



BA report:

AS-R-2014-10-24

Basic Assessment Report for the proposed upgrade of provincial roads OP09810 and OP09811 and associated infrastructure from the National Route N7 via Stofkraal and construction of a new private road and associated infrastructure to the proposed Zandkopsdrift Mine, Northern Cape Province

October 2014

**Prepared for: Sedex Minerals (Pty) Ltd
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Basic Assessment Report for the proposed upgrade of provincial roads OP09810 and OP09811 and associated infrastructure from the National Route N7 and construction of a new private road and associated infrastructure to the proposed Zandkopsdrift Mine, Western Cape and Northern Cape Province

October 2014

Prepared for:

Sedex Minerals (Pty) Ltd

Compiled by:

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environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

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File Reference Number:

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Date Received:

Basic assessment report in terms of the Environmental Impact Assessment Regulations, 2010, promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended.

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2010 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. This report format is current as of **1 September 2012**. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority
3. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
4. Where applicable **tick** the boxes that are applicable in the report.
5. An incomplete report may be returned to the applicant for revision.
6. The use of “not applicable” in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
7. This report must be handed in at offices of the relevant competent authority as determined by each authority.
8. No faxed or e-mailed reports will be accepted.
9. The signature of the EAP on the report must be an original signature.
10. The report must be compiled by an independent environmental assessment practitioner.
11. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
12. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.
13. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report must also be submitted.

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14. Two (2) colour hard copies and one (1) electronic copy of the report must be submitted to the competent authority.
15. Shape files (.shp) for maps must be included on the electronic copy of the report submitted to the competent authority.

SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section? ~~YES~~ NO
 If YES, please complete the form entitled "Details of specialist and declaration of interest" for the specialist appointed and attach in Appendix I.

1. PROJECT DESCRIPTION

a) Describe the project associated with the listed activities applied for

The proposed Project entails the upgrade of provincial roads OP09810 and OP09811 from the National Route N7 and construction of a new private road from Stofkraal to serve as access roads to the proposed Zandkopsdrift Mine near Garies in the Northern Cape Province and Bitterfontein in the Western Cape Province (please refer to Figure 1). The project will also entail the construction and upgrade of associated storm water management infrastructure where the proposed road crosses the Swart-Doring River and associated drainage lines. The proposed access road stretches across both the Kamiesberg Local Municipality which forms part of the Namakwa District Municipality and the Matzikama Local Municipality which forms part of the West Coast District Municipality. The proposed access road is located off the National Route 7 (N7) approximately 34 km south of the town of Garies in the Northern Cape Province and approximately 31 km north of Bitterfontein in the Western Cape Province. The proposed access route from the National Route N7 to the proposed Zandkopsdrift Mine via Stofkraal will mainly be utilised as a mine haul road for the transportation of product and chemical reagents to and from site, as well as a general access road for the transportation of some of the labour and staff that is expected to reside in the nearby towns and communities to the proposed mine site. The proposed access route consists of the following provincial and proposed private roads (Refer to Table 1):

Table 1: Proposed provincial roads and new private access road

Road	Activity	From and to	Distance
Provincial Road: OP09810	Upgrade of existing provincial road	N7 to OP09811	10.70 km
Provincial Road: OP09811	Upgrade of existing provincial road	OP09811 to Private Road	2.55 km
Proposed Private Road	Construction of new private access road	OP09811 to proposed Zandkopsdrift Mine	6.79 km

The existing storm water structures along provincial roads OP09810 and OP09811 will be upgraded. A concrete drift or a set of culverts will be constructed where the provincial road crosses the northern tributary of the Swart-Doring River, as well as where the road crosses the Swart-Doring River in the village of Stofkraal. Embankment protection will be provided, in the form of gabion boxes and gabion mattresses, where the road crosses the Swart-Doring River and its northern tributary. In addition, concrete pipes or box culverts, berms and mitre drains will be constructed along both the provincial roads and the proposed new private road, where they cross drainage lines, as needed. In key locations deep cuts have been incorporated into the vertical alignment traversing steep crests in order to achieve an acceptable level of safety and to provide the required pavement construction material.

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b) Provide a detailed description of the listed activities associated with the project as applied for

Listed activity as described in GN R.544, 545 and 546	Description of project activity
<p><i>GN R.544 Activity 1: The construction of:</i></p> <p><i>(iii) bridges</i></p> <p><i>(vi) bulk storm water outlet structures</i></p> <p><i>(xi) infrastructure or structures covering 50 square metres or more</i></p> <p><i>where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse</i></p>	<p><i>Construction of new storm water infrastructure, culverts and drifts within the Swart-Doring River or within 32 meters of the Swart-Doring River and its tributaries for the existing road as well as the proposed private road.</i></p>
<p><i>GN R.544 Activity 18: The infilling or depositing of any material more than 5 cubic metres into:</i></p> <p><i>(i) a watercourse</i></p>	<p><i>The infilling of material of more than 5 cubic meters into the Swart-Doring River and its tributary for the purposes of constructing drifts where the route alignment crosses the river. Further, due to the existing alignment of the road, road works will for a significant portion of the length of the road will be within the floodplain (i.e. within 32m) of the watercourse itself.</i></p>
<p><i>GN R.544 Activity 22: The construction of a road, outside urban areas,</i></p> <p><i>(i) with a reserve wider than 13,5 metres</i></p>	<p><i>The construction of a road 9.8 meter wide within a reserve of 25 metres</i></p>
<p><i>GN R.544 Activity 39: The expansion of</i></p> <p><i>(v) bulk storm water outlet structures</i></p> <p><i>within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse</i></p>	<p><i>The upgrading and expansion of existing culvert structures and other storm water infrastructure within the watercourse(s) itself or within 32 meters of the Swart-Doring River and its tributaries</i></p>
<p><i>GN R.544 Activity 40: The expansion of</i></p> <p><i>(iv) infrastructure by more than 50 square metres</i></p> <p><i>within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse</i></p>	<p><i>The upgrading and expansion of existing storm water infrastructure and culvert structures by more than 50 square meters in total for the entire existing road</i></p>
<p><i>GN R.544 Activity 47: The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre –</i></p> <p><i>(v) where no reserve exists, where the road is wider than 8 metres –</i></p>	<p><i>The widening of existing provincial roads (OP09810 and OP09811) to 9.8 meters in total and the lengthening of these roads by more than 1 km, but by no more than 10 km</i></p>
<p><i>GN R.546 Activity 4: The construction of a road</i></p>	<p><i>The construction of a 9.8 meter wide road within a reserve of 25 metres outside an urban area in the</i></p>

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<p>wider than 4 metres with a reserve less than 13.5 metres.</p> <p>(a) In Northern Cape Province</p> <p>ii. Outside urban areas, in:</p> <p>(dd) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;</p> <p>(d) In Western Cape</p> <p>ii. All areas outside urban areas</p>	<p>Western Cape.</p>
<p>GN R.546 Activity 10: The construction of facilities or infrastructure for the storage, or storage and handling of dangerous goods, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres.</p> <p>(a) In Eastern Cape, Free State, KwaZulu-Natal, Limpopo, Mpumalanga and Northern Cape provinces;</p> <p>ii Outside urban areas, in:</p> <p>(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;</p> <p>(ii) Areas on the watercourse side of the development setback line or within 100 metres from the edge of a watercourse where no such setback line has been determined;</p> <p>(e) In Western Cape;</p> <p>ii. All areas outside urban areas.</p>	<p>The construction of “skid” tanks for the storage of fuel not exceeding 80 cubic metres in total for the upgrade of the existing provincial roads and the construction of the proposed private road outside an urban area in Western Cape.</p>
<p>GN R.546 Activity 12: The clearance of an area of 300 square metres or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation.</p> <p>(b) Within critical biodiversity areas identified in bioregional plans;</p>	<p>The removal of vegetation for the upgrade of provincial roads OP09810 and OP098911 and the construction of the private road to the Zandkopsdrift Mine.</p>
<p>GN R.546 Activity 13: The clearance of an area of 1 hectare or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation.</p> <p>(a) Critical biodiversity areas and ecological support areas as identified in systematic biodiversity plans adopted by the competent authority.</p>	<p>The removal of vegetation for the upgrade of provincial roads OP09810 and OP098911 and the construction of the private road to the Zandkopsdrift Mine.</p>
<p>GN R.546 Activity 14: The clearance of an area</p>	<p>The removal of vegetation for the upgrade of</p>

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<p><i>of 5 hectares or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation</i></p>	<p>provincial roads OP09810 and OP098911 and the construction of the private road to the Zandkopsdrift Mine.</p>
<p><i>GN R.546 Activity 16: The construction of:</i> <i>(iv) infrastructure covering 10 square metres or more</i></p> <p><i>where such construction occurs within a watercourse or within 32 meters of a watercourse, measured from the edge of a watercourse.</i></p> <p><i>(a) In Northern Cape Province</i></p> <p><i>ii. Outside urban areas, in:</i></p> <p><i>(aa) Critical biodiversity areas as identifies in systematic biodiversity plans adopted by the competent authority or in bioregional plans;</i></p> <p><i>(d) In Western Cape</i></p> <p><i>ii. Outside urban areas, in:</i></p> <p><i>(ee) Critical biodiversity areas as identifies in systematic biodiversity plans adopted by the competent authority or in bioregional plans;</i></p>	<p>The construction culvert structures and drifts within the Swart-Doring River or within 32 meters of the Swart-Doring River and its tributaries for the existing road, and the construction of mechanisms to cross watercourses for the new portion of the road (i.e. the mine access road).</p>
<p><i>GN R.546 Activity 19: The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre.</i></p> <p><i>(a) In Northern Cape Province</i></p> <p><i>ii. Outside urban areas, in:</i></p> <p><i>(aa) Critical biodiversity areas as identifies in systematic biodiversity plans adopted by the competent authority or in bioregional plans;</i></p> <p><i>(ii) Areas on the watercourse side of the development setback line or within 100 metres from the edge of a watercourse where no such setback line has been determined.</i></p> <p><i>(d) In Western Cape</i></p> <p><i>ii. All areas outside urban areas</i></p>	<p>The upgrading and subsequent widening of the existing provincial roads OP09810 and OP09811 by more than 4 metres and the lengthening of these roads by more than 1 kilometre but by no more than 10 km outside urban areas in the Western Cape.</p>

2. FEASIBLE AND REASONABLE ALTERNATIVES

“alternatives”, in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to—

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

Describe alternatives that are considered in this application as required by Regulation 22(2)(h) of GN R.543. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity (NOT PROJECT) could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed.

The determination of whether site or activity (including different processes, etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the, competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

The identification of alternatives should be in line with the Integrated Environmental Assessment Guideline Series 11, published by the DEA in 2004. Should the alternatives include different locations and lay-outs, the co-ordinates of the different alternatives must be provided. The co-ordinates should be in degrees, minutes and seconds. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

a) Site alternatives

Alternative 1 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
Proposed upgrade of provincial roads OP09810 and OP09811 and associated infrastructure from the National Route N7 and construction of a new private road and associated infrastructure from Stofkraal to serve as access roads to the proposed Zandkopsdrift Mine. Alternative 1 allows for the new private access road to enter and exit the site to the north of the resource area and is the preferred alternative. Alternative 1 crosses only one drainage line and will require the construction of a concrete drift or pipe culvert. The drainage line associated with alternative 1 is located in a more sensitive ecological area and will therefore require greater mitigation measures to limit the impact. However, from an ecological perspective either of the alternatives can be considered as sound, with the main focus being on strict		

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mitigation needed for the major crossings (southern alternative 2) and the floodplains (preferred alternative). Both route options will impact on Stone Age scatters but the preferred route option will have the least impact on these resources. Therefore the preferred option is considered most favourable in terms of heritage resources management. Please refer to the Alternatives Map and Sensitivity Map in Appendix A.		
Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 2 follows the same alignment as Alternative 1 up to the point of deviation. The route alignment for Alternative 2 will enter and exit the site south of the resource area. More drainage lines are associated with alternative 2 and will require the construction of culverts where the route alignment crosses these drainage lines. Please refer to the Alternatives Map in Appendix A.		

In the case of linear activities:

Alternative:

Latitude (S):

Longitude (E):

Alternative S1 (preferred)

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

30°49'26.97"	18°7'6.95"
30°49'2.96"	18°1'14.69"
30°51'16.20"	17°57'45.54"

Alternative S2 (if any)

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

30°49'26.97"	18°7'6.95"
30°49'2.96"	18°1'14.69"
30°52'12.76"	17°57'22.50"

For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 250 meters along the route for each alternative alignment.

In the case of an area being under application, please provide the co-ordinates of the corners of the site as indicated on the lay-out map provided in Appendix A.

b) Lay-out alternatives

Alternative 1 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 3		
Description	Lat (DDMMSS)	Long (DDMMSS)

c) Technology alternatives

Alternative 1 (preferred alternative)
Alternative 2
Alternative 3

d) Design alternatives

Alternative 1 (preferred alternative)
<p>The proposed route alignment crosses the Swart-Doring River at the settlement of Stofkraal as well as a tributary of the river later on along the route. Concrete drifts are proposed to be constructed at these crossings. The preferred alternative is to construct a concrete drift at the river crossings as it is a low-cost structure which is ideally suited for seasonal flows of water, but with large and intense flows during parts of the year. The Swart-Doring River is characterized as a non-perennial drainage channel and therefore only flows part of the year. The drift provides an economic and technically feasible approach to dealing with crossings at these points. Floodwater often carries excessive amounts of debris and silt which can easily create blockages. While such debris often poses problematic to culverts and bridges, drifts do not face such problems. Drifts also require limited maintenance compared to culverts.</p>
Alternative 2
<p>It is proposed that a set of culverts (4 x 1,8m x 0,6m) are constructed where the road crosses the Swart-Doring River as well as the tributary of the river. Culverts are the most common cross-drainage structure used on roads. Culverts allow for water to cross underneath the road and therefore roads do not become flooded during seasonal floods, whereas roads with drifts may become flooded for short periods of time during floods. Culverts are however more costly and time-consuming to construct and also associated with more maintenance to prevent blockages caused by seasonal flooding. Therefore concrete drifts (Alternative 1) are the preferred alternative from an economic and technical perspective.</p>

e) No-go alternative

<p>Alternatives should be evaluated against the no-go option. In this scenario the identified access road will not be constructed for the mine.</p> <p>The proposed access road will entail the upgrade of existing provincial roads OP09810 and OP09811 and a construction of a new private road. The proposed access road poses the shortest route to the mine site. Due to inadequate maintenance activities, the wearing course level of provincial road OP09810 is currently below the surrounding natural ground level. The gravel wearing course has been damaged by surface erosion and traffic abrasion. The gravel profile is flat and no cross-fall is visible over substantial lengths of the road section under investigation, which results in inadequate transverse drainage.</p> <p>The existing private road can be described as a combination of an informal jeep track road and overland terrain which traverses rolling terrain with numerous tight curves and steep gradients. There is no evidence of any fill or drainage provided in the low lying areas. The horizontal and vertical alignment (narrow track width, tight curves and steep slopes) currently only provides for local farm</p>
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access.

The upgrading of the proposed access route linking the N7 with the proposed Zandkopsdrift mine site is an integral part of the prefeasibility study for the development of the Zandkopsdrift Rare Earth Mine Project. The preferred access route is less intrusive to stakeholders than the other routes through Garies and Bitterfontein, and significantly shorter resulting in savings in construction and maintenance costs. The existing provincial gravel roads will need to be upgraded and the proposed private road be designed and constructed to surfaced standards in order to accommodate the additional traffic loading that will be generated by the proposed Zandkopsdrift Rare Earth Mine Project.

Should the roads not be upgraded, it cannot be considered feasible for these roads to provide access to the mine taking into account road safety risks and environmental considerations. There is a reduced accident risk of surfaced roads compared to gravel roads (especially taking into account that the road sections under investigation traverse through local communities) and there are safety concerns associated with the current alignment of the road which has a narrow track width, tight curves and steep slopes. The upgrade and design of the above roads will result in a reduction in the required maintenance activities and frequency of surfaced roads compared to gravel roads. The upgraded road will also result in increased accessibility for the communities of Stofkraal, Molsvlei and Rietpoort. The surfaced road will also result in a reduction of dust as well as soil erosion, which would in turn reduce siltation of the Swart-Doring River.

Should the road not be upgraded the environment would be left as is and the impact on the area and potential benefits would remain unchanged. The no-go option is therefore not considered feasible as the proposed access road presents the simplest form of access to the mine and will result in a number of positive benefits for the area. In addition, should the mitigation measures proposed in the EMP be implemented the negative impact on the environment can be considered to be low to negligible.

Paragraphs 3 – 13 below should be completed for each alternative.

ALTERNATIVE 1 (PREFERRED ALTERNATIVE)

3. PHYSICAL SIZE OF THE ACTIVITY

a) Indicate the physical size of the preferred activity/technology as well as alternative activities/technologies (footprints):

Alternative:

- Alternative A1¹ (preferred activity alternative)
- Alternative A2 (if any)
- Alternative A3 (if any)

Size of the activity:

	m ²
	m ²
	m ²

¹ "Alternative A.." refer to activity, process, technology or other alternatives.

or, for linear activities:

Alternative:

Alternative A1 (preferred activity alternative)
 Alternative A2 (if any)
 Alternative A3 (if any)

Length of the activity:

20040 m
20040 m
m

b) Indicate the size of the alternative sites or servitudes (within which the above footprints will occur):

Alternative:

Alternative A1 (preferred activity alternative)
 Alternative A2 (if any)
 Alternative A3 (if any)

Size of the site/servitude:

501 000 m ²
501 000 m ²
m ²

4. SITE ACCESS

Does ready access to the site exist?

If NO, what is the distance over which a new access road will be built

YES	NO
	6790 m

Describe the type of access road planned:

Provincial road OP09810 and OP09811 will be upgraded from the National Route 7 (N7) to serve as an access road for the proposed Zandkopsdrift Mine. A new private access road from Stofkraal will also be constructed. The existing provincial gravel roads will be upgraded and the proposed private road will be designed to surfaced road standards to accommodate the increased traffic volume and loading that will be generated by the Zandkopsdrift mine development.

The project will also entail the construction and upgrade of associated storm water management infrastructure where the proposed road crosses the river and drainage lines.

Include the position of the access road on the site plan and required map, as well as an indication of the road in relation to the site.

5. LOCALITY MAP

An A3 locality map must be attached to the back of this document, as Appendix A. The scale of the locality map must be relevant to the size of the development (at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map.). The map must indicate the following:

- an accurate indication of the project site position as well as the positions of the alternative sites, if any;
- indication of all the alternatives identified;
- closest town(s);
- road access from all major roads in the area;
- road names or numbers of all major roads as well as the roads that provide access to the site(s);

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- all roads within a 1km radius of the site or alternative sites; and
- a north arrow;
- a legend; and
- locality GPS co-ordinates (Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection).

6. LAYOUT/ROUTE PLAN

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as Appendix A to this document.

The site or route plans must indicate the following:

- the property boundaries and numbers of all the properties within 50 metres of the site;
- the current land use as well as the land use zoning of the site;
- the current land use as well as the land use zoning each of the properties adjoining the site or sites;
- the exact position of each listed activity applied for (including alternatives);
- servitude(s) indicating the purpose of the servitude;
- a legend; and
- a north arrow.

7. SENSITIVITY MAP

The layout/route plan as indicated above must be overlain with a sensitivity map that indicates all the sensitive areas associated with the site, including, but not limited to:

- watercourses;
- the 1:100 year flood line (where available or where it is required by DWA);
- ridges;
- cultural and historical features;
- areas with indigenous vegetation (even if it is degraded or infested with alien species); and
- critical biodiversity areas.

The sensitivity map must also cover areas within 100m of the site and must be attached in Appendix A.

8. SITE PHOTOGRAPHS

Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under Appendix B to this report. It must be supplemented with additional photographs of relevant features on the site, if applicable.

9. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of at least 1:200 as Appendix C for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

10. ACTIVITY MOTIVATION

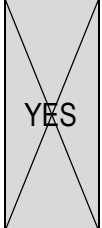
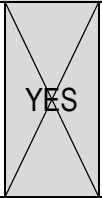
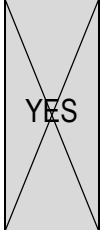
Motivate and explain the need and desirability of the activity (including demand for the activity):

1. Is the activity permitted in terms of the property's existing land use rights?	YES	<input checked="" type="checkbox"/> NO	Please explain
<p>The majority of the properties surrounding provincial roads OP09810 and OP09811 are classified as vacant / unspecified, with isolated patches of cultivated land. The predominant land use of the project area is agricultural land, comprising mostly of small stock farming (sheep and goats) (Henning, 2014). The current defined servitudes for OP09810 and OP09811 are 25m and 20m respectively. Some places would therefore require expropriation to establish the new road reserve line/servitude line, especially at re-aligned sections of improved road geometry and at the cuttings expected along the route/s.</p> <p>As the project deals with the upgrading of existing provincial roads, a change of land use will not be required for the upgrade of roads OP09810 and OP09811. A change of land-use application may be required for the farm Zandkopsdrift 537 (Portion 2 and Remainder) to change the land use from vacant/unspecified to mining. The proposed new private road which will provide access to the proposed Zandkopsdrift mine is located on the farm Zandkopsdrift 537 (Portion 2 and Remainder) and will fall under this land use application. The land use application process is a separate process as part of the Mining Right Application and would therefore be subject to the relevant land use legislation.</p>			
2. Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)	<input checked="" type="checkbox"/> YES	NO	Please explain
<p>The Northern Cape Province Spatial Development Framework (NCSDF) identifies transport as a supportive sector which plays a key role in meeting objectives of economic growth, access to employment opportunities, and social integration. The West Coast District Municipality Spatial Development Framework (PSDF) identifies transport as a tool to achieve regional efficiency.</p> <p>Transport, both public and private, is a primary spatial structuring element providing access and mobility to both urban and rural communities. Major roads in the province are inter-linked by a network of minor roads, most of which are gravel roads that need on-going maintenance. One of the issues listed in this regard is that the upgrading of roads does not keep pace with needs, e.g. poor condition of gravel roads, inadequate links between 'leader' and smaller towns, etc.</p> <p>It can therefore be stated that proposed upgrade of the provincial roads and the construction of the new private road will be in line with the above PSDF's for the area.</p>			
(b) Urban edge / Edge of Built environment for the area	<input checked="" type="checkbox"/> YES	NO	Please explain
The provincial roads proposed to be upgraded are existing roads and fall outside the urban edge.			

BASIC ASSESSMENT REPORT

<p>(c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).</p>	<div style="border: 1px solid black; width: 40px; height: 40px; margin: 0 auto; display: flex; align-items: center; justify-content: center;"> X </div>	<input type="checkbox"/> YES	<input type="checkbox"/> NO	Please explain
<p>The Matzikama Municipality plans to spend approximately R35 million for the next three years to build surface roads in the residential areas. This is however, not enough as the backlog on roads are big and would require large amounts of money to eradicate. Similar with storm water networks, many towns and villages suffer from floods during the winter months as storm water networks are either obsolete or are lacking.</p> <p>The Matzikama Municipality SDF states that in addition to major infrastructure projects currently proposed in the municipality proposed mines will have major infrastructure requirements, for instance, Zandkopsdrift mine has budgeted US\$4m for access road upgrading. Some infrastructure requirements will be local, within nearby proximity to the mining operations and are unlikely to have wider legacy benefits. Other infrastructure, such as housing and roads, could have major legacy benefits if carefully planned so as to fulfill both the mines' needs and to maximize opportunities for this investment to have wider benefits (Matzikama Municipal SDF; 2013).</p> <p>The needs identified for Ward 8 which includes the towns of Stofkraal, Molsvlei and Rietpoort in the Matzikama Municipality IDP with regards to transport are as follows:</p> <ul style="list-style-type: none"> • Upgrade maintenance services of gravel roads; • Tar or pave gravel roads that link towns with the N7; • Improve public transport in the ward (Matzikama Municipality IDF; 2012-2017). <p>The project can therefore be seen to be in line with local municipal IDP's and SDF's.</p>				
<p>(d) Approved Structure Plan of the Municipality</p>	<div style="border: 1px solid black; width: 40px; height: 40px; margin: 0 auto; display: flex; align-items: center; justify-content: center;"> X </div>	<input type="checkbox"/> YES	<input type="checkbox"/> NO	Please explain
<p>The spatial management of growth in urban and rural environments was previously done through the Guide Plans and Structure plans. A new system of spatial planning as described in principle in the Development Facilitation Act (Act No. 67 of 1995) and Municipal Systems Act (Act No. 32 of 2000) has subsequently been implemented. This new system comprises an indicative plan or Spatial Development Framework (SDF) that was intended to show desired patterns of land use, directions for future growth, indicate the alignment of Urban Edges, and depict other special development areas.</p> <p>Please refer to Section 2(c) for more details with regards to the Matzikama Municipal SDF.</p>				
<p>(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)</p>	<div style="border: 1px solid black; width: 40px; height: 40px; margin: 0 auto; display: flex; align-items: center; justify-content: center;"> X </div>	<input type="checkbox"/> YES	<input type="checkbox"/> NO	Please explain
<p>The Namakwa District Environmental Management Framework states that groundwater sources are limited and both ground water and surface water pollution represent a threat. The proposed route alignment crosses the Swart-Doring River which represents an important CBA area, however it should be noted that this is an existing crossing and it is proposed that the crossing be upgraded by implementing a concrete drift which would assist with flooding.</p>				
<p>(f) Any other Plans (e.g. Guide Plan)</p>	<input type="checkbox"/> YES	<input type="checkbox"/> NO	Please explain	
N/A				

BASIC ASSESSMENT REPORT

<p>3. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?</p>		NO	Please explain
<p>The SDF's for the area states that gravel roads require on-going maintenance and that the upgrading of roads does not keep pace with needs, e.g. poor condition of gravel roads, inadequate links between 'leader' and smaller towns, etc. It would therefore appear that the upgrade of existing provincial roads is an identified priority and therefore the proposed project does comply with the timeframe intended by the existing approved SDF.</p>			
<p>4. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate.)</p>		NO	Please explain
<p>The following transport needs were identified for Ward 8 which includes the towns of Stofkraal, Molsvlei and Rietpoort:</p> <ul style="list-style-type: none"> • Upgrade maintenance services of gravel roads • Tar or pave gravel roads that link towns with the N7 • Improve public transport in the ward (Matzikama Municipality IDP; 2012-2017) <p>The upgraded road will result in increased accessibility for the communities of Stofkraal, Molsvlei and Rietpoort.</p>			
<p>5. Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development? (Confirmation by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)</p>		NO	Please explain
<p>10 m³ construction solid waste will be generated per month during the construction phase of the project and will be disposed of at the registered landfill site in Van Rhynsdorp. Confirmation from the relevant Municipality is attached to this final BAR.</p> <p>Water will be sourced from the Zandkopsdrift Mine Site, who in turn will be obtaining their water from the desalination plant in Volwaterbaai.</p>			

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<p>6. Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.²)</p>	<div style="border: 1px solid black; width: 40px; height: 40px; margin: 0 auto; display: flex; align-items: center; justify-content: center;"> X </div>	<div style="border: 1px solid black; width: 40px; height: 40px; margin: 0 auto; display: flex; align-items: center; justify-content: center;"> NO </div>	<div style="border: 1px solid black; width: 40px; height: 40px; margin: 0 auto; display: flex; align-items: center; justify-content: center;"> Please explain </div>
<p>The Matzikama Municipality plans to spend approximately R35 million for the next three years to build surface roads in the residential areas. This is however, not enough as the backlog on roads are big and would require large amounts of money to eradicate. Similar with storm water networks, many towns and villages suffer from floods during the winter months as storm water networks are either obsolete or are lacking.</p> <p>The Matzikama Municipality SDF states that in addition to major infrastructure projects currently proposed in the municipality proposed mines will have major infrastructure requirements, for instance, Zandkopsdrift mine has budgeted US\$4m for access road upgrading. Some infrastructure requirements will be local, within nearby proximity to the mining operations and are unlikely to have wider legacy benefits. Other infrastructure, such as housing and roads, could have major legacy benefits if carefully planned so as to fulfill both the mines' needs and to maximize opportunities for this investment to have wider benefits.</p> <p>The needs identified for Ward 8 which includes the towns of Stofkraal, Molsvlei and Rietpoort in the Matzikama Municipality IDP with regards to transport are as follows:</p> <ul style="list-style-type: none"> • Upgrade maintenance services of gravel roads • Tar or pave gravel roads that link towns with the N7 • Improve public transport in the ward <p>The project can therefore be seen to be in line with local municipal IDP's and SDF's.</p>			
<p>7. Is this project part of a national programme to address an issue of national concern or importance?</p>	<div style="border: 1px solid black; width: 40px; height: 40px; margin: 0 auto; display: flex; align-items: center; justify-content: center;"> X </div>	<div style="border: 1px solid black; width: 40px; height: 40px; margin: 0 auto; display: flex; align-items: center; justify-content: center;"> NO </div>	<div style="border: 1px solid black; width: 40px; height: 40px; margin: 0 auto; display: flex; align-items: center; justify-content: center;"> Please explain </div>
<p>According to the National Development Plan for 2030 South Africa's largest single public asset is its road network. As the road network has a replacement value of R1.7 trillion, preserving it is a top priority. National and provincial roads are the prime means of connecting people and moving cargo from small settlements and secondary towns to the centres of economic activity. In the short term, before expansions are considered, road maintenance campaigns in municipalities and rehabilitating provincial road networks are needed to prevent further deterioration (National Development Plan 2030; 2011).</p> <p>The upgrade of provincial roads OP09810 and OP09811 will contribute towards the above vision of rehabilitation of provincial road networks.</p>			

² Will be submitted along with the Final Basic Assessment Report

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8. Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	Please explain
Provincial roads OP09810 and OP09811 are existing roads and therefore the location is favourable for the current land use of the area.			
9. Is the development the best practicable environmental option for this land/site?	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	Please explain
<p>Provincial roads OP09810 and OP09811 are existing provincial gravel roads with existing storm water infrastructure which will be upgraded to surfaced design standards. Due to inadequate maintenance activities, the wearing course level of provincial road OP09810 is currently below the surrounding natural ground level. The gravel wearing course has been damaged by surface erosion and traffic abrasion. The gravel profile is flat and no cross-fall is visible over substantial lengths of the road section under investigation, which results in inadequate transverse drainage.</p> <p>The existing private road can be described as a combination of an informal jeep track road and overland terrain which traverses rolling terrain with numerous tight curves and steep gradients. There is no evidence of any fill or drainage provided in the low lying areas. The horizontal and vertical alignment (narrow track width, tight curves and steep slopes) currently only provides for local farm access.</p> <p>The upgrade and design of the above roads will result in a reduction in the required maintenance activities and frequency of surfaced roads compared to gravel roads. In addition, there is a reduced accident risk in using surfaced roads compared to gravel roads. The surfaced road will also result in a reduction of dust as well as soil erosion, which would in turn reduce siltation of the Swart-Doring River.</p>			
10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	Please explain
During the construction phase, the negative impact will outweigh the positive benefits of the project, but it should be noted that the construction phase impacts will be of short duration and limited to the immediate area. It is thought that the nett benefit of implementing the project in an environment that requires socio-economic growth and development outweighs the potential negative impacts, all of which can be mitigated to well within acceptable levels			
11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	Please explain
<p>The Matzikama IDP states that at least three new mining companies will soon be opening. These are RARECO, Pretoria Portland Cement and Tormin Minerals that will extract rare earth minerals near Kliprand, lime near Van Rhynsdorp and heavy minerals at the coast respectively.</p> <p>It can be assumed that where access roads to these mining companies do not exist, that new access roads will need to be constructed or alternatively existing roads will need to be upgraded to allow for the increase in traffic on the roads.</p>			

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12. Will any person's rights be negatively affected by the proposed activity/ies?	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	Please explain
The current defined servitudes for OP09810 and OP09811 are 25m and 20m respectively. Some places would therefore require expropriation to establish the new road reserve line/servitude line, especially at re-aligned sections of improved road geometry and at the cuttings expected along the route/s.			
13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	Please explain
The provincial roads proposed to be upgraded are existing roads and fall outside the urban edge.			
14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	Please explain
SIP 6: Integrated municipal infrastructure project aims to develop national capacity to assist the 23 least resourced districts (19 million people) to address all the maintenance backlogs and upgrades required in water, electricity and sanitation bulk infrastructure. The road maintenance programme will enhance service delivery capacity thereby impacting positively on the population. However, neither the Matzikama Local Municipality nor the Kamiesberg Local Municipality have been identified as local municipalities in the 23 least resourced districts.			
15. What will the benefits be to society in general and to the local communities?	Please explain		
The existing road infrastructure consists of a gravel, unsurfaced road and basic storm water infrastructure. This project entails the rectification of this situation through the formal surfacing of the existing roads from gravel to an all-weather bitumen surface, and the implementation of associated storm water infrastructure (concrete drifts where the road crossed the Swart-Doring River and its tributary and culverts at drainage line crossings). Localised flooding impacts on the local communities, decreasing access due to the Swart-Doring River flooding the access road. Poor storm water management similarly increases the risk of water borne diseases due to ponding stagnant water. The upgrade of the road will result in increased accessibility for farmers and communities due to a decrease in flooding of the road at low-lying sections and subsequent road closure. The upgrade will also result in less nuisance dust from the gravel roads. In key locations deep cuts have been incorporated into the vertical alignment traversing steep crests in order to achieve an acceptable level of safety and to provide the required pavement construction material, thereby conserving soil resources. There is also a reduced accident risk of surfaced roads compared to gravel roads (especially taking into account that the road sections under investigation traverse through local communities).			

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16. Any other need and desirability considerations related to the proposed activity?	Please explain
<p>Current impacts from continuing the status quo include severe erosion of the gravel road surface in the rain season, with the requirement of continual unsustainable maintenance and repair. Flooding and poor storm water management increases erosion and siltation which impacts on the Swart-Doring River and associated drainage lines.</p> <p>The upgrade of the road will result in improved drainage due to storm water management, decrease in siltation of water resources and soil erosion.</p>	
17. How does the project fit into the National Development Plan for 2030?	Please explain
<p>The National Development Plan for 2030 states that South Africa's largest single public asset is its road network. As the road network has a replacement value of R1.7 trillion, preserving it is a top priority. National and provincial roads are the prime means of connecting people and moving cargo from small settlements and secondary towns to the centres of economic activity. In the short term, before expansions are considered, road maintenance campaigns in municipalities and rehabilitating provincial road networks are needed to prevent further deterioration (National Development Plan 2030; 2011).</p> <p>The upgrade of provincial roads OP09810 and OP09811 will contribute towards the above vision of rehabilitation of provincial road networks.</p>	
18. Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account.	
<p>The objectives of integrated environmental management have been taken onto account during the Basic Environmental Impact Assessment Process. Potential biophysical and socio-economic impacts on the environment have been identified and assessed. The significance of an identified impact was rated by taking into account its duration, scale, severity (magnitude) and the probability that the impact may occur. The findings of the specialist studies undertaken during this BAR provide an assessment of both the benefits and potential negative impacts anticipated as a result of the proposed project. Mitigation measures have been proposed in order to minimise negative impacts and maximise positive benefits. A number of alternatives were evaluated by the environmental consultant (AGES) as well as various specialist consultants in order to propose the most acceptable alternative from an environmental and risk perspective. The public consultation process has been undertaken to assist in the identification of significant issues, and every effort has been made to include representatives of all stakeholders within the process.</p>	

19. Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.

The principles of environmental management as per Section 2 of the NEMA have been taken into account throughout the entire Basic Environmental Impact Assessment process. The needs, concerns and interests of people in the surrounding communities have been taken into account through the public participation process, which is still ongoing up to finalisation of the Final BAR. Public open days are being planned during the review period of the draft BAR.

The development is socially, environmentally and economically sustainable and the possible disturbance of ecosystems and biological diversity has been assessed in the Ecological Impact Assessment (Appendix D1). Mitigation measures have been proposed by the ecological specialist to limit impacts relating to pollution and degradation of the environment where these impacts cannot be avoided.

A Heritage Impact Assessment was also undertaken to avoid or minimise any potential impacts on the cultural heritage in the area (Appendix D2). Mitigation measures pertaining to waste management are included in the Environmental Management Plan (Appendix G).

In key locations deep cuts have been incorporated into the vertical alignment traversing steep crests in order to achieve an acceptable level of safety and to provide the required pavement construction material, thereby conserving soil resources.

By taking pro-active measures during the planning and construction phases, potential environmental impacts during the operational phase will be minimised. This, in turn, will minimise the risk of environmental degradation occurring beyond that which is expected and planned for.

11. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations, if applicable:

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
The National Environmental Management Act (Act No 107 of 1998) (NEMA)	An environmental authorisation application in terms of section 24 of the NEMA has been submitted to the DEA for consideration.	Department of Environmental Affairs (DEA)	19 November 1998
Environmental Impact Assessment Regulations, 2010	Activities as listed in GNR 544, 545 and 546 of the EIA Regulations 2010 were identified as being applicable to the proposed access road project, and were included in the documentation submitted to the DEA.	Department of Environmental Affairs (DEA)	18 June 2010
National Water Act (Act No 36 of 1998) (NWA)	A water use license application for 21(c) and (i) water uses will be submitted to the DWA.	Department of Water Affairs (DWA)	26 August 1998
The National Heritage Resources Act (Act No 25 of 1999) (NHRA)	A heritage impact assessment was conducted for the project.	South African Heritage Resources Association	28 April 1999

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National Environmental Management: Biodiversity Act (Act No 10 of 2004)	An ecological impact assessment was conducted for the project.	Department of Environmental Affairs (DEA)	7 June 2004
Conservation of Agricultural Resources Act (Act No 43 of 1983)	The Act regulates the utilization and protection of wetlands, soil conservation and all matters relating thereto; control and prevention of veld fires, control of weeds and invader plants, the prevention of water pollution resulting from farming practices and losses in biodiversity.	Department of Agriculture	1983
The National Forest Act (Act No 84 of 1998)	Provided for the protection of certain tree species.	Department of Environmental Affairs (DEA)	30 October 1998
Northern Cape Nature Conservation Act (Act No 9 of 2009)	To provide for the sustainable utilisation and protection of biodiversity within the province.	Northern Cape Department of Environment and Nature Conservation (DENC)	18 March 2010
Western Cape Nature Conservation Laws Amendment Act (Act No 3 of 2000)	To provide for the sustainable utilisation and protection of biodiversity within the province.	Western Cape Department of Environmental Affairs and Development Planning (DEADP)	2000
Mine Health and Safety Act, 1996 (Act No 29 of 1996)	Transportation of explosives.	Department of Mineral Resources (DMR)	14 June 1996

12. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?

If YES, what estimated quantity will be produced per month?

<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
10 m ³	

How will the construction solid waste be disposed of (describe)?

Construction solid waste will be disposed of at the registered landfill site in Van Rhynsdorp.

Where will the construction solid waste be disposed of (describe)?

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Construction solid waste will be disposed of at the registered landfill site in Van Rhynsdorp.

Will the activity produce solid waste during its operational phase?

YES NO

If YES, what estimated quantity will be produced per month?

m³

How will the solid waste be disposed of (describe)?

--

If the solid waste will be disposed of into a municipal waste stream, indicate which registered landfill site will be used.

--

Where will the solid waste be disposed of if it does not feed into a municipal waste stream (describe)?

--

If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the NEM:WA?

YES NO

If YES, inform the competent authority and request a change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

Is the activity that is being applied for a solid waste handling or treatment facility?

YES NO

If YES, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?

YES NO

If YES, what estimated quantity will be produced per month?

m³

Will the activity produce any effluent that will be treated and/or disposed of on site?

YES NO

If YES, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Will the activity produce effluent that will be treated and/or disposed of at another facility?

YES NO

If YES, provide the particulars of the facility:

Facility name:			
Contact person:			
Postal address:			
Postal code:			
Telephone:	Cell:		
E-mail:	Fax:		

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

The activity will not generate any waste water.

c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere other than exhaust emissions and dust associated with construction phase activities?

YES	NO
-----	---------------

If YES, is it controlled by any legislation of any sphere of government?

YES	NO
-----	----

If YES, the applicant must consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If NO, describe the emissions in terms of type and concentration:

During construction, access roads will be graded and the surface compacted. Grading and land clearing will result in dust generation with vehicles and construction equipment such as graders, scrapers and dozers (most likely to be diesel fuelled) emitting gaseous pollutants such as sulphur dioxide, oxides of nitrogen, carbon monoxide, hydrocarbons and diesel particulates. Due to the impact being limited to the local area surrounding the activity and the short duration of the construction phase, the impact from vehicular fugitive emissions can be considered low and with mitigation can be reduced to negligible. The impact on air quality from vehicular emissions during the operational phase can also be considered as low and can be reduced to negligible significance. The impact on air quality from dust during the construction phase can be considered of moderate significance and can be reduced to low with the implementation of mitigation measures.

d) Waste permit

Will any aspect of the activity produce waste that will require a waste permit in terms of the NEM:WA?

YES	NO
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If YES, please submit evidence that an application for a waste permit has been submitted to the competent authority

e) Generation of noise

Will the activity generate noise?

YES	NO
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If YES, is it controlled by any legislation of any sphere of government?

YES	NO
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If YES, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If NO, describe the noise in terms of type and level:

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The character of ambient noise in the project area is currently free of any influences from economic activity other than livestock farming. There are no mines or industries in the area and there is very little traffic on the local road network. Ambient noise at and around residences comprises predominantly of natural sounds (birds, insects and wind) and of low intensity noises produced by livestock activity and low levels of on-site vehicle movements.

In terms of the SANS 10103 guidelines the area would nominally be rated as a Rural District, the lowest ambient noise category. As such, typical ambient levels in the area would be in the order of 45 dBA (daytime) and 35 dBA night-time, respectively. A baseline survey conducted in the area show that ambient levels in the study area may even be lower than this (40dBA in the daytime and 30dBA in the night-time. According to the above guidelines, an increase in noise levels of 5 dB is seen as significant while an increase of 7 dB (legal limit) can be expected to evoke widespread complaints from the community (Zandkopsdrift Mine – Baseline Noise Report, van Zyl:2012).

The proposed access route will mainly be utilised as a mine haul road for the transportation of the mined product and chemical reagents to and from the town of Saldanha Bay, as well as for the transportation of labour and staff that is expected to reside in the town of Garies and surrounding areas to the proposed mine site. An increase in traffic on the proposed access road is anticipated as follows:

Vehicle Type and Description	Average Daily Trips (Both Directions)
Seven Axle Interlink Truck	4
Six Axle Articulated Truck	14
Five Axle Articulated Truck	12
Seven Axle Interlink Truck	2
Five Axle Articulated Truck	2
Three Axle Vehicles	32
Passenger bus (34 seater)	6
Seven Axle Interlink Truck	4
TOTAL Average Daily Trips	76

According to the Noise Impact Assessment Study conducted for the Zandkopsdrift Mine project (EIA Reference: NC/EIA/NAM/KAM/ZAN/2012), daytime road traffic is expected to produce a 5 dB noise footprint extending approximately 500 m on either side of the road, which is below the legal limit of 7 dB. The significance of the noise impact has been rated of negligible significance for both the construction and operational phase.

13. WATER USE

Please indicate the source(s) of water that will be used for the activity by ticking the appropriate box(es):

Municipal	Water board	Groundwater	River, stream, dam or lake	Other	The activity will not use water
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Water will be sourced from the Zandkopsdrift Mine Site, who in turn will be obtaining their water from the desalination plant in Volwaterbaai.

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:

litres	
YES	NO

Does the activity require a water use authorisation (general authorisation or water use license) from the Department of Water Affairs?

If YES, please provide proof that the application has been submitted to the Department of Water Affairs.³

14. ENERGY EFFICIENCY

Describe the design measures, if any that have been taken to ensure that the activity is energy efficient:

The following recommendations regarding the road design are recommended by the environmental consultant:

- The use of road construction materials that requires excessive amounts of energy to manufacture should be minimised.
- Road construction material that can be recycled / reused should be used rather than road construction material that can't.
- The use of road construction material originating from sensitive or scarce environmental resources should be minimised.
- Road construction material should be legally obtained by the supplier, e.g. fill material should be obtained only from legal borrow pits and/or from commercial sources.
- Use of highly durable road construction material is recommended.

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

Local building material instead of imported building material should be used as much as possible as this will reduce transportation impacts, enhance local job creation and decrease costs.

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

1. For linear activities (pipelines, etc) as well as activities that cover very large sites, it may be necessary to complete this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section B and indicate the area, which is covered by each copy No. on the Site Plan.

Section B Copy No. (e.g. A):

³ **The Integrated Water Use Licence Application will be submitted together with this Final Basic Assessment Report.**

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2. Paragraphs 1 - 6 below must be completed for each alternative.

3. Has a specialist been consulted to assist with the completion of this section? YES NO

If YES, please complete the form entitled "Details of specialist and declaration of interest" for each specialist thus appointed and attach it in Appendix I. All specialist reports must be contained in Appendix D.

Property description/physical address:

Province	Refer to attached list
District Municipality	
Local Municipality	
Ward Number(s)	
Farm name and number	
Portion number	
SG Code	

Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application including the same information as indicated above.

Current land-use zoning as per local municipality IDP/records:

The majority of the surrounding area is classified as vacant / unspecified, with isolated patches of cultivated land. The predominant land use of the project area is agricultural land, comprising mostly of small stock farming (sheep and goats) (Henning, 2014). The current defined servitudes for OP09810 and OP09811 are 25m and 20m respectively. Some places would therefore require expropriation to establish the new road reserve line/servitude line, especially at re-aligned sections of improved road geometry and at the cuttings expected along the route/s.

As the project deals with the upgrading of existing provincial roads, a change of land use will not be required for the upgrade of roads OP09810 and OP09811. A change of land-use application may be required for the farm Zandkopsdrift 537 (Portion 2 and Remainder) to change the land use from vacant/unspecified to mining. The proposed new private road which will provide access to the proposed Zandkopsdrift mine is located on the farm Zandkopsdrift 537 (Portion 2 and Remainder) and will fall under this land use application. The land use application process is a separate process as part of the Mining Right Application and would therefore be subject to the relevant legislation.

In instances where there is more than one current land-use zoning, please attach a list of current land use zonings that also indicate which portions each use pertains to, to this application.

Is a change of land-use or a consent use application required? YES NO

BASIC ASSESSMENT REPORT

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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Alternative S2 (if any):

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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2. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site:

2.1 Ridgeline	<input type="checkbox"/>	2.4 Closed valley	<input type="checkbox"/>	2.7 Undulating plain / low hills	<input checked="" type="checkbox"/>
2.2 Plateau	<input type="checkbox"/>	2.5 Open valley	<input checked="" type="checkbox"/>	2.8 Dune	<input type="checkbox"/>
2.3 Side slope of hill/mountain	<input checked="" type="checkbox"/>	2.6 Plain	<input checked="" type="checkbox"/>	2.9 Seafront	<input type="checkbox"/>

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

Is the site(s) located on any of the following?

	Alternative S1:	NO	Alternative S2 (if any):	NO	Alternative S3 (if any):	NO
Shallow water table (less than 1.5m deep) ⁴	YES	NO	YES	NO	YES	NO
Dolomite, sinkhole or doline areas	YES	NO	YES	NO	YES	NO
Seasonally wet soils (often close to water bodies)	YES	NO	YES	NO	YES	NO
Unstable rocky slopes or steep slopes with loose soil	YES	NO	YES	NO	YES	NO
Dispersive soils (soils that dissolve in water)	YES	NO	YES	NO	YES	NO
Soils with high clay content (clay fraction more than 40%)	YES	NO	YES	NO	YES	NO
Any other unstable soil or geological feature	YES	NO	YES	NO	YES	NO
An area sensitive to erosion	YES	NO	YES	NO	YES	NO

If you are unsure about any of the above or if you are concerned that any of the above aspects may be an issue of concern in the application, an appropriate specialist should be appointed to assist in the completion of this section. Information in respect of the above will often be available as part of the project information or at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by the Council for Geo Science may also be consulted.

⁴ Groundwater levels on the mine site are on average between 20 m to 25 m deep, on the carbonatite between 50 m and 60 m and in the Swart-Doring River channel ~0.4 to 2.5 m (Meyer et al; 2014). As the proposed access road is aligned parallel to the Swart-Doring River and crosses the river as well as a tributary of the river, the water table may be shallow along the route alignment.

BASIC ASSESSMENT REPORT

4. GROUNDCOVER

Indicate the types of groundcover present on the site. The location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

Natural veld in good condition^E	Natural veld with scattered aliens^E	Natural veld with heavy alien infestation ^E	Veld dominated by alien species ^E	Gardens
Sport field	Cultivated land	Paved surface	Building or other structure	Bare soil

If any of the boxes marked with an “E” is ticked, please consult an appropriate specialist to assist in the completion of this section if the environmental assessment practitioner doesn’t have the necessary expertise.

5. SURFACE WATER

Indicate the surface water present on and or adjacent to the site and alternative sites?

Perennial River	YES	NO	UNSURE
Non-Perennial River	YES	NO	UNSURE
Permanent Wetland	YES	NO	UNSURE
Seasonal Wetland	YES	NO	UNSURE
Artificial Wetland	YES	NO	UNSURE
Estuarine / Lagoonal wetland	YES	NO	UNSURE

BASIC ASSESSMENT REPORT

If any of the boxes marked YES or UNSURE is ticked, please provide a description of the relevant watercourse.

The Swart-Doring River represents the only major drainage channel in the project area, although several of its tributaries will be crossed as part of the road upgrade. The Swart-Doring River and its tributaries are characterized as non-perennial drainage channels with dense riparian woodland that varies from natural to degraded along its banks. The substrate in the channel is largely composed of rivers and with some medium sized rocks along some areas of the channel and banks. The river itself plays an important role as a source of water to various organisms. No vegetation grows in the channel itself other than the edges of the channel where riparian woodland occurs.

The drainage channels are classified as non-perennial channels by the National Wetland Classification System (Sanbi, 2009). A channel (river, including the banks) is an open conduit with clearly defined margins that (i) continuously or periodically contains flowing water, or (ii) forms a connecting link between two water bodies. Dominant water sources include concentrated surface flow from upstream channels and tributaries, diffuse surface flow or interflow, and/or groundwater flow. Water moves through the system as concentrated flow and usually exits as such but can exit as diffuse surface flow because of a sudden change in gradient. Unidirectional channel-contained horizontal flow characterises the hydrodynamic nature of these units. As a result of the erosive forces associated with concentrated flow, channels characteristically have relatively obvious active channel banks.

In some areas of the larger project area, floodplains occur adjacent to the drainage channels (e.g Swart-Doring River and to the north and north-east of the proposed open pit area). The floodplains can be described as "Riparian habitat" includes the physical structure and associated vegetation of the areas associated with a watercourse which are commonly characterised by alluvial soils, and which are inundated or flooded to an extent and with a frequency sufficient to support vegetation of species with a composition and physical structure distinct from those of adjacent land areas". Riparian areas commonly reflect the high-energy conditions associated with the water flowing in a water channel, whereas wetlands generally display more diffuse flow and are lower energy environments.

6. LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that currently occur within a 500m radius of the site and give description of how this influences the application or may be impacted upon by the application:

Natural area X	Dam or reservoir	Polo fields
Low density residential X	Hospital/medical centre	Filling station ^H
Medium density residential	School X	Landfill or waste treatment site
High density residential	Tertiary education facility	Plantation
Informal residential ^A X	Church	Agriculture X
Retail commercial & warehousing	Old age home	River, stream or wetland X
Light industrial	Sewage treatment plant ^A	Nature conservation area

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Medium industrial ^{AN}	Train station or shunting yard ^N	Mountain, koppie or ridge X
Heavy industrial ^{AN}	Railway line ^N	Museum
Power station	Major road (4 lanes or more) ^N	Historical building
Office/consulting room	Airport ^N	Protected Area
Military or police base/station/compound	Harbour	Graveyard
Spoil heap or slimes dam ^A	Sport facilities	Archaeological site X
Quarry, sand or borrow pit	Golf course	Other land uses (describe)

If any of the boxes marked with an "N" are ticked, how will this impact / be impacted upon by the proposed activity?

If any of the boxes marked with an "An" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

If any of the boxes marked with an "H" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

Does the proposed site (including any alternative sites) fall within any of the following:

Critical Biodiversity Area (as per provincial conservation plan)	YES	NO
Core area of a protected area?	YES	NO
Buffer area of a protected area?	YES	NO
Planned expansion area of an existing protected area?	YES	NO
Existing offset area associated with a previous Environmental Authorisation?	YES	NO
Buffer area of the SKA?	YES	NO

If the answer to any of these questions was YES, a map indicating the affected area must be included in Appendix A.

7. CULTURAL/HISTORICAL FEATURES

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including Archaeological or paleontological sites, on or close (within 20m) to the site? If YES, explain:

YES	NO
Uncertain	

BASIC ASSESSMENT REPORT

During a palaeontological impact assessment study for the proposed Zandkopsdrift mine, no fossil remains or related occurrences were documented by Dr John E. Almond. He concluded that “The Namaqua-Natal basement rocks in this area are extensively overlain by superficial sediments such as alluvial sands and calcretes of Quaternary age. These superficial sediments are only sparsely fossiliferous to unfossiliferous”⁵. It is therefore improbable that further palaeontological features will occur in areas adjacent to the Zandkopsdrift mine.

An Archaeological Survey was done for the access road project during June 2013. During the survey, medium to low densities of Middle Stone Age (MSA) artefact scatters were observed in the study area along the route for the proposed road upgrade, directly east of Swartkop Hill on the farm Zandkopsdrift. These occurrences are located within the context of large quartzite exposures in a large drainage line, a tributary of the Swartdoring River. In most instances, the MSA material occurs in open contexts. Some of the flakes could also be attributed to the Later Stone Age (LSA), as secondary retouching of the artefacts was noted.

Stone Age occurrences such as those noted above are significant, but they occur widely in the Zandkopsdrift area. These occurrences have been the subject of detailed studies, specifically the Zandkopsdrift Mine Phase 1 Heritage Impact Assessment Study⁶ and the consequent Phase 2 Stone Age Specialist Study⁷. These studies identified high densities of Middle Stone Age (MSA) artefact scatters along drainage lines and in particular around outcrops of rocks sourced for lithic material on Swartkop Hill. The Phase 2 Specialist Study included detailed typological artefact analyses and elaborate landscape and lithic interpretations. The study concluded that Zandkopsdrift provided a unique landscape-use pattern, centred on the procurement of raw materials that were eminently suitable material for the manufacture of stone tools. It also linked aspects such as prehistoric trade, subsistence and stone tool industry to the rich MSA assemblages at Zandkopsdrift. Following the Phase 2 Specialist Study, SAHRA concluded that the Zandkopsdrift Stone Age horizon had been adequately studied and documented. In their opinion, the Phase 2 report provided a thorough and adequate representation of the Stone Age legacy of the area and a destruction permit for the site was issued.

If uncertain, conduct a specialist investigation by a recognised specialist in the field (archaeology or palaeontology) to establish whether there is such a feature(s) present on or close to the site. Briefly explain the findings of the specialist:

Will any building or structure older than 60 years be affected in any way?

Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?

If YES, please provide proof that this permit application has been submitted to SAHRA or the relevant provincial authority.

YES	NO
YES	NO

⁵ Almond, J.E. 2010. Recommended exemption from Palaeontological Impact Study: Portion 2 and remainder portion of the farm Zandkopsdrift no. 537 near Garies, Namaqualand, Northern Cape.

⁶ Kruger, N. 2011. *Sedex Minerals: Zandkopsdrift 357, Garies, Northern Cape Province. Consolidated Phase 1 Archaeological Impact Assessment Report.* Ages (Pty) Ltd.

⁷ Van der Ryst, M & Küsel, S. 2012. *Phase 2 Report on Middle Stone Age localities on the farm Zandkopsdrift 357, Garies district, Northern Cape Province.* Habitat Landscape Architects

8. SOCIO-ECONOMIC CHARACTER

a) Local Municipality

Please provide details on the socio-economic character of the local municipality in which the proposed site(s) are situated.

Level of unemployment:

The proposed access road falls within both the Kamiesberg Local Municipality in the Northern Cape and the Matzikama Local Municipality in the Western Cape. According to the Census 2011 Municipal Fact Sheet, published by Statistics South Africa, the Kamiesberg Local Municipality has an unemployment rate of 30.80% while unemployment rate in the Matzikama Local Municipality is 14%.

Economic profile of local municipality:

The proposed access road falls within both the Kamiesberg Local Municipality in the Northern Cape and the Matzikama Local Municipality in the Western Cape. There are three main economic sectors in the Kamiesberg LM, namely livestock grazing, mining and tourism. Aquaculture and conservation and ecological restoration are two sectors that are emerging. The wild flowers in spring are the major tourist attraction in the area. The majority of the population is not economically active (Namakwa District Municipality IDP 2012 – 2016).

Agriculture is the main economic activity in the area with viniculture around the river areas, as well as tomatoes to a lesser extent, while other villages are largely dependent on livestock farming. Until now mining was one of the slow growing sectors, but it will soon increase its contribution to the local economy, as at least three mining companies will soon open their doors, namely RARECO, Pretoria Portland Cement and Tormin Minerals (Matzikama Local Municipality IDP 2012 – 2017).

Level of education:

Of those aged 20 years and older in the Kamiesberg LM, 40,5% has some secondary schooling, 12,2% completed primary school, 16,4% completed Grade 12, 21,4% have some primary schooling, 5,2% have no schooling and 4,3% completed higher learning.

Of those aged 20 years and above in the Matzikama LM, 8,9% have completed primary school, 39,1% have some secondary education, 20,3% have completed matric, and 6,9% have some form of higher education. 6,2% of those aged 20 years and older have no form of schooling (Census 2011).

b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?

± R 83 million

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What is the expected yearly income that will be generated by or as a result of the activity?	N/A	
Will the activity contribute to service infrastructure?	YES	NO
Is the activity a public amenity?	YES	NO
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	Approximately 15	
What is the expected value of the employment opportunities during the development and construction phase?	± R 1,5 million	
What percentage of this will accrue to previously disadvantaged individuals?	75 %	
How many permanent new employment opportunities will be created during the operational phase of the activity?	None	
What is the expected current value of the employment opportunities during the first 10 years?	N/A	
What percentage of this will accrue to previously disadvantaged individuals?	N/A	

9. BIODIVERSITY

Please note: The Department may request specialist input/studies depending on the nature of the biodiversity occurring on the site and potential impact(s) of the proposed activity/ies. To assist with the identification of the biodiversity occurring on site and the ecosystem status consult <http://bgis.sanbi.org> or BGIShelp@sanbi.org. Information is also available on compact disc (cd) from the Biodiversity-GIS Unit, Ph (021) 799 8698. This information may be updated from time to time and it is the applicant/EAP's responsibility to ensure that the latest version is used. A map of the relevant biodiversity information (including an indication of the habitat conditions as per (b) below) and must be provided as an overlay map to the property/site plan as Appendix D to this report.

- a) **Indicate the applicable biodiversity planning categories of all areas on site and indicate the reason(s) provided in the biodiversity plan for the selection of the specific area as part of the specific category)**

Systematic Biodiversity Planning Category	If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan
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<p>Critical Biodiversity Area (CBA)</p>	<p>Ecological Support Area (ESA)</p>	<p>Other Natural Area (ONA)</p>	<p>No Natural Area Remaining (NNR)</p>	<p>The westward draining Swart-Doring River is located along the proposed route alignment. The proposed route alignment crosses the Swart-Doring River at the settlement of Stofkraal as well as a tributary of the river later on along the route. The Swart-Doring River and the drainage channel to the west of the resource area represent important CBA areas. These areas support terrestrial and aquatic features in the landscape that are critical for retaining biodiversity and supporting continued ecosystem functioning and services.</p>
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b) Indicate and describe the habitat condition on site

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).
Natural	20%	<p>The project area is mostly utilised for grazing by small livestock with the only degraded area being the township of Stofkraal. Most of the site is characterized by low succulent shrubland that varies in density and species composition, while the Swart-Doring River bisect the area from East to West and represent an important CBA area.</p>
Near Natural (includes areas with low to moderate level of alien invasive plants)	10%	<p>These areas comprise mostly old fields, cultivated and degraded land. The cultivated land in the valleys and on the plains occurs mostly close to the villages (i.e. Stofkraal) and represents small patches of completely modified land. These areas are characterised by homogenous stands of crops and some Alien Invasive Species (AIS), exotic weeds and pioneer grasses.</p>
Degraded (includes areas heavily invaded by	%	

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alien plants)		
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	70 %	The access route from the National Route 7 to Zandkopsdrift via Stofkraal mostly follows the alignment of the existing provincial roads OP09810 and OP09811. The project area is mostly utilised for grazing by small livestock with the only urban/transformed area apart from the existing road being the township of Stofkraal.

c) Complete the table to indicate:

- (i) the type of vegetation, including its ecosystem status, present on the site; and
- (ii) whether an aquatic ecosystem is present on site.

Terrestrial Ecosystems		Aquatic Ecosystems							
Ecosystem threat status as per the National Environmental Management: Biodiversity Act (Act No. 10 of 2004)	Critical	Wetland (including rivers, depressions, channelled and unchannelled wetlands, flats, seeps pans, and artificial wetlands)			Estuary		Coastline		
	Endangered								
	Vulnerable								
	Least Threatened								
		YES	NO	UNSURE	YES	NO	YES	NO	

- d) Please provide a description of the vegetation type and/or aquatic ecosystem present on site, including any important biodiversity features/information identified on site (e.g. threatened species and special habitats)

The larger project area falls within the Succulent Karoo biome (Low & Rebelo, 1996), with the dominant vegetation types along the proposed road upgrade route being classified as Namaqualand Heuweltjieveld, Namaqualand Klipkoppe Shrubland and the riverine areas being classified as Namaqualand Riviere (Mucina & Rutherford, 2006).

The landscape features of the Namaqualand Heuweltjieveld includes undulating plains with a mosaic of communities on heuweltjies (slightly raised termite mounds up to 10m in diameter) and in between heuweltjies. Low shrubland dominated by leaf-succulent shrubs occur throughout the area. The conservation status of the Namaqualand Heuweltjieveld is Least Threatened with 11% conserved in statutory reserves and between 3 and 4% transformed by cultivation (Mucina & Rutherford, 2006).

The landscape features of the Namaqualand Klipkoppe Shrubland includes dramatic huge granite and gneiss domes, disintegrating boulder koppies supporting open shrubland up to 1 meter tall, dominated by shrubs of dwarf to medium stature and with ericoid or succulent leaves. The conservation status is Least Threatened with 6% conserved in statutory reserves (Mucina & Rutherford, 2006). Little or no transformation of this vegetation type is evident.

The landscape of the Namaqualand Riviere is characterised by a complex of alluvial shrubland and patches of tussock graminoids, occupying riverbeds and banks of intermittent rivers such as the Swart-Doring in the study area. In places low thickets of *Acacia karoo* and *Tamarix usneoides* occur. The conservation status is Least Threatened with only a very small portion conserved in statutory reserves and almost 20% transformed by cultivation (Mucina & Rutherford, 2006).

The project area is mostly utilised for grazing by small livestock with the only degraded area being the township of Stofkraal. The vegetation units on the site vary according to soil characteristics, topography and land-use. Most of the site is characterized by low succulent shrubland that varies in density and species composition, while the Swart-Doring River bisect the area from East to West and represent an important CBA area. Vegetation units were identified and can be divided into the following 7 distinct vegetation units:

- *Euphorbia decussata* – *Cheiridopsis dentidulata* succulent shrubveld;
- *Ruschia leucosperma* – *Dimorphotheca pinnata* heuweltjieveld;
- *Euphorbia ephedroides* – *Ruschia leucosperma* succulent valley shrubveld;
- *Euphorbia mauritanica* – *Ruschia* – succulent shrubveld associated with outcrops;
- *Acacia karoo* riparian woodland, prominent floodplains & vegetation of smaller streams;
- Old fields / cultivated land; and
- Carbonatite veld.

Euphorbia decussata – Cheiridopsis denticulata succulent shrubveld

This vegetation unit occurs along the N7 and the first section of the Stofkraal secondary road. This typical succulent shrubveld associated with red-yellow soils on undulating terrain is dominated by species such as *Euphorbia decussata*, *Cheiridopsis denticulata* and *Ruschia* species. The vegetation unit is classified as having a medium sensitivity due to its widespread status in the Succulent Karoo Biome. No red data species were observed for this vegetation unit. Protected species include all species of the families Mesembryanthemaceae, Oxalidaceae, Iridaceae and Genus *Euphorbia* and the species *Brunsvigia bosmaniae*.

Ruschia leucosperma – Dimorphotheca pinnata heuweltjieveld

This vegetation unit is the most common and dominant natural vegetation entity occurring in the low-lying plains and valleys of the western section of the project area. This vegetation unit has a very widespread status as plant community in Namaqualand. The vegetation unit is classified as having a medium sensitivity due to its widespread status in the Succulent Karoo Biome. No red data species were observed for this vegetation unit. Permits should be obtained for the eradication of protected flora such as *Mesembryanthemaceae*, *Euphorbia* spp. and *Gladiolus saccatus*, should they be impacted upon by the road upgrade.

Euphorbia ephedroides – Ruschia leucosperma succulent valley shrubveld

This vegetation unit is the most common and dominant natural vegetation entity occurring in the low-lying plains and valleys of the project area, and has a very widespread plant community in Namaqualand. The vegetation unit is classified as having a medium sensitivity due to its widespread status in the Succulent Karoo Biome. No red data species were observed for this vegetation unit.

Certain succulent species such as *Euphorbia caput-medusae* can be rescued and relocated to alternative locations before construction commences.

Euphorbia mauritanica – Ruschia – succulent shrubveld

This vegetation unit represent the moderately undulating rocky terrain underlied by Gneiss on the farms Stofkraal, Bruintjieshoogte and Moordenaarskraal. The vegetation is typical succulent shrubveld, although the landscape is more prominently undulating compared to the other succulent shrubveld types with rocky outcrops scattered through the area. The most dominant plant species is *Euphorbia maritanica*. The vegetation unit is classified as having a medium to high sensitivity due to the shallow, rocky soils, high percentage of succulent species, fauna microhabitats and potential presence of species endemic to the Namaqualand and Succulent Karoo Biome. No red data species were observed for this vegetation unit.

Acacia karroo riparian woodland & vegetation of smaller streams

The Swart-Doring River represents the only major drainage channel in the project area, although several of its tributaries will be crossed as part of the road upgrade. The Swart-Doring River and its tributaries are characterized as non-perennial drainage channels with dense riparian woodland that varies from natural to degraded along its banks. The substrate in the channel is largely composed of riversand with some medium sized rocks along some areas of the channel and banks. The river itself plays an important role as a source of water to various organisms. No vegetation grows in the channel itself other than the edges of the channel where riparian woodland occurs.

The drainage channels are classified as non-perennial channels by the National Wetland Classification System (Sanbi, 2009). A channel (river, including the banks) is an open conduit with clearly defined margins that (i) continuously or periodically contains flowing water, or (ii) forms a connecting link between two water bodies. Dominant water sources include concentrated surface flow from upstream channels and tributaries, diffuse surface flow or interflow, and/or groundwater flow. Water moves through the system as concentrated flow and usually exits as such but can exit as diffuse surface flow because of a sudden change in gradient. Unidirectional channel-contained horizontal flow characterises the hydrodynamic nature of these units. As a result of the erosive forces associated with concentrated flow, channels characteristically have relatively obvious active channel banks.

In some areas of the project areas, floodplains occur adjacent to the drainage channels (e.g Swart-Doring River and to the north and north-east of the proposed open pit area). The floodplains can be described as "Riparian habitat" and includes the physical structure and associated vegetation of the areas associated with a watercourse which are commonly characterised by alluvial soils, and which are inundated or flooded to an extent and with a frequency sufficient to support vegetation of species with a composition and physical structure distinct from those of adjacent land areas". Riparian areas commonly reflect the high-energy conditions associated with the water flowing in a water channel, whereas wetlands generally display more diffuse flow and are lower energy environments.

The vegetation associated with the drainage channels, floodplains and riparian woodland has a high sensitivity with a high conservation priority. No major alteration of these important drainage areas is recommended, especially considering it to form part of an important catchment. No red data species were observed for this vegetation unit.

Old fields / cultivated land / degraded land

The areas that are currently in a largely degraded state as a result of overgrazing, crop cultivation, old fields or anthropogenic influences are discussed as one vegetation unit based on the low sensitivity of the area and common state of degradation. The degraded areas occur throughout large areas of the low-lying plains and valleys of the study area and are characterized by three main variations namely:

- Small scale subsistence cultivated land;
- Primary old fields
- Degraded areas in and around villages

The cultivated land in the valleys and on the plains occurs mostly close to the villages and represents small patches of completely modified land. Croplands in the area are found primarily on the Ag land type that is characterised by red-yellow apedal, freely drained loamy sand soils with a high base status, and is less than 300 mm deep. These areas do not represent a vegetation entity other than homogenous stands of crops and some Alien Invasive Species (AIS), exotic weeds and pioneer grasses. Therefore, no further discussion follows on the cultivated land considering that these areas represent zero sensitivity areas that is highly suitable for any development from an ecological perspective.

Carbonatite veld

The carbonatite veld occurs on very dark soil or on almost black surface rock and therefore the soil temperatures get very hot in summer, and this effectively means that few shrubs are present, as few are capable of surviving soil surface temperatures that probably approach 70 degrees Celsius at midday. Rocky outcrops in Namaqualand typically support high densities of dwarf succulents (many of which may be rare or localised), especially where the rock is white quartz (much cooler), but the one exception is where the surface rock is very dark in colour. The result of this phenomenon is that the carbonatite veld has a depauperate perennial cover, although annuals and bulbs (geophytes) seem to be common, which is not surprising, as both the latter life-forms effectively avoid the dry, hot summer conditions by retreating underground. On a regional scale perennial plant diversity in this area is very low, but this is partly made up for by what appears to be a fairly high diversity of annuals and bulbs. The highest diversity is found on the deeper, sandier soils surrounding the main rocky outcrop (Helme, 2012). The area has a medium to high sensitivity although no development is planned for this area as it forms part of the resource area. No red data species were observed for this vegetation unit.

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According to the SANBI database, the following red data plant species potentially occur in the larger project area:

Family	Species	Threat status
ASPHODELACEAE	<i>Bulbine louwii</i> L.I.Hall	Rare
ASPHODELACEAE	<i>Bulbine wiesei</i> L.I.Hall	Rare
ASTERACEAE	<i>Amphiglossa celans</i> Koekemoer	Rare
ASTERACEAE	<i>Helichrysum tricoatum</i> (Thunb.) Less.	Near threatened
ASTERACEAE	<i>Ursinia pygmaea</i> DC.	Rare
FABACEAE	<i>Lebeckia plukenetiana</i> E.Mey.	Endangered
IRIDACEAE	<i>Babiana confusa</i> (G.J.Lewis) Goldblatt & J.C.Manning	Near threatened
IRIDACEAE	<i>Babiana lewisiana</i> B.Nord.	Vulnerable
IRIDACEAE	<i>Babiana rubella</i> Goldblatt & J.C.Manning	Vulnerable
MESEMBRYANTHEMACEAE	<i>Leipoldtia klaverensis</i> L.Bolus	Endangered
MESEMBRYANTHEMACEAE	<i>Lithops divergens</i> L.Bolus	Near threatened
OXALIDACEAE	<i>Oxalis virginea</i> Jacq.	Rare
PROTEACEAE	<i>Leucadendron linifolium</i> (Jacq.) R.Br.	Vulnerable
PROTEACEAE	<i>Leucospermum rodolentum</i> (Salisb. ex Knight) Rourke	Vulnerable
RHAMNACEAE	<i>Phylica hirta</i> Pillans	Near threatened
SANTALACEAE	<i>Thesium urceolatum</i> A.W.Hill	Data deficient

None of the species listed above was documented during the ecological survey of the access route alignment.

Protected plant species in the area include all species of the families *Mesembryanthemaceae*, *Oxalidaceae*, *Iridaceae* and Genus *Euphorbia* and the species *Brunsvigia bosmaniae*. Permits should be obtained for the above protected flora species should they be impacted upon by the upgrade of the existing provincial roads and the construction of the new private road.

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT AND NOTICE

Publication name	Government Gazette	
Date published	12 July 2013	
Publication name	Die Plattelander	
Date published	12 July 2013	
Site notice position	Latitude	Longitude
	S 30°49'13.15"	E 18°7'1.84"
Date placed	12 July 2013	
Site notice position	Latitude	Longitude
	S 30°52'12.84"	E 17°57'22.80"
Date placed	12 July 2013	
Site notice position	Latitude	Longitude
	S 30°49'20.62"	E 18°1'5.37"
Date placed	12 July 2013	
Site notice position	Latitude	Longitude
	S 30°52'18.56"	E 18°2'17.89"
Date placed	12 July 2013	
Site notice position	Latitude	Longitude
	S 30°57'16.99 "	E 18°2'21.28"
Date placed	12 July 2013	

Include proof of the placement of the relevant advertisements and notices in Appendix E1.

2. DETERMINATION OF APPROPRIATE MEASURES

Provide details of the measures taken to include all potential I&APs as required by Regulation 54(2)(e) and 54(7) of GN R.543.

Key stakeholders (other than organs of state) identified in terms of Regulation 54(2)(b) of GN R.543:

Title, Name and Surname	Affiliation/ key stakeholder status	Contact details (tel number or e-mail address)
Ms Madeleine Brandt Municipal Manager	Namakwa District Municipality	Tel: (027) 712 8000 info@namakwa-dm.gov.za benv@namakwa-dm.gov.za
Mr Gert Maarman Municipal Manager	Kamiesberg Local Municipality	Tel: (027) 652 8000 gertm@kamiesberg.co.za
Ms. Doretha Kotze Town and Regional Planner	West Coast District Municipality (WCDM)	Tel: (022) 433 8400 westcoastdm@wcdm.co.za Tel: 022 433 8523 dkotze@wcdm.co.za
Mr Dean O'Neill Municipal Manager Mr Briaan Smit	Matzikama Local Municipality	Tel: (027) 201 3301 / 3300 Tel: 027 201 3481 bsmit@matzikamamun.co.za

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Town and Regional Planner		
Mr. Chris van Westruis	Rietpoort Gemeenskap (Stofkraal) - Municipal councillor	Cell: 0827174925 christoffelvdw@matzikamamun.co.za
Mr. Leon Owies	Rietpoort Gemeenskap (Stofkraal) - Land Claims Committee	leon.owies@gmail.com
Mr. Johannes Nicolaas Boonzaaier	Landowner - RE of Moordenaars Kraal 41	Tel: 0276427217 Cell: 0836770084
Mr. Gideon Andries van Zyl	Landowner - Portion 7 of Bruintjes Hoogte 40	Tel: 0276421110 / 0546023102
Mr. J.T. Myburgh	Landowner - Portion 8 of Bruintjes Hoogte 40	PO Box 2 Van Rhynsdorp 8170
Mrs. Johanna Elizabeth Kotze	Landowner - Portion 10 of Bruintjes Hoogte 40	P O Box 11 Bitterfontein 8202
Ms. R De Kock	SANRAL - Western Region	Tel: (021) 957 4600 / 4607 dekokcr@nra.co.za
Amukelani Nkuna (Catchment Manager: West Coast Cluster)	Cape Nature	Tel: (022) 931 2900 Cell: (072) 437 4011 ankuna@capenature.co.za

Include proof that the key stakeholder received written notification of the proposed activities as Appendix E2. This proof may include any of the following:

- e-mail delivery reports;
- registered mail receipts;
- courier waybills;
- signed acknowledgements of receipt; and/or
- or any other proof as agreed upon by the competent authority.

3. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summary of main issues raised by I&APs	Summary of response from EAP
Location of proposed access route and affected farms	<p>The proposed Zandkopsdrift access road is located off the National Route 7 (N7) approximately 34km south of the town of Garies in the Northern Cape Province and approximately 31 km north of Bitterfontein in the Western Cape Province.</p> <p>The farms which fall within the Western Cape are:</p> <ul style="list-style-type: none"> – Bruintjes Hoogte 45 – Moordenaarskraal 41 – Stof Kraal 42

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	The farm Zandkopsdrift 537 falls within the Northern Cape Province.
Location of mine	The proposed mine will be located approximately 2km in the Northern Cape from the Western Cape provincial boundary.
Timeframe for road construction	Construction is planned to start 2017 and operations in 2019.
Progress of the water use licence application	A water use licence application (WULA) is being compiled for the road crossings at the Swart-Doring River and associated drainage lines. The application will be submitted to the Department of Water Affairs (DWA) along with the Final BAR.
Road building material and the authorisation of borrow pits	Please note that borrow pits may not be required as the vertical alignment will be cut in key locations where the alignment traverses steep crests in order to achieve an acceptable level of safety and to provide the required road construction material. Investigations are currently underway to determine whether this would constitute borrow pits and liaison with the Department of Roads and Transport is ongoing with regards to this. However authorisations and permits will be obtained for all the relevant borrow pits.
Issuing of tenders for road construction	Should tenders be placed they would be placed in local newspapers. Large companies usually constructed roads due to the high costs of road construction, however talks will be held with the contractor to ensure that local labour is employed as far as possible.
Soil pollution	A specialist Ecological Study has been conducted to assess the potential soil pollution due to the upgrade and construction of the road. Please refer to Appendix D1.
Ecological Impacts <ul style="list-style-type: none"> – Impact on fauna and flora – Occurrence of Namaqua Stream Frog – Impact on conservation areas – Impact on grazing areas – Impact of vibrations on herpetofauna 	A specialist Ecological Study has been conducted to assess the ecological impacts of the project. Please refer to Appendix D1.

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<p>Heritage Impacts</p> <ul style="list-style-type: none"> – Impact on graves, old buildings, cultural and historical areas – Demarcation of heritage areas 	<p>A Heritage study has been conducted to assess the impact on heritage resources in the area. Please refer to Appendix D2.</p>
<p>Traffic Impact</p> <ul style="list-style-type: none"> – Traffic Impact Assessment – Application for upgrade of N7/OP09810 intersection – Road management agent: West Coast District 	<p>Noted. Please note that the Preliminary Road Design Report will be made available along with this BAR for comment.</p>
<p>Surface Water Impacts</p> <ul style="list-style-type: none"> – Water pollution of rivers and watercourses – Number of water resources which will be crossed – Number of bridges to be constructed / widened – Flooding: measurement of Swart-Doring River during floods 	<p>A specialist Ecological Study has been conducted to assess the potential soil pollution due to the upgrade and construction of the road. Please refer to Appendix D1.</p> <p>Please note that the route alignment follows that of the existing gravel road as far as possible. The proposed access road will therefore cross the Swart-Doring River at the current crossing in Stofkraal as well as at a tributary of the Swart-Doring River. Concrete drifts will be constructed at these points. Furthermore, culverts will be constructed at all drainage crossings (where necessary). Please refer to storm water infrastructure map (Appendix A).</p>
<p>Socio-Economic impacts</p> <ul style="list-style-type: none"> – Job creation – Use of local labour – Availability of skilled labour in not directly affected communities – Scarcity of jobs in the area – Socio-economic impacts in the long run 	<p>Socio-economic impacts have been identified and assessed as part of the Basic Assessment process. Please refer to Section D.</p>

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<ul style="list-style-type: none"> – Socio-economic empowerment of community – Impact on closely situated communities currently and in the future (during construction and operations) – Health impact from water pollution – Agreements with community with regard to appropriation of land for the establishment of a road servitude – Establishment of a community liaison platform – Project would lead to socio-economic upliftment in the community – Necessary road construction skills were available in local communities 	
<p>Economic Benefits</p> <ul style="list-style-type: none"> – Impact on local economy – Contribution of development to economic welfare of affected community – Development to advantage of broader community is appreciated – Development of local entrepreneurs – Assistance to local businesses – Request for road construction operations to be located in Stofkraal 	<p>Socio-economic impacts have been identified and assessed as part of the Basic Assessment process. Please refer to Section D.</p>
<p>Noise Impact</p> <ul style="list-style-type: none"> – Noise impact on fauna and community 	<p>Noise impacts have been identified and assessed as part of the Basic Assessment process. Please refer to Section D.</p>

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members	
<p>Safety and Security</p> <ul style="list-style-type: none"> – Fencing of road – Safety of children – Enforcement of speed limits – Road crossings within residential areas 	<p>Socio-economic impacts, such as safety and was assessed in section D of this report.</p>
<p>Alternative routes</p> <ul style="list-style-type: none"> - Identification and assessment of alternative access routes - Reason for concrete drifts being the preferred alternative - Alternative access for communities during construction phase 	<p>Alternative routes and design alternatives have been assessed in the BAR (Refer to Section A).</p>
<p>Public Participation</p> <ul style="list-style-type: none"> - Public Meeting - Communication channels between mine and community leaders and townspeople - Municipal involvement with project and public meeting - Use of community hall for public meetings 	<p>Initial public participation was conducted in order to notify the public of the project and invite them to register as I&APS on the project. Two adverts had been placed in a national and local newspaper and site notices had been placed along the proposed access road route. BID's were distributed to the landowners as well as the communities of Stofkraal, Molsvlei and Rietpoort. The Draft BAR was also made available for review by I&APs from the 2nd of July till the 1st of August 2014. The project and the proposed route alignment were also presented to I&APs at the public meetings which took place on 31st of July and 1st of August 2014 in Garies, Bitterfontein and Stofkraal.</p>

4. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments received from I&APs and respond to each comment before the Draft BAR is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to the Final BAR as Appendix E3.

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5. AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders:

Authority/Organ of State	Contact person (Title, Name and Surname)	Tel No	Fax No	e-mail	Postal address
Western Cape Department of Environmental Affairs and Development Planning	Ms. Mische Engelbrecht	(021) 483 4094	(021) 483 4372	mische.engelbrecht@westerncape.gov.za	Private Bag X9086 Cape Town 8000
Northern Cape Department of Environment and Nature Conservation	Ms. L Pienaar / A.T. Makaudi	(053) 807 7430	(053) 831 3530	eia@half.ncape.gov.za	Private Bag X6102 Kimberley 8300
	Ms. O. Ndzumao	(027) 718 8800			
Western Cape Department of Transport and Public Works	Mr. Johan Fourie	(021) 483 2826 / 2078	(021) 483 5068 / 2217	Johan.Fourie@westerncape.gov.za ; Transport.Publicworks@westerncape.gov.za ; Malcolm.Watters@westerncape.gov.za	Private Bag X9185 Cape Town 8001
Department of Water Affairs - Western Cape	Mr. MAR Khan	(021) 941 6000 (082) 809 2218			Private Bag X16 SANLAMHOF 7532
Department of Water Affairs	Mrs. Hester Lyons Mr. Warren Dreyer	021 941 6185	086 556 9985	Dreyerw@dwa.gov.za	Private bag x16 Sanlamhof 7532
Department of Agriculture	Mr. AS Roux Mr. Francis Steyn	021 808 7613		francis@elsenberg.com	Private Bag x1 Elsenburg 7607
Western Cape Department of Economic Development	Mr. Nigel Gwynne-Evans Mr. Jim	(021) 483 3859 (021) 483 5065	(021) 483 7527	ecohead@westerncape.gov.za	PO Box 979 Cape Town 8000

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and Tourism (DEDAT)	Petrie Mr. Solly Fourie Ms. Jo-Ann Johnston Mr. Herman Jonker				
Provincial Roads and Transport Management: West Coast	Mr. Lars Starke (District Roads Engineer) Mr Walcolm Watters	023 312 1120 082 809 6170 021 483 2203	023 312 2633	Lars.Starke@westerncape.gov.za Malcolm.Watters@westerncape.gov.za	Private Bag X2 Ceres 6835
SAHRA - Western Cape	Ms. Jenna Lavin			jlavin@pgwc.gov.za	
Department of Water Affairs Northern Cape	Mr. A. Abrahams Mr. LJ Snyders	(053) 830 8803 (082) 883 6741 (053) 830 8804 (082) 809 2306	(053) 831 4534	AbrahamsA@dwa.gov.za	Private Bag X6101 Kimberley 8300
Department of Tourism, Environment & Conservation	Ms. Lucille Karsten Mr. Sibonelo Mbanjwa Ms. Basani Mkhombo Ms. Dineo Moleko	(027) 718 1958 (053) 807 4800	(027) 718 1949	karsten@sptour.ncape.gov.za	Private Bag X16 Springbok 8240 Private Bag X6102 Kimberley 8300
Department of Forestry	Ms. Jacoline Mans			JacolineMa@daff.gov.za	Private Bag X5912 Upington 8800
Department of Agriculture, Land Reform & Rural Development - Northern Cape	Mr. Thabo Mothibi Ms. Lorato Sehularo Mr. Sydney Hlongwane Ms. Cindy Damons	(053) 838 9158 (053) 830 4042 (082) 827 0010 (051) 403 0700 (082) 827 0010 (053) 807 1340 (082) 827 0010	(053) 831 4095 (053) 833 1160	Lsehularo@ruraldevelopment.gov.za cjdamons@ruraldevelopment.gov.za	Private Bag X5018 Kimberley 8300 Private Bag X5007 Kimberley 8300 PO Box 4376 Bloemfontein 9300

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					PO Box 2458 Kimberley 8300
Department of Economic Development	Mr. E. Julius			ejulius4@gmail.com	
SAHRA Northern Cape	- Ms. Mariagrazia Galimberti			mgalimberti@sahra.org.za	PO Box 1930 Kimberley 8300

Include proof that the Authorities and Organs of State received written notification of the proposed activities as appendix E4.

In the case of renewable energy projects, Eskom and the SKA Project Office must be included in the list of Organs of State.

6. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for any activities (linear or other) where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that sub-regulation to the extent and in the manner as may be agreed to by the competent authority.

Proof of any such agreement must be provided, where applicable. Application for any deviation from the regulations relating to the public participation process must be submitted prior to the commencement of the public participation process.

A list of registered I&APs must be included as appendix E5.

Copies of any correspondence and minutes of any meetings held must be included in Appendix E6.

SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2010, and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

1. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES

Provide a summary and anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed. This impact assessment must be applied to all the identified alternatives to the activities identified in Section A(2) of this report.

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Alternative 1 (preferred alternative)												
Direct Impacts:												
Nr	Impact	Without or With Mitigation	Probability		Duration		Scale		Magnitude/ Severity		Significance	
			Score	Magnitude	Score	Magnitude	Score	Magnitude	Score	Magnitude	Score	Magnitude
Construction Phase												
Noise Impacts												
1	Increased noise from construction vehicles and machinery	WOM	1	Improbable	3	Medium Term	1	Local	2	Low	6	Negligible
		WM	1	Improbable	3	Medium Term	1	Local	2	Low	6	Negligible
Air Quality Impacts												
2	Decreased air quality due to dust and emissions from construction vehicles and machinery	WOM	4	Highly Probable	3	Medium Term	1	Local	2	Low	24	Low
		WM	2	Probable	3	Medium Term	1	Local	2	Low	12	Negligible
Water Impacts												
3	Potential pollution of the Swart-Doring River, its tributaries and drainage lines and groundwater resources due to hydrocarbon spillages	WOM	2	Probable	5	Permanent	3	Regional	8	High	32	Low
		WM	2	Probable	5	Permanent	3	Regional	2	Low	20	Negligible
4	Potential pollution of the Swart-Doring River, its tributaries and drainage lines	WOM	2	Probable	5	Permanent	3	Regional	8	High	32	Low
		WM	2	Probable	5	Permanent	3	Regional	2	Low	20	Negligible

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	and groundwater resources from asphalt and concrete batching and mixing areas												
5	Increased siltation of water resources due to soil erosion caused by construction activities	WOM	2	Probable	1	Short Term	3	Regional	8	High	24	Low	
		WM	2	Probable	1	Short Term	3	Regional	2	Low	12	Negligible	
6	Impact on natural drainage regime of area (total distance of route at major crossings and tributaries)	WOM	5	Definite	5	Permanent	3	Regional	8	High	80	High	
		WM	4	Highly Probable	5	Permanent	3	Regional	2	Low	40	Low	
Soil Impacts													
7	Soil erosion due to construction activities	WOM	4	Highly Probable	1	Short Term	3	Regional	8	High	48	Moderate	
		WM	4	Highly Probable	1	Short Term	3	Regional	2	Low	24	Low	
8	Potential soil pollution from asphalt and concrete batching and mixing areas	WOM	4	Highly Probable	5	Permanent	3	Regional	8	High	64	High	
		WM	4	Highly Probable	5	Permanent	3	Regional	2	Low	40	Low	
Waste Impacts													
9	Generation of construction solid waste during construction	WOM	2	Probable	1	Short Term	1	Local	6	Medium	16	Negligible	
		WM	2	Probable	1	Short Term	1	Local	2	Low	8	Negligible	
10	Generation of domestic effluent - contractors staff	WOM	5	Definite	1	Short Term	3	Regional	6	Medium	50	Moderate	
		WM	5	Definite	1	Short Term	3	Regional	2	Low	30	Low	

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Ecological Impacts												
11	Direct natural habitat modification / destruction: High sensitivity areas (drainage channels)	WOM	5	Definite	5	Permanent	1	Local	8	High	70	High
		WM	5	Definite	5	Permanent	1	Local	6	Medium	60	Moderate
12	Direct natural habitat modification / destruction: Semi-natural areas (medium sensitivity)	WOM	5	Definite	5	Permanent	1	Local	6	Medium	60	Moderate
		WM	5	Definite	5	Permanent	1	Local	2	Low	40	Low
13	Direct natural habitat modification / destruction: Degraded areas	WOM	1	Improbable	5	Permanent	1	Local	6	Medium	12	Negligible
		WM	1	Improbable	5	Permanent	1	Local	2	Low	8	Negligible
14	Natural habitat fragmentation: High sensitivity outcrops / riparian woodland	WOM	4	Highly Probable	5	Permanent	1	Local	8	High	56	Moderate
		WM	4	Highly Probable	5	Permanent	1	Local	6	Medium	48	Moderate
15	Natural habitat fragmentation: Semi natural areas (medium sensitivity)	WOM	4	Highly Probable	5	Permanent	1	Local	6	Medium	48	Moderate
		WM	4	Highly Probable	5	Permanent	1	Local	2	Low	32	Low
16	Natural habitat fragmentation: Degraded areas	WOM	1	Improbable	5	Permanent	1	Local	6	Medium	12	Negligible
		WM	1	Improbable	5	Permanent	1	Local	2	Low	8	Negligible
17	Spread and establishment of alien invasives	WOM	5	Definite	4	Long Term	3	Regional	8	High	75	High
		WM	5	Definite	4	Long Term	3	Regional	2	Low	45	Moderate

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18	Negative effect of human activities on fauna and flora	WOM	4	Highly Probable	3	Medium Term	2	Site	6	Medium	44	Moderate
		WM	4	Highly Probable	3	Medium Term	2	Site	2	Low	28	Low
19	Air pollution (impact on natural vegetation): High sensitivity areas	WOM	4	Highly Probable	1	Short Term	2	Site	8	High	44	Moderate
		WM	4	Highly Probable	1	Short Term	2	Site	6	Medium	36	Low
20	Air pollution (impact on natural vegetation): Semi-natural areas (moderate or moderate-low sensitivity)	WOM	4	Highly Probable	1	Short Term	2	Site	6	Medium	36	Low
		WM	4	Highly Probable	1	Short Term	2	Site	2	Low	20	Negligible
21	Air pollution (impact on natural vegetation): Degraded areas	WOM	1	Improbable	1	Short Term	2	Site	6	Medium	9	Negligible
		WM	1	Improbable	1	Short Term	2	Site	2	Low	5	Negligible
22	Road mortality: fauna	WOM	5	Definite	5	Permanent	1	Local	6	Medium	60	Moderate
		WM	5	Definite	5	Permanent	1	Local	2	Low	40	Low
Heritage Impacts												
23	Impact on isolated Middle and Later Stone Age Scatters	WOM	5	Definite	5	Permanent	1	Local	2	Low	40	Low
		WM	5	Definite	5	Permanent	1	Local	2	Low	40	Low
Socio-economic Impacts												
24	Creation of job opportunities	WOM	5	Definite	3	Medium Term	2	Site	8	High	65	High +
		WM	5	Definite	3	Medium Term	2	Site	8	High	65	High +
25	Access to and potential damage	WOM	2	Probable	1	Short Term	1	Local	6	Medium	16	Negligible
		WM	2	Probable	1	Short Term	1	Local	2	Low	8	Negligible

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	to property											
26	Potential damage to existing infrastructure	WOM	2	Probable	1	Short Term	1	Local	6	Medium	16	Negligible
		WM	2	Probable	1	Short Term	1	Local	2	Low	8	Negligible
27	Road safety	WOM	5	Definite	4	Long Term	3	Regional	8	High	75	High
		WM	2	Probable	4	Long Term	3	Regional	6	Medium	26	Low
28	Open trenches and unsafe areas	WOM	2	Probable	1	Short Term	1	Local	8	High	20	Negligible
		WM	2	Probable	1	Short Term	1	Local	2	Low	8	Negligible
Operational Phase												
Noise Impacts												
1	Increased noise from vehicular movement on roads	WOM	2	Probable	4	Long Term	2	Site	2	Low	16	Negligible
		WM	2	Probable	4	Long Term	2	Site	2	Low	16	Negligible
Air Quality Impacts												
2	Decreased air quality due to vehicular emissions	WOM	4	Highly Probable	4	Long Term	2	Site	2	Low	32	Low
		WM	2	Probable	4	Long Term	2	Site	2	Low	16	Negligible
3	Dust mitigated due to impermeable all-weather road surface	WOM	4	Highly Probable	5	Permanent	2	Site	8	High	60	High +
		WM	4	Highly Probable	5	Permanent	2	Site	8	High	60	High +
Water Impacts												
4	Potential pollution of the Swart-Doring River, its tributaries and drainage lines	WOM	2	Probable	5	Permanent	3	Regional	6	Medium	28	Low
		WM	2	Probable	5	Permanent	3	Regional	2	Low	20	Negligible

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	due to dirty run-off from surfaced roads												
5	Storm water management resulting in improved drainage	WOM	5	Definite	5	Permanent	2	Site	8	High	75	High +	
		WM	5	Definite	5	Permanent	2	Site	8	High	75	High +	
6	Decrease in flooding of road at low-lying sections and subsequent road closure	WOM	4	Highly Probable	5	Permanent	2	Site	8	High	60	High +	
		WM	4	Highly Probable	5	Permanent	2	Site	8	High	60	High +	
Soil Impacts													
7	Decrease in siltation of water resources ⁸	WOM	4	Highly Probable	5	Permanent	2	Site	8	High	60	High +	
		WM	4	Highly Probable	5	Permanent	2	Site	8	High	60	High +	
8	Decrease in soil erosion	WOM	5	Definite	5	Permanent	2	Site	8	High	75	High +	
		WM	5	Definite	5	Permanent	2	Site	8	High	75	High +	
Ecological Impacts													
9	Direct natural habitat modification / destruction: High sensitivity areas (drainage channels)	WOM	5	Definite	5	Permanent	1	Local	6	Medium	60	Moderate	
		WM	5	Definite	5	Permanent	1	Local	2	Low	40	Low	
10	Spread and establishment of alien invasives	WOM	5	Definite	4	Long Term	3	Regional	8	High	75	High	
		WM	5	Definite	4	Long Term	3	Regional	2	Low	45	Moderate	

⁸ Decrease in siltation of water resources, e.g. Swart-Doring River and tributaries, compared to that of the status quo

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11	Road mortality: fauna	WOM	5	Definite	5	Permanent	1	Local	6	Medium	60	Moderate
		WM	5	Definite	5	Permanent	1	Local	2	Low	40	Low
Socio-economic Impacts												
12	Increased accessibility for farmers and communities	WOM	5	Definite	5	Permanent	2	Site	8	High	75	High +
		WM	5	Definite	5	Permanent	2	Site	8	High	75	High +
13	Road Safety: Increased traffic on roads	WOM	5	Definite	4	Long Term	3	Regional	8	High	75	High
		WM	4	Highly Probable	4	Long Term	3	Regional	6	Medium	52	Moderate
14	Road Safety: Increased road speeds resulting in traffic accidents	WOM	5	Definite	4	Long Term	3	Regional	8	High	75	High
		WM	2	Probable	4	Long Term	3	Regional	6	Medium	26	Low
Cumulative Impacts:												
Nr	Activity	Without or With Mitigation	Probability		Duration		Scale		Magnitude/ Severity		Significance	
			Score	Magnitude	Score	Magnitude	Score	Magnitude	Score	Magnitude	Score	Magnitude
Operational Phase												
Air Quality Impacts												
1	Decreased air quality due to vehicular emissions	WOM	4	Highly Probable	4	Long Term	2	Site	2	Low	32	Low
		WM	2	Probable	4	Long Term	2	Site	2	Low	16	Negligible
Water Impacts												
3	Potential pollution of the Swart-Doring River, its tributaries and drainage lines due to dirty run-off from surfaced roads	WOM	2	Probable	5	Permanent	3	Regional	6	Medium	28	Low
		WM	2	Probable	5	Permanent	3	Regional	2	Low	20	Negligible

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Alternative 2												
Direct Impacts:												
The direct impacts identified for Alternative B and their significance rating is identical to that of Alternative A.												
Cumulative Impacts:												
The cumulative impacts identified for Alternative B and their significance rating is identical to that of Alternative A.												
No-go												
Direct Impacts:												
Nr	Activity	Without or With Mitigation	Probability		Duration		Scale		Magnitude/ Severity		Significance	
			Score	Magnitude	Score	Magnitude	Score	Magnitude	Score	Magnitude	Score	Magnitude
Operational Phase												
Air Quality Impacts												
2	Dust due to gravel road surface	WOM	5	Definite	5	Permanent	2	Site	8	High	75	High
Water Impacts												
4	Lack of storm water management resulting in poor drainage	WOM	5	Definite	5	Permanent	2	Site	8	High	75	High
5	Flooding of road at low-lying sections and subsequent road closure	WOM	4	Highly Probable	3	Medium Term	2	Site	8	High	52	Moderate
Soil Impacts												
7	Siltation of water resources	WOM	4	Highly Probable	5	Permanent	2	Site	8	High	60	Moderate

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8	Soil erosion	WOM	5	Definite	5	Permanent	2	Site	8	High	75	High
Socio-economic Impacts												
23	Gravel roads leading to traffic accidents	WOM	5	Definite	5	Permanent	3	Regional	8	High	80	High
Cumulative Impacts:												
Nr	Activity	Without or With Mitigation	Probability		Duration		Scale		Magnitude/ Severity		Significance	
			Score	Magnitude	Score	Magnitude	Score	Magnitude	Score	Magnitude	Score	Magnitude
Operational Phase												
Air Quality Impacts												
2	Dust due to gravel road surface	WOM	5	Definite	5	Permanent	2	Site	8	High	75	High
Water Impacts												
4	Lack of storm water management resulting in poor drainage	WOM	5	Definite	5	Permanent	2	Site	8	High	75	High
5	Flooding of road at low-lying sections and subsequent road closure	WOM	4	Highly Probable	3	Medium Term	2	Site	8	High	52	Moderate
Soil Impacts												

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7	Siltation of water resources	WOM	4	Highly Probable	5	Permanent	2	Site	8	High	60	Moderate
8	Soil erosion		5	Definite	5	Permanent	2	Site	8	High	75	High
Socio-economic Impacts												
23	Gravel roads leading to traffic accidents	WOM	5	Definite	5	Permanent	3	Regional	8	High	80	High
<p><i>The above impacts for the no-go option have been rated without mitigation (WOM) as it represents the status quo and any mitigation measures which may have been implemented previously now forms part of the status quo.</i></p>												

A complete impact assessment in terms of Regulation 22(2)(i) of GN R.543 must be included as Appendix F.

2. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that summarises the impact that the proposed activity and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

Alternative A (preferred alternative)

The significance of the identified impacts was rated by taking into account its duration, scale, severity (magnitude) and the probability that the impact may occur. The findings of the specialist studies undertaken during this study provide an assessment of both the benefits and potential negative impacts anticipated as a result of the proposed project. The study concluded that most of the negative impacts will be mitigated to be of negligible or low significance and all the positive impacts will be enhanced to be of high significance, by implementing the mitigation measures described in the attached EMP (Appendix G). All the impacts which were rated as of high significance following mitigation are positive impacts. The following negative impacts of moderate significance following mitigation were identified:

Ecological impacts:

- Direct natural habitat modification
- Natural habitat fragmentation
- Spread and establishment of alien invasive species

Socio-economic impacts:

- Road Safety: Increased traffic on roads

No negative impacts of high significance after mitigation were identified.

The following positive impacts of high significance after mitigation are expected for the development:

Socio-Economic impacts:

- Job creation
- Increased accessibility for farmers and communities

Air Quality impacts:

- Dust mitigated due to impermeable all-weather road surface

Surface Water impacts:

- Stormwater management resulting in improved drainage
- Decrease in flooding of road at low-lying sections and subsequent road closure

Soil impacts:

- Decrease in siltation of water resources
- Decrease in soil erosion
- Conservation of soil resources

The findings conclude that provided that the recommended mitigation and management measures are implemented there are no environmental disqualifying factors that should prevent the proposed project from proceeding.

In order to achieve appropriate environmental management standards and ensure that the findings of the environmental studies are implemented through practical measures, the mitigation measures detailed in the specialist studies have been captured in the EMP.

This EMP will form part of the contract with the contractors appointed to construct and maintain the proposed access road and stormwater infrastructure. The EMP would be used to ensure compliance with environmental specifications and management measures. The implementation of this EMP for key cycle phases (i.e. construction and operation) of the proposed project is considered to be fundamental in achieving the appropriate environmental management standards as detailed for this project.

It is recommended that the process of open communication and consultation with the community is maintained throughout the life cycle of this project.

Alternative B

The significance of the identified impacts for Alternative B is identical to that of Alternative A. However due to the higher amount of drainage lines associated with Alternative B this alternative would require the construction of more culverts and a larger disturbance to the natural vegetation surrounding drainage lines than Alternative A. Alternative B is therefore not considered feasible.

No-go alternative (compulsory)

Alternatives should be evaluated against the no-go option. In this scenario the identified access road will not be constructed for the mine.

The proposed access road will entail the upgrade of existing provincial roads OP09810 and OP09811 and a construction of a new private road. The proposed access road poses the shortest route to the mine site. Due to inadequate maintenance activities, the wearing course level of provincial road OP09810 is currently below the surrounding natural ground level. The gravel wearing course has been damaged by surface erosion and traffic abrasion. The gravel profile is flat and no cross-fall is visible over substantial lengths of the road section under investigation, which results in inadequate transverse drainage.

The existing private road can be described as a combination of an informal jeep track road and overland terrain which traverses rolling terrain with numerous tight curves and steep gradients. There is no evidence of any fill or drainage provided in the low lying areas. The horizontal and vertical alignment (narrow track width, tight curves and steep slopes) currently only provides for local farm access.

The upgrade and design of the above roads will result in a reduction in the required maintenance activities and frequency of surfaced roads compared to gravel roads. In addition, there is a reduced accident risk in using surfaced roads compared to gravel roads. The upgraded road will also result in increased accessibility for the communities of Stofkraal, Molsvlei and Rietpoort. The surfaced road will also result in a reduction of dust as well as soil erosion, which would in turn reduce siltation of the Swart-Doring River.

Should the road not be upgraded the environment would be left as is and the impact on the area and potential benefits would remain unchanged. The no-go option is therefore not considered feasible as the proposed access road presents the simplest form of access to the mine and will result in a number of positive benefits for the area. In addition, should the mitigation measures proposed in the EMP be implemented the negative impact on the environment can be considered to be moderate to low.

SECTION E. RECOMMENDATION OF PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?

YES	NO
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If "NO", indicate the aspects that should be assessed further as part of a Scoping and EIA process before a decision can be made (list the aspects that require further assessment).

If "YES", please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application.

A variety of mitigation measures have been identified that will serve to mitigate the scale, intensity, duration or significance of the impacts that have a medium to high significance rating. These include guidelines to be applied during the construction and operational phases of the project. It is submitted that the proposed mitigatory measures, if implemented, will reduce the significance of the identified impacts to "moderate" and "low", and that the proposed project should proceed.

The recommendations made in the following specialist studies are included in the EMPR and must be adhered to:

- Ecological Assessment;
- Heritage Assessment;
- Air Quality Impact Assessment (specialist declaration of interest is included in report);
- Noise Impact Assessment (specialist declaration of interest is included in report);
- Preliminary Road Design Report; and
- Floodline Report.

Please refer to the attached Environmental Management Plan for all recommendations and mitigation measures.

Is an EMPr attached?

YES	NO
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The EMPr must be attached as Appendix G.

The details of the EAP who compiled the BAR and the expertise of the EAP to perform the Basic Assessment process must be included as Appendix H.

If any specialist reports were used during the compilation of this BAR, please attach the declaration of interest for each specialist in Appendix I.

Any other information relevant to this application and not previously included must be attached in Appendix J.

BASIC ASSESSMENT REPORT

Dr JC Vivier (PhD: Environmental Management)

NAME OF EAP



SIGNATURE OF EAP

23 October 2014

DATE

SECTION F: APPENDIXES

The following appendixes must be attached:

Appendix A: Maps

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports (including terms of reference)

Appendix E: Public Participation

Appendix F: Impact Assessment

Appendix G: Environmental Management Programme (EMPr)

Appendix H: Details of EAP and expertise

Appendix I: Specialist's declaration of interest

Appendix J: Additional Information

Appendix A: Maps

Appendix B: Photographs

Appendix C: Route Drawings – refer to Annexure F of the Preliminary Road Design Report

Appendix D: Specialist Reports
Appendix D1: Ecological Impact Assessment

Appendix D2: Heritage Impact Assessment

Appendix D3: Air Quality Impact Assessment

Appendix D4: Noise Impact Assessment

Appendix D5: Preliminary Road Design Report

Appendix D6: Floodline Report

Appendix D7: Rehabilitation Plan

Appendix E: Public Participation

Appendix E1: Proof of advertisements and notices

Appendix E2: Proof of notification

Appendix E3: Comments and Response Report

Appendix E4: Proof of notification (Organs of State) – please refer to Appendix E2

Appendix E5: List of registered I&APs

Appendix E6: I&AP Correspondence and meeting minutes

Appendix F: Impact Assessment

Appendix G: Environmental Management Programme (EMPr)

Appendix H: Details of EAP and expertise

Appendix I: Specialist's declaration of interest

Appendix J: Property Description List

Appendix K: Route coordinates

Appendix L: Water Use Licence Documentation

Appendix M: Waste Disposal Letter