authorities should be notified and a buffer area should be maintained around existing known sites of archaeological and cultural importance.						



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
10a	Sensitive landscapes (Watercourses- Riparian and instream habitat)	Construction of a public access road and powerline	Riparian and Instream Disturbance Habitat	Construction (permanent loss)	Avoid, remedy	<p>All laydown areas, material stockpiles, temporary construction villages, support infrastructure and heavy machinery parking areas should be established outside of the delineated watercourses and riparian habitat.</p> <p>Such areas should be clearly demarcated and all associated activities restricted to the demarcated areas.</p> <p>Wherever possible, construction laydown areas and stockpiles should be located in areas of existing disturbance.</p> <p>No materials may be excavated or taken from within the delineated watercourses or rivers or within the 1:100-year floodline.</p> <p>Keep the clearing of natural vegetation in watercourses and riparian areas to a minimum and attempt to ensure that clearing occurs in parallel with the construction progress where practically possible.</p> <p>Limit construction equipment operating in watercourses/riparian areas to that needed to clear the construction servitude.</p> <p>As far as practically possible, protected plants/trees should be avoided and if not possible, removed intact and relocated/used in rehabilitation. Smaller trees (less than 3-4 m high) could be easily removed intact and replanted outside of the construction zone. Any protected or red listed plant species may require a permit to remove. Potentially relevant protected plant species for the local area include, but may not be limited to <i>Balanites maughamii subsp. maughamii</i>, <i>Boscia albitrunca</i>, <i>Combretum imberbe</i>, <i>Philenoptera violacea</i>, <i>Sclerocarya birrea subsp. Caffra</i>.</p> <p>A protected tree survey should be undertaken prior to any vegetation clearing and the appropriate permitting process completed prior to removal of protected trees.</p> <p>No powerline pylons or fence posts should be placed in the active channel of a watercourse or within the river diversion.</p>	<p><i>Outcome:</i> Minimise the impact on sensitive landscapes, riparian and instream habitat.</p> <p><i>Standard:</i> National Water Act, 1998 and associated Regulations.</p>	Construction 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
10b			Flow Impoundment and Concentration	Construction, Operational		<p>Construction in rivers and watercourses should proceed during the dry winter and spring months (low or zero flow periods) only in order to significantly limit the potential for erosion linked to high runoff rates.</p> <p>Watercourse crossings should be designed and constructed so that no concentration of flows takes place downslope of the crossings during regular return storm events. □ Bridge crossings, which should span the entire active channel, are preferred over single or multiple culvert crossings, for all seasonal to permanent rivers if the road route will be a permanent infrastructure. Box culverts are preferred over pipe culverts.</p> <p>Where culverts are used, a sufficient number of suitably sized culverts should be positioned across the full width of the active channel at each crossing to ensure that the natural flow regime is not altered.</p> <p>All culvert discharge points should be suitably protected against erosion. □ Any bridge crossings, if applicable, should have sufficient clearance (length and height) to accommodate regular storm events up to and including the 1:10 year storm event and to prevent concentration of low flows.</p> <p>Regular inspections and maintenance of all crossings and culverts should be undertaken along the road route. As a minimum, all culverts should be cleared of debris at the start of the rainy season (September every year) and during the middle of the rainy season (December/January). In addition, inspections and, if required, maintenance should be undertaken after every significant flood event.</p>		
10c			Soil Erosion	Construction		<p>The design of the road should allow for regular drainage of surface flows away from the road and road verges. This should be done to prevent surface runoff from the road building up sufficient volume and velocity to cause or exacerbate soil erosion.</p> <p>All points of confined discharge should be reinforced to absorb the impact of flow and spread confined flows before discharge into the receiving environment.</p> <p>Construction in rivers/watercourses should proceed during the dry winter and spring months (low or zero flow periods) only in order to limit the potential for erosion linked to high runoff rates.</p> <p>If standing water or saturated soils are present, or if construction equipment causes ruts, use should be made of low-ground-weight construction equipment, or normal equipment should be operated on timber riprap, prefabricated equipment mats, or terra mats.</p> <p>If sandbags are used to temporarily divert water, then these bags should be in good condition.</p> <p>Any erosion points created during construction should be filled and stabilized immediately.</p> <p>Stockpiles must be protected from erosion, stored on flat areas where possible, and be surrounded by appropriate berms.</p> <p>Install protective works and stabilizing structures (e.g.: gabions, reno-mattresses) to stabilize and protect unstable banks and any headcuts at, or near, the crossing points (i.e. immediately upstream and downstream of the road crossings).</p>		



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
10d						<p>No stockpiling of soils or materials should take place within a watercourse, including wetlands and the riparian zone of streams/rivers.</p> <p>Install sediment barriers (e.g. silt fences, sandbags, hay bales, earthen filter berms, retaining walls and check dams) across the entire construction right of way at all watercourse crossings where necessary to contain spoil and prevent sediment flow into rivers.</p> <p>Pipes / diversion structures should be used to deflect water away from active works areas where necessary (e.g. work within channels).</p> <p>Excavated and imported material should be stored away from streams and rivers and other areas of concentrated flow to limit the risk of sediment wash to downstream areas.</p> <p>Soil required for construction purposes must not be derived from the watercourses.</p> <p>Exposed soils should be rehabilitated/revegetated as soon as practically possible to limit the risk of erosion. The channel embankments must be rehabilitated to ensure both longitudinal and cross-sectional stability against summer floods. Depending on the circumstances, this may necessitate stabilizing structures such as gabions or reno mattresses as well as careful attention to rehabilitation</p>		
						<p>To minimise the risk of erosion, the extent of disturbed vegetation and soil should be kept to a minimum. It is recommended that prior to the commencement of construction activities that the entire construction servitude, including lay down areas and stockpile areas etc., be fenced off and clearly demarcated. All construction activity should be contained within this demarcated servitude.</p> <p>All recommendations made to limit soil erosion should be fully implemented as limiting erosion will limit the source of sediments.</p> <p>The project Environmental Officer ("EO") / Environmental Control Officer ("ECO") or equivalent should perform periodic visual inspections of on-site water quality, identifying the source of any rapid increases in turbidity of surface waters and remedying this where necessary.</p>		
						<p>Use of potentially polluting substances on site should be strictly controlled and only handled in designated areas under supervision of competent and trained personnel.</p> <p>Storage of potentially hazardous materials (e.g. fuel, oil, cement, bitumen, paint, etc.) should be outside of the 100-year flood line, or beyond a horizontal distance of 30 m from any watercourse or drainage line, or as specified by the ECO. This applies to storage of these materials and does not apply to normal operation or use of equipment in these areas.</p> <p>It is recommended that all construction camps, lay down areas, batching plants and any stores in general should be located a distance of at least 30 m in an upland direction from the edge of delineated riparian areas. These activities can occur closer only if the ECO finds, in advance, no reasonable alternative and the contractors have taken appropriate steps (including secondary containment structures) to prevent spills and provide for prompt clean-up in the event of a spill.</p> <p>To prevent spillages, no diesel or oil should be stored on site, other than what is required for work undertaken during the</p>		
10e			Water Quality Deterioration	Construction, Operational				



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
						<p>course of 1 day. Such diesel and oil should be stored in a way that will allow any spillages to be easily and quickly isolated (e.g. stored on plastic sheeting or on impermeable bunded areas).</p> <p>Spillages of fuels, oils and other potentially harmful chemicals should be cleaned up immediately and contaminants properly drained and disposed of using proper solid/hazardous waste facilities (not to be disposed of within the natural environment). Any contaminated soil from the construction site must be removed and rehabilitated timeously and appropriately.</p> <p>Emergency response to spillages of hazardous substances along the route should also be well defined and tested regularly to ensure rapid response to, containment of, and neutralisation of any spillages. All emergency services (i.e. police, ambulances, tow trucks etc.) should be made aware of the responsible authority to contact in the case of spillages.</p> <p>Operation and storage of machinery and construction-related equipment must be done outside of delineated rivers wherever possible.</p> <p>Construction materials liable to spillage are to be stored in appropriate containment structures (e.g. drip-trays).</p> <p>Mechanical plant and bowsers must not be refuelled or serviced within or directly adjacent to any watercourse (including river, streams and wetlands).</p> <p>Provide drip-trays beneath standing machinery/plant.</p> <p>Provide adequate waste disposal facilities (bins) and encourage workers not to litter or dispose of solid waste in the natural environment but to use available facilities for waste disposal.</p> <p>Ensure that any rubbish is regularly cleared from the site, especially from rivers/streams.</p> <p>Routinely check machinery/plant for oil or fuel leaks each day before construction activities begin.</p> <p>No stockpiling should take place within a watercourse, including the riparian area of streams/rivers.</p> <p>Any cement mixing activities should occur outside of streams/rivers. Cement mixing boards should be used, and no cement should be mixed directly on the ground surface. Cement products/wash are not to be disposed of into the natural environment. Dispose of all visible remains of excess cement and concrete after the completion of tasks. Dispose of in the approved manner (solid waste concrete may be treated as inert construction rubble, but wet cement and liquid slurry, as well as cement powder must be treated as hazardous waste).</p> <p>Sanitation – portable toilets (1 toilet per 30 users is the norm) to be provided where construction is occurring. Workers need to be encouraged to use these facilities and not the natural environment. Toilets should be located outside of the 1:100-year flood line of a watercourse or 30 m from any natural water bodies, including streams. Waste from chemical toilets should be disposed of regularly and in a responsible manner by a registered waste contractor.</p>		
11a	Visual	Option 1 (preferred route)		Construction and operational	Control, mitigate	All disturbed areas outside of the direct footprint of the relocated road, powerline and stormwater management	Outcome:	Construction 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	
11b		Visibility of mining activities from the D4134 road	Option 2 (shortest route)	Mining and mining related activities will be more visible due to the new location of the D4134 road.		infrastructure are to be rehabilitated. Where possible, visual barriers must be in place to reduce the visibility of mining activities from the relocated road. Dust suppression should be applied during the construction phase to reduce visual impacts.	To limit visual impacts. <i>Standard:</i> National Environmental Management Act (NEMA) (Act 107 of 1998).		
11c	Option 3 (northern route)								
12	Socio-economic	Construction and use of infrastructure associated with the proposed project	All route options.	Job security of the mine's current employees will continue, along with other benefits arising from the Social and Labour Plan.	Construction and operational	N/A	Maximise positive impact.	<i>Outcome:</i> To maximise economic opportunities for local employment and development. <i>Standard:</i> Mineral and Petroleum Resources Development Act (MPRDA) (Act 28 of 2002). Social and Labour Plan.	Construction phase
13	Traffic	Traffic congestion and extended travel time.	All route options <i>(Traffic counts for all three options were assumed to be same and as such no differentiation in the impacts are expected)</i>	With the implementation of the proposed diversion as well as the additional estimated 5-year traffic growth, this intersection will have a worst-case Level of Service of ("LOS") A, with a longer average delay of 5.8 seconds.	Construction and operational	Control	A maximum speed of 40 km/h is allowed on the proposed road diversion. Speed limit signs, warning signs (T-junction) and dead-end chevrons to be erected.	<i>Outcome:</i> Prevent / manage any impacts on traffic. <i>Standard:</i> Requirements of the Mpumalanga Department of Roads and Transport. Standards of the COTO Traffic Impact and Site Traffic Assessments and Requirements Manual. National Environmental Management Act (NEMA) (Act 107 of 1998).	Construction phase



1.5 Closure objectives and financial provision

1.5.1 Closure objectives identified

The relocated D4134 road and powerline will remain even after closure of the AAM is obtained. It is assumed that the end user of the proposed provincial road will be the Road Agency Limpopo (“RAL”) as it is anticipated that all licences and responsibilities will be transferred from AAM to RAL after completion of the project. As such, no closure objectives have been identified for the project.

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

Refer to section 1.5.1 above.

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

A rehabilitation plan is not applicable to this project, as the road will remain post closure.

1.5.4 Explain why it can be confirmed that the rehabilitation plan is compatible with the closure objectives

Refer to section 1.5.3 above.

1.5.5 Calculate and state the quantum of the financial provision required to manage and rehabilitate the environment in accordance with the applicable guideline

Refer to section 18 (Part A).

1.5.6 Confirm that the financial provision will be provided as determined

As discussed above, financial provision will not be made available specifically to this project as the project will remain post-closure for public access..

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.

1.6.1 Soil

Monitoring of soil conditions should be in line with the AAM existing Standard Operating Procedures (“SOP”) and should be implemented for the entire duration of the construction phase. Soil monitoring should also include:

- Inspections of the roads for any pollution.



- Inspection of road routes.
- Erosion monitoring.
- Surface water quality monitoring; groundwater quality monitoring; and monitoring of surface water drainage systems in accordance with the water monitoring programme.
- Spill handling procedures should be adopted in the event of a spillage.

1.6.1.1 Monitoring frequency

Continuous monitoring throughout the construction phase or as per the SOP.

1.6.1.2 Monitoring parameters

As per section 1.6.1 above.

1.6.2 Biodiversity

A floral monitoring plan must be designed and implemented throughout the construction phase of the proposed project. The removal of indigenous and protected species should be documented, after obtaining the relevant approvals and permits. The mine's current alien and invasive species eradication programme should be applied to the specific project area.

1.6.2.1 Monitoring frequency

Continuous monitoring throughout the construction phase and as per the weed eradication programme.

1.6.2.2 Monitoring parameters

As per section 1.6.2 above.

1.6.3 Surface water and groundwater monitoring

Taking into consideration the number of biomonitoring, groundwater and surface water monitoring already implemented in the area, no additional monitoring points are recommended. The mine's current monitoring programme was compiled in line with the stipulated conditions as per the mine's existing IWUL.

1.6.3.1 Monitoring frequency

Continuous monitoring throughout the construction phase. This includes monthly monitoring of existing surface water monitoring localities and quarterly monitoring of existing groundwater localities.

1.6.3.2 Monitoring parameters

As per the existing IWUL, or alternatively specified in the WUL to be issued as part of this project.

1.6.4 Air quality

Current monthly dust fallout monitoring should continue to be implemented through the construction phase of the activity. No additional air quality monitoring localities are proposed as part of this project.



The monthly dustfall monitoring reports comply with Regulation 5(a) of the National Dustfall Control Regulations.

1.6.4.1 Monitoring frequency

Monthly monitoring and reporting at existing monitoring localities.

1.6.4.2 Monitoring parameters

As per the current dust fallout monitoring report in accordance with the National Dustfall Control Regulations.

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

Formal training will be provided to all employees regarding the hazards of the duties to be performed to both their health as well as the surrounding environment. It is the responsibility of the Mine Manager and the Health and Safety Officer to ensure that adequate training is provided to all employees. It is also the responsibility of the relevant Heads of Departments to identify the need for further training. As part of the mandatory training provided to all employees and contractors, environmental awareness training will be provided, as described below.

The following environmental awareness training will be implemented by the applicant to inform employees and contractors of the environmental risk that may result from their work, or the risk of their interaction with the sensitive environment. The training will be conducted as part of the induction process for all new employees (including contractors) that will perform work in terms of the proposed activities. Proof of all training provided must be kept on-site.

The environmental awareness training will, as a minimum cover the following topics:

- Air quality
 - Activities that may result or mitigate impact on air quality; speeding on roads, dust suppression, etc.
 - Negative impacts on the receiving environment if mitigation measures are not implemented.
- Surface and groundwater (including sensitive landscapes such as wetlands)
 - Risks to surface and groundwater, e.g. fuel and chemical handling and risks to wetland and pan areas.
 - How incidents should be reported, and emergency requirements.



- The importance of stormwater control, maintenance of pollution control infrastructure.
- The importance to reuse water and to prevent spillages.
- Cultural heritage
 - To respect all cultures and believes.
 - To remain within working areas and not to enter or interfere with any cultural heritage.
 - How to report any sightings as identified during operational activities (e.g. fossils or additional graves).
- Fauna
 - Overview of the fauna found on site and the uniqueness thereof.
 - Mitigation measures that all contractors and employees need to abide by.
 - No contractor or personnel allowed to catch or kill any species, and how any sightings should be reported if further actions are required (e.g. to catch and release).
- Flora
 - Overview of the flora diversity on site, and the rare and endangered nature thereof.
 - Measures taken by the mine to protect species.
 - No contractor or personnel allowed to remove, harvest or destroy any flora species unless clearly instructed based on the construction and operational plans.
- Waste management
 - The correct segregation of general and hazardous waste.
 - Do's and don'ts with respect to waste disposal.
 - Measures to avoid waste generation and to participate in waste minimisation/reduction strategies.
- Traffic
 - Abide by traffic rules, no speeding allowed.
 - To stay on designated roads (and not to drive on areas that are not fit and designed for this purpose).
 - To be aware of the fauna species and to be on the lookout and avoid collisions.
- Natural Resource Consumption
 - Minimise unnecessary use of energy by making use of energy saving devices, switching off non-essential appliances etc.
 - Optimise utilisation of mining equipment, travelling routes etc.
- Emergency Preparedness and Response
 - Designated smoking areas.
 - How to report any emergency or incident.



- How to respond when emergency alarm goes off.
- General rules and conduct
 - Respect for the sensitive environment.
 - Do not litter.
 - HIV/AIDS awareness.
 - Respect for each other and for different cultures.
 - Safety and health requirements.

1.9 Specific information required by the Competent Authority

The information, as presented in Table 24 below, has been requested by the Competent Authority upon acceptance of the Scoping Report.

“a) Details of the land use for the site and infrastructure after decommissioning in 20-30 years.”

As discussed in 7.4.1 and 7.4.2 above, the proposed project falls within the AAM Mining Right boundary and as result, have similar soil, land use and land capability characteristics of the mining area. Some areas have already been disturbed by previous mining activities, and some areas are still vegetated and will require vegetation clearance. The Biodiversity Study is attached as Appendix D4. The D4134 road and powerline will remain after decommissioning and closure of the mine. The future land use will therefore remain demarcated for the road and powerline.

“b) Total footprint of the proposed development should be indicated.”

All activities are anticipated to take place within the road reserve. The road reserve is 20m wide and the length of the road is 1630 m. This totals to a disturbed area of 3.3 ha.

“c) Possible impacts and effects of the development on the vegetation ecology with regard to lowland-highland interface in the locality should be indicated.”

Refer to section 7.5.1 above.

“d) Possible impacts and effects of the development on the surrounding industrial area.”

Refer to section 7.5.1 above.

“e) Information on services required on the site, e.g. sewage, refuse removal, water and electricity. Who will supply these services and has an agreement and confirmation of capacity been obtained?”

The existing mining facilities and services will be used. No additional services will be required.

“f) A construction and operational phase EMP to include mitigation and monitoring measures.”

Refer to the EMP section in this report.

“g) Should blasting be required, appropriate mitigation measures should be provided”

It is not anticipated that blasting will be undertaken as part of this project.



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

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 **DRAFT FOR REVIEW**
by:

Renate Steffens

Report reviewed by: **DRAFT FOR REVIEW**

Brian Hayes (Pr Eng)

