mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

BASIC ASSESSMENT REPORT

And

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

(REVISION 1 – 2019)

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

NAME OF APPLICANT: ALIDABIX (PTY) LTD

TEL NO: 053 832 3298
FAX NO: 053 832 3298
POSTAL ADDRESS: 94 CENTRAL ROAD, KIMBERLEY, 8301
PHYSICAL ADDRESS: 94 CENTRAL ROAD, KIMBERLEY, 8301
FIRE REFERENCE NUMBER SAMRAD: (NC) 30/5/1/1/2/12131 PR

IMPORANT NOTICE

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

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

In terms of Section 16(3)(b) of the EIA Regulations, 2014, any report submitted as part of an application must be prepared in a format that may be determined by the Competent Authority and in terms of Section 17(1)(c) the Competent Authority must check whether the application has taken into account any minimum requirements applicable or instructions or guidance provided by the Competent Authority to the submission of applications.

It is therefore an instruction that the prescribed reports required in respect of applications for an environmental authorisation for listed activities triggered by an application for a right or permit are submitted in the exact format of, and provide all the information required in terms of, this template. Furthermore please be advised that failure to submit the information required in the format provided in this template will be regarded as a failure to meet the requirements of the Regulation and will lead to the Environmental Authorisation being refused.

It is furthermore an instruction that the Environmental Assessment Practitioner must process and interpret his/her research and analysis and use the findings thereof to compile the information required herein. (Unprocessed supporting information may be attached as appendices.) The EAP must ensure that the information required is placed correctly in the relevant sections of the Report, in the order, and under the provided headings as set out below, and ensure that the report is not cluttered with un-interpreted information and that it unambiguously represents the interpretation of the applicant.

OBJECTIVE OF THE BASIC ASSESSMENT PROCESS

The objective of the basic assessment process is to, through a consultative process:-

a) determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;

b) identify the alternatives considered, including the activity, location, and technology alternatives;

c) describe the need and desirability of the proposed alternatives;

d) through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on these aspects to determine:

   (i) the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and
   (ii) the degree to which these impacts:-
      (aa) can be reversed;
      (bb) may cause irreplaceable loss of resources; and
      (cc) can be managed, avoided or mitigated;

e) through a raking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to:-
   (i) identify and motivate a preferred site, activity and technology alternative;
   (ii) identify suitable measures to manage, avoid or mitigate identified impacts; and
   (iii) identify residual risks that need to be managed and monitored.

PART A
SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

Contact Person and correspondence address:

a) Details of:

i) The EAP who prepared the report:

Name of the Practitioner: M and S Consulting (Pty) Ltd
Tel No: 053 861 1765
Fax No: 086 636 0731
Cell No: 084 444 4474 – Ms. T. Jooste
E-Mail address: ms.consulting@vodamail.co.za

(i) Expertise of the EAP:

(1) The qualifications of the EAP:
(With evidence attached as Appendix 1)

- Eleven years professional experience, in terms of Section 15(1) of the National Environmental Management Act, 1998 (Act No. 107 of 1998), Section 24 24H Registration Authority Regulations as published on 22 July 2016 under Government Gazette No. 40154 (849); and
- Environmental Management Certificate

(2) Summary of the EAP's past experience:
(Attach the EAP's curriculum vitae as Appendix 2)

Relevant past experiences in carrying out the Environmental Impact Assessment Procedures include Environmental Impact Assessments, Environmental Management Plans / Programmes / Reports, Performance Assessments, Rehabilitation Progress Assessments, Environmental Liability Assessments, Environmental Compliance Monitoring, Scoping Reports, etc.

b) Location of the overall activity:

Farm Name:	Portion 3 (a portion of Portion 1 – Stomp Oor A) of the Farm Stomp Oor 109
Application area (Ha)	2 736.9830 Ha
Magisterial district:	Prieska
Distance and direction from nearest town	The application area is situated approximately 45km northwest of the small town of Copperton in the Northern Cape Province. Access to the site can be obtained from a secondary road turning from the N10 between Marydale and Prieska
21 digit Surveyor General Code for each farm portion	C06000000000010900003

c) Locality Map:

(show nearest town, scale not smaller than 1:250 000 attached as Appendix 3)

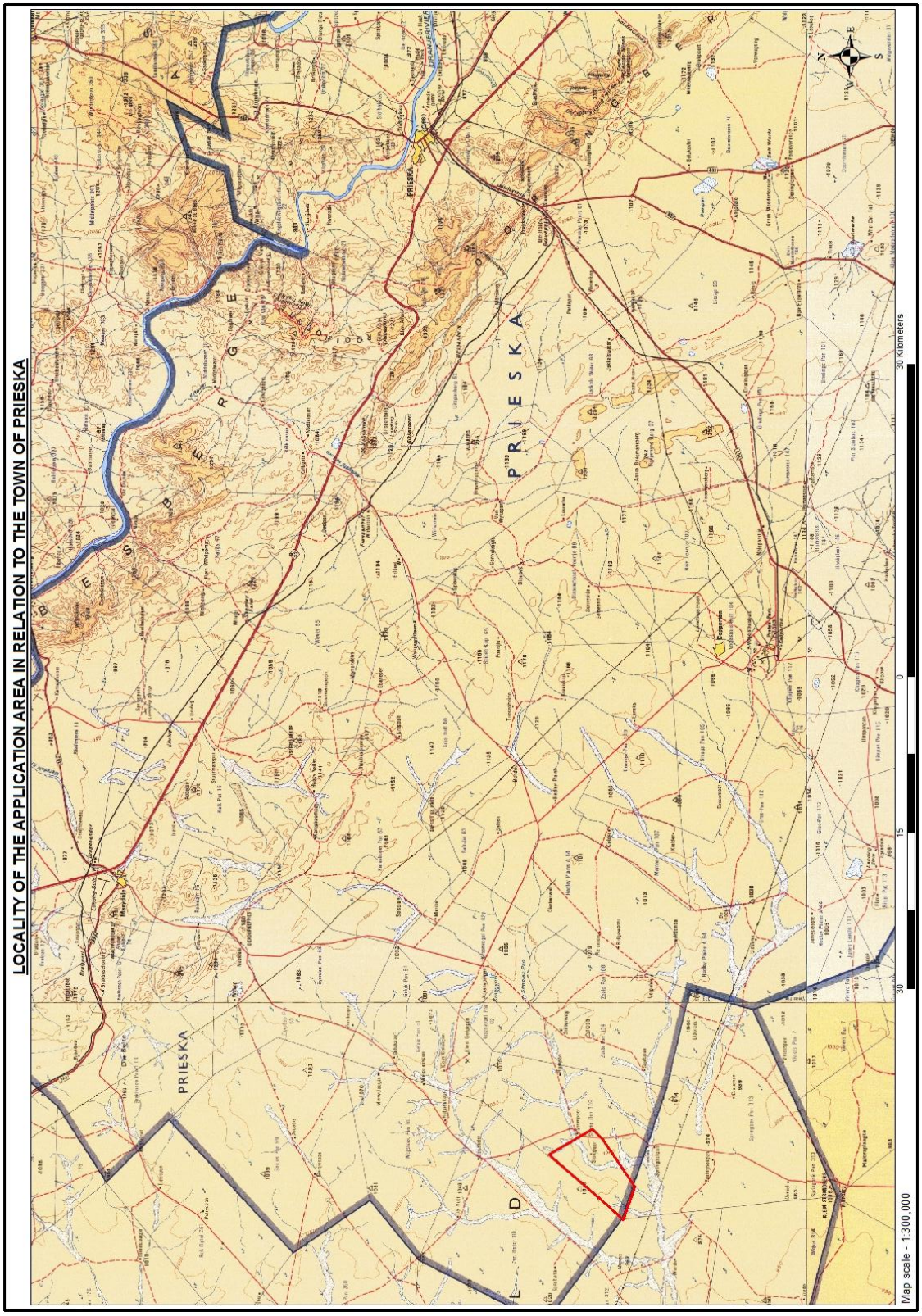


Figure 1 – Locality Map

d) Description of the scope of the proposed overall activity:

i) Listed and specified activities:

(Provide a plan drawn to a scale acceptable to the competent authority but not less than 1:10 000 that shows the location, and area (hectares) of all the aforesaid main and listed activities, and infrastructure to be placed on site and attach as Appendix 4)

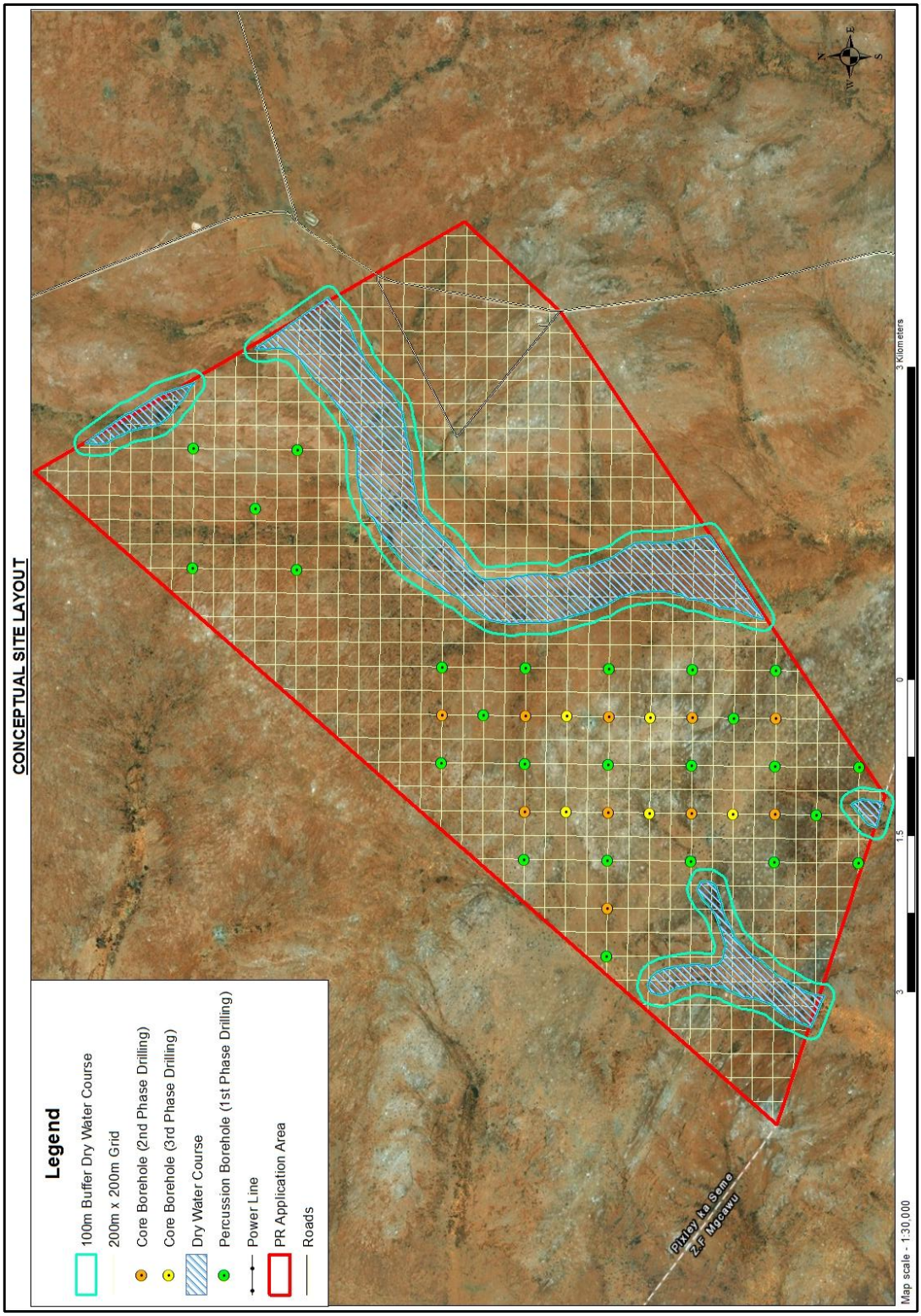


Figure 2 – Conceptual site layout plan

The final site layout can only be determined during active prospecting as set out below:

- The first phase of the proposed prospecting activities entails the review of historical activities and data.
- The second phase of the proposed prospecting activities is geological mapping by a Geologist.
- The third phase of the proposed prospecting activities is a geophysical survey. The exact locality of the proposed percussion boreholes can only be determined during this phase.
- The exact locality of the proposed core boreholes can only be determined after the percussion boreholes were drilled and the samples analysed.

No offices and storerooms will be established at the site as Alidabix (Pty) Ltd (hereinafter referred to as 'Alidabix') shall make use of facilities in the town of Prieska.

Name of activity (e.g. Excavations, blasting, stockpiles, discard dumps or dams, loading, hauling and transport, water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc.)		Aerial extent of the activity (Ha or m²)	Listed Activity (mark with an X where applicable or affected)	Applicable Listing Notice (GNR544, GNR545 or GNR546 / Not listed)
1	Percussion boreholes (25 boreholes with a 10m x 10m surface disturbance around each hole)	2 500m² (0.25 Ha)	X	GNR327 – Activity 20 GNR327 – Activity 27
2	Core boreholes (15 boreholes with a 10m x 10m surface disturbance around each hole)	1 500m² (0.15 Ha)	X	GNR327 – Activity 20 GNR327 – Activity 27
3	Access tracks: - 500m long and 3m wide access tracks will be created. - Existing roads will be used as far as possible.	1 500m² (0.15 Ha)	X	GNR327 – Activity 20 GNR327 – Activity 27

Full description of listed activities applied for:

Full description of listed activities:

- GNR 327 – Activity 20: Any activity including the operation of that activity which requires a prospecting right in terms of Section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including
  a) associated infrastructure, structures and earthworks, directly related to prospecting of a mineral resource; or including activities for which an exemption has been issued in terms of Section 106 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002);
  b) the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing;
  but excluding the secondary processing of a mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource in which case Activity 6 of Listing Notice 2 applies.

- GN327: Activity 27: The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for:-
  (i) the undertaking of a linear activity; or
  (ii) maintenance purposes undertaken in accordance with a maintenance management plan.

(ii) Description of the activities to be undertaken:

(Describe methodology or technology to be employed, and for a linear activity, a description of the route of the activity.)

Alidabix's prospecting activities for Copper, Zinc, Gold, Silver, Diamond General, Diamond Alluvial, Diamond in Kimberlite, Molybdenum, Nickel and Platinum Group Metals shall be conducted in ten phases over a period of five years.

Phase	Activity (what are the activities that are planned to achieve optimal prospecting)	Skill(s) required (refers to the competent personnel that will be employed to achieve the required results)	Timeframe (in months) for the activity)	Outcome (What is the expected deliverable, e.g. Geological report, analytical results, feasibility study, etc.)	Timeframe for outcome (deadline for the expected outcome to be delivered)	What technical expert will sign off on the outcome? (e.g. geologist, mining engineer, surveyor, economist, etc)
1	**Non-invasive Prospecting** Review of historical activities	Geologist	Month 1 – 6	Maps, Plan & Report	Month 7	Geologist
2	**Non-invasive Prospecting** Geological Mapping	Geologist	Month 7 - 12	Map & Report	Month 13	Geologist
3	**Non-invasive Prospecting** Geophysical Survey	Geophysicist	Month 13 - 18	Map & Report	Month 19	Geophysicist
4	**Invasive Prospecting** Percussion drilling	Geologist & Drilling contractor	Month 19 - 24	Drill logs	Month 24	Geologist
5	**Non-invasive Prospecting** Analysis of drill samples	Laboratory	Month 25 - 30	• Analyses sheets • Laboratory report • Map • Report	Month 31	Laboratory & Geologist
6	**Invasive Prospecting** Core drilling	Geologist & Drilling contractor	Month 31 - 36	Drill logs	Month 36	Geologist
7	**Non-invasive Prospecting** Analysis of drill samples	Laboratory	Month 37 - 42	• Analyses sheets • Laboratory report • Map • Report	Month 43	Laboratory & Geologist
8	**Invasive Prospecting** Core drilling	Geologist & Drilling contractor	Month 43 - 48	Drill logs	Month 48	Geologist
9	**Non-invasive Prospecting** Analysis of drill samples	Laboratory	Month 49 - 54	• Analyses sheets • Laboratory report • Map • Report	Month 54	Laboratory & Geologist
10	**Non-Invasive Prospecting** Feasibility study	Geologist	Month 55 - 60	Resource Calculations to evaluate economic viability of the project	Month 60	Geologist & CEO

- <u>Non-invasive prospecting:</u>

  <u>Phase 1:</u>
  In order to direct the exploration programme in an efficient manner, there will be a review of all available information and data gathered by previous exploration on the farm. A desktop study will be undertaken of the metal potential of the area. A site investigation of the target areas will be undertaken to identify infrastructure and determine any potential problems that may need to be addressed.

  <u>Phase 2:</u>
  Any anomalous features identified will be mapped in detail. The various rock types and their contacts will also be mapped.

Phase 3:
A 10-line kilometer magnetic survey (or any other suitable geophysical method) will be undertaken using a proton 5 magnetometer over selected areas as identified during the desktop study. This study will result in identifying potential mineral / metal / sulphide mineralization.

Phases 5 & 7 & 9:
Drill samples will be collected in one-meter intervals and logging will be done by a qualified geologist who will record the lithology, mineralogy, degree of mineralization and structural features. Mineralized samples will be analyzed at an internationally recognized (ISO certified) laboratory.

- Invasive prospecting:

Phase 4: Percussion drilling:
Percussion drilling will be used initially to identify the position of a suspected base metal deposit. The position of the boreholes is dependent on the results of the review of historical activities, geological mapping, desktop study and geophysical survey.

Twenty-five boreholes, on average 50m deep each, are planned for phase 4. The collar position of all boreholes will be surveyed. All drilling will be short term and undertaken by a contractor using truck-mounted equipment.

Angled percussion holes are planned to locate and intersect the mineralization. A traverse line or grid drilling is used to identify and define the extent of any mineralization. The sizes of the boreholes drilled will be determined by such factors as cost, proposed sampling, availability of drilling machines and the volume of sample required, among others.

Each drill site will be rehabilitated. The boreholes will be filled with drill chips and covered with topsoil.

Phases 6 & 8: Core drilling:
Dependent on the results from the non-invasive prospecting activities, further confirmation and exploratory drilling may be required. Core drilling will only be used if mineralization has been found. The position of the boreholes is dependent on the results of the non-invasive activities.

Ten boreholes, planned 50m depth each (can be more or less depending on results), are planned for phase 6 and five for phase 8. The collar position of all boreholes will be surveyed. All drilling will be short term and undertaken by a contractor using skid-mounted equipment.

Each drill site will be rehabilitated once completed. The boreholes will be covered with a metal plate and 1m previously stored topsoil. All drilling material, liquid spills and refuse will be cleared and transported to the relevant municipal landfill.

e) Policy and Legislative Context:

Applicable Legislation and Guidelines used to compile the report (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process.)	Reference where applied
Conservation of Agricultural Resources Act (Act 43 of 1983) and Regulations	- Section 5: Implementation of control measures for alien and invasive plant species; - Section 6: Control measures. - Regulation GN R1048, published on 25 May 1984, in terms of CARA
Constitution of South Africa (Act 108 of 1996)	- Section 24: Environmental right - Section 25: Rights in Property - Section 27: Water and sanitation right
Environment Conservation Act (Act 73 of 1989) and Regulations	- Sections 21, 22, 25, 26 and 28: EIA Regulations, including listed activities. - Section 28A: Exemptions.
Fencing Act (Act 31 of 1963)	- Section 17: States that any person erecting a boundary fence may clean any bush along the line of the fence up to 1.5m on each side thereof and remove any tree standing in the immediate line of the fence. However, this provision must be read in conjunction with the environmental legal provisions relevant to protection of flora.
Hazardous Substances Act (Act 15 of 1973) and Regulations read together with NEMA and NEMWA	- Definition, classification, use, operation, modification, disposal or dumping of hazardous substances.
Intergovernmental Relations Act (Act 13 of 2005)	- This Act establishes a framework for the National, Provincial and Local Governments to promote and facilitate intergovernmental relations.
Mine, Health and Safety Act (Act 29 of 1996) and Regulations	- Entire Act.
Mineral and Petroleum Resources Development Act (Act 28 of 2002) and Regulations as amended	- Entire Act. - Regulations GN R527
National Environmental Management Act (Act 107 of 1998) and Regulations as amended	- Section 2: Strategic environmental management principles, goals and objectives. - Section 24: Foundation for Environmental Management frameworks. - Section 24N: - Section 24O:

	- Section 28: The developer has a general duty to care for the environment and to institute such measures to demonstrate such care. - Regulations GN R547, published on 18 June 2010 in terms of NEMA (Environmental Management Framework Regulations) - Regulations GN R982 to R985, published on 4 December 2014 in terms of NEMA (Listed Activities) - Regulations GN R993, published on 8 December 2014 in terms of NEMA (Appeal) - Regulations GN R994, published on 8 December 2014 in terms of NEMA (exemption) - Regulations GN R205, published on 12 March 2015 in terms of NEMA (National appeal Amendment Regulations) - Regulations GN R1147, published on 20 November 2015 in terms of NEMA (Financial Provision)
National Environmental Management: Air Quality Act (Act 39 of 2004)	- Section 32: Control of dust - Section 34: Control of noise - Section 35: Control of offensive odours - Regulation GN R551, published on 12 June 2015 (amended Categories 1 to 5 of GN 983) in terms of NEM:AQA (Atmospheric emission which have a significant detrimental effect on the environment) - Regulation GN R283, published on 2 April 2015 in terms of NEM:AQA (National Atmospheric Emissions Reporting Regulations) (Group C-Mines)
National Environmental Management: Biodiversity Act (Act 10 of 2004)	- Section 52 of The National Environmental Management Act: Biodiversity Act (NEMBA) (Act 10 of 2004) states that the MEC/Minister is to list ecosystems that are threatened and in need of protection. - Section 53 states that the Minister may identify any process or activity in such a listed ecosystem as a threatening process. - A list of threatened and protected species has been published in terms of Section 56(1) GG 29657 GNR 151 and GNR 152, Threatened or Protected Species Regulations. Commencement of Threatened or Protected Species Regulations 2007 : 1 June 2007 GNR 150/GG 29657/23-02-2007

	Publication of lists of critically endangered, vulnerable and protected species GNR 151/GG 29657/23-02-2007 * Threatened or Protected Species Regulations GNR 152/GG 296547/23-02-2007 * - Sections 65 – 69: These sections deal with restricted activities involving alien species; restricted activities involving certain alien species totally prohibited; and duty of care relating to alien species. - Sections 71 and 73: These sections deal with restricted activities involving listed invasive species and duty of care relating to listed invasive species. - Regulation GN R151, published on 23 February 2007 (List fo Critically Endangered, Vulnerable and Protected Species, 2007) in terms of NEM: BA - Regulation GN R152, published on 23 February 2007 (TOPS) in terms of NEM:BA - Regulations GN R507 to 509 of 2013 and GN 599 of 2014 in terms of NEM:BA (Alien Species)
The National Environmental Management Act: Protected Areas Act (NEMPAA) (Act 57 of 2003) provides for the protection of ecologically viable areas that are representative of South Africa‟s natural biodiversity and its landscapes and seascapes.	- Chapter 2 lists all protected areas.
National Environmental Management: Waste Management Act (Act 59 of 2008)	- Chapter 4: Waste management activities - Regulations GN R634 published on 23 August 2013 in terms of NEM:WA (Waste Classification and Management Regulations) - Regulations GN R921 published on 29 November 2013 in terms of NEM:WA (Categories A to C – Listed activities) - National Norms and Standards for the Remediation of contaminated Land and Soil Quality published on 2 May 2014 in terms of NEM:WA (Contaminated land regulations) - Regulations GN R634 published on 23 August 2013 in terms of NEM: WA (Waste Classification and Management Regulations) - Regulations GN R632 published on 24 July 2015 in terms of NEM: WA (Planning and Management of Mineral Residue Deposits and Mineral Residue Stockpiles)

	- Regulations GN R633 published on 24 July 2015 in terms of NEM: WA (Amendments to the waste management activities list published under GN921)
National Forest Act (Act 84 of 1998) and Regulations	- Section 15: No person may cut, disturb, damage, destroy or remove any protected tree; or collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a licence granted by the Minister.
National Heritage Resources Act (Act 25 of 1999) and Regulations	- Section 34: No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority. - Section 35: No person may, without a permit issued by the responsible heritage resources authority destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site. - Section 36: No person may, without a permit issued by SAHRA or a provincial heritage resources authority destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a forma cemetery administered by a local authority. - Section 38: This section provides for HIA which are not already covered under the ECA. Where they are covered under the ECA the provincial heritage resources authorities must be notified of a proposed project and must be consulted during HIA process. - Regulation GN R548 published on 2 June 2000 in terms of NHRA
National Water Act (Act 36 of 1998) and and regulations as amended, *inter alia* Government Notice No. 704 of 1999	- Section 4: Use of water and licensing. - Section 19: Prevention and remedying the effects of pollution. - Section 20: Control of emergency incidents. - Section 21: Water uses In terms of Section 21 a licence is required for: (a) taking water from a water resource; (b) storing water; (c) impeding or diverting the flow of water in a watercourse; (f) Waste discharge related water use; (g) disposing of waste in a manner which may detrimentally impact on a water resource; (i) altering the bed, banks, course or characteristics of a watercourse;

	(j) removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people; and; - Regulation GN R704, published on 4 June 1999 in terms of the National Water Act (Use of water for mining and related activities) - Regulation GN R1352, published on 12 November 1999 in terms of the National Water Act (Water use to be registered) - Regulation GN R139, published on 24 February 2012 in terms of the National Water Act (Safety of Dams) - Regulation GN R398, published on 26 March 2004 in terms of the National Water Act (Section 21 (j)) - Regulation GN R399, published on 26 March 2004 in terms of the National Water Act (Section 21 (a) and (b)) - Regulation GN R1198, published on 18 December 2009 in terms of the National Water Act (Section 21 (c) and (i) – rehabilitation of wetlands) - Regulations GN R1199, published on 18 December 2009 in terms of the National Water Act (Section 21 (c) and (i)) - Regulations GN R665, published on 6 September 2013 in terms of the National Water Act (Amended GN 398 and 399 – Section 21 (e), (f), (h), (g), (j))
Nature Conservation Ordinance (Ord 19 of 1974)	- Chapters 2, 3, 4 and 6: Nature reserves, miscellaneous conservation measures, protection of wild animals other than fish, protection of Flora.
Northern Cape Nature Conservation Act (Act 9 of 2009)	- Addresses protected species in the Northern Cape and the permit application process related thereto.
Occupational Health and Safety Act (Act 85 of 1993) and Regulations	- Section 8: General duties of employers to their employees. - Section 9: General duties of employers and self-employed persons to persons other than their employees.
Road Traffic Act (Act 93 of 1997) and Regulations	- Entire Act.
Water Services Amendment Act (Act 30 of 2007)	- It serves to provide the right to basic water and sanitation to the citizens of South Africa (giving effect to section 27 of the Constitution).
National Land Transport Act, (Act 5 of 1998)	
Northern Cape Planning and Development Act (Act 7 of 1998)	- To control planning and development
Spatial Planning and Land Use Management (Act 16 of 2013	- To provide a framework for spaitial planning and land use management in

(SPLUMA) and regulations	the Republic; - To specify the relationship between the spatial planning and the land use management, amongst others - Regulations GN R239 published on 23 March 2015 in terms of SPLUMA
Subdivision of Agricultural Land Act, 70 of 1970 and regulations	- Regulations GN R373 published on 9 March 1979 in terms of Subdivision of Agricultural Land
Basic Conditions of Employment Act (Act 3 of 1997)) as amended	- To regulate employment aspects
Community Development (Act 3 of 1966)	- To promote community development
Development Facilitation (Act 67 of 1995) and regulations	- To provide for planning and development
Development Facilitation (GN24, PG329, 24/07/1998)	- Regulations re Northern Cape LDO's
Development Facilitation (GNR1, GG20775, 07/01/2000)	- Regulations re application rules S26, S46, S59
Development Facilitation (GN732, GG14765, 30/04/2004)	- Determines amount, see S7(b)(ii)
Land Survey Act (Act 8 of 1997)) and regulations, more specifically GN R1130	- To control land surveying, beacons etc. and the like; - Agriculture, land survey S10
National Veld and Forest Fire Act (Act 101 of 1998)) and regulations, more specifically GN R1775	- To regulate law on veld and forest fires - (Draft regulations s21)
Municipal Ordinance, 20/1974	- To control pollution, sewers etc.
Municipal Ordinance, PN955, 29/08/1975	- Nature conservation Regulations
Cape Land Use Planning Ordinance, 15/85	- To control land use planning
Cape Land Use Planning Ordinance, PN1050, 05/12/1988	- Land use planning Regulations

f) Need and desirability of the proposed activities:

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

In terms of the Environmental Impact Assessment Regulations, 2014 (GG38282, Government Notice No. R.982) the need and desirability of any development must be included in the relevant reports to be submitted to the competent authority.

Assessment of the geological information available has determined that the area in question may have various mineral targets. In order to ascertain the above and determine the nature, locality and extent of the mineral targets within the prospecting area, it will be necessary that prospecting be undertaken. The prospecting will also determine if there are any features that may have an impact on the economic extraction of the minerals.

The information that will be obtained from the prospecting to be done will be necessary to determine, should the minerals be found, how and where the minerals will be extracted and how much economically viable mineral reserves are available within the proposed prospecting area.

Should the minerals applied for be found in the application area, Alidabix will be able to ensure employment opportunities and support to the local business for a certain period.

Alidabix expects that substantial benefits from the project (should the minerals applied for be found) will accrue to the immediate project area, the sub-region and the Northern Cape Province. These benefits must be offset against the costs of the project, including the impact to the surface owner.

Further to the above and with reference to the Pixley Ka Seme District Municipality's (PKSDM) Integrated Development Plan (IDP), it has been determined that there is little data on the extent of mineral reserves in the district. The undertaking of exploration is a costly and complex business. As such the IDP proposes that a detailed marketing plan is put together to attract exploration investment to the district and to aggressively market the district as an investment target in the mining sector. Alidabix's proposed prospecting activities shall directly contribute to the requirements as set out in the PKSDM's IDP.

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

- The property on which or location where it is proposed to undertake the activity:
  The Geological formation supports the possibility that the minerals applied for could be found within the application area.

- The operational aspects of the activity:
  Alidabix aims to minimize its impact on the natural environment as much as possible and as such has opted to only use drilling as an invasive prospecting method.

- The technology to be used in the activity:
  A percussion drill rig will be used during phase 4 of the prospecting activities and a core drill rig during phases 6 and 8 of the prospecting activities. There are no

alternatives to these types of drill rigs that will ensure high quality samples for analysis.

h) Full description of the process followed to reach the proposed preferred alternatives within the site:

(NB!! – This section is about the determination of the specific site layout and the location of infrastructure and activities on site, having taken into consideration the issues raised by interested and affected parties, and the consideration of alternatives to the initially proposed site layout.)

(i) Details of all alternatives considered:

With reference to the site plan provided as Appendix 4 and the location of the individual activities on site, provide details of the alternatives considered with respect to:

(a) The property on which or location where it is proposed to undertake the activity:

The registered description of the land to which the prospecting right application relates:

Farm Name	Title Deed	In Extent
Portion 3 (a portion of Portion 1 – Stomp Oor A) of the Farm Stomp Oor 109	T78507/1997	2 736.9830 Ha

Alternatives considered:-

Alidabix has considered the following alternatives:

- The Geological formation that supports the possibility that the minerals applied for could be found within the area.
- The availability of farms within the area that is not already occupied by existing prospecting or mining rights.
- The availability of infrastructure, such as a road network, in the immediate surrounding area, which could be utilized to allow easy access to the site.

Taking the above into consideration, Alidabix opted to apply for the property as above.

(b) The type of activity to be undertaken:

Prospecting activities for Copper, Zinc, Gold, Silver, Diamond General, Diamond Alluvial, Diamond in Kimberlite, Molybdenum, Nickel and Platinum Group Metals are to take place in the form of percussion drilling and core drilling.

Alternatives considered:-

The only alternative land use is livestock farming; however the applicant's main economic activity is prospecting / mining and for this reason does not favour any other alternative land use.

(c) The design or layout of the activity:

Infrastructure: No offices and storerooms will be established at the site as Alidabix shall make use of facilities in the town of Prieska.

Invasive prospecting: The proposed locality of the boreholes was placed on a 200m x 200m grid.

Alternatives considered:-
Infrastructure: The only alternative considered was the establishment of offices and storerooms on the farm under application. As Alidabix aims to minimize its impact on the natural environment as much as possible this option was decided against.

Invasive prospecting: The drilling of boreholes over the entire property was considered, but taking into account that Alidabix aims to minimize its impact on the natural environment as much as possible this option was decided against.

(d) The technology to be used in the activity:

A percussion drill rig will be used during phase 4 of the prospecting activities and a core drill rig during phases 6 and 8 of the prospecting activities.

Alternatives considered:-
There are no alternatives to these types of drill rigs that will ensure high quality samples for analysis.

(e) The operational aspects of the activity:

Alidabix aims to minimize its impact on the natural environment as much as possible and as such has opted to only use drilling as an invasive prospecting method.

Alternatives considered:-
Alidabix considered conducting bulk sampling as part of its prospecting activities. To ensure the prospecting activities are cost effective, Alidabix opted to only conduct drilling activities during its initial prospecting period.

(f) The option of not implementing the activity:

Five measures of economic impacts can be used to demonstrate the potential effect of the proposed prospecting operation on the local economy:

- Employment - The extent of employment can be measured as number of jobs or in terms of full time equivalents.
- Payroll income - The gross remuneration of employees in terms of salaries and wages.

- Capital Expenditure (CAPEX) - The total amount spent on the purchasing of fixed assets and total spent on construction.
- Operating expenditure and maintenance (OPEX) - The total amount spent locally by businesses on goods and services, excluding salaries and wages as well as rents or interest.
- Revenue - The total value of sales arising from business activity at the prospecting operation.

The abovementioned positive impacts will be lost if the proposed prospecting project is not developed.

(ii) Details of the Public Participation Process Followed:

(Describe the process undertaken to consult interested and affected parties including public meetings and one on one consultation. NB the affected parties must be specifically consulted regardless of whether or not they attended public meetings. Information to be provided to affected parties must include sufficient detail of the intended operation to enable them to assess what impact the activities will have on them or on the use of their land.)

Public Participation process followed during Prospecting Right Application process:

The surface owner of the property under application, surrounding landowners and various other identified interested and affected parties were notified of the proposed prospecting activity by means of registered post/e-mail, with a Background Information Document attached thereto.

Any other interested and / or affected party was also invited to register as such in advertisements that were placed in the Oewernuus (Local newspaper) and Volksblad (Regional newspaper). A notice board was also placed near the entrance road to the site. Attached as Appendix '5' find hereto proof of the notification process.

The following responses have been received to the notification letters (refer to Appendix '6'):

- Department: Water & Sanitation, Kimberley (26 July 2018):
  - Request a copy of BAR;
  - Apply and obtain water use authorisation;
  - Request a pre-consultation meeting; and
  - Should activities be conducted within 500m buffer zone of a wetland, a Wetland Specialist must be appointed.

  A response letter was sent to DWS on 30 July 2018 addressing the abovementioned letter.

- Department: Water & Sanitation, Kimberley (10 September 2018) after evaluation of the BAR:
  - No activity may occur within the 1:100 year flood line of a river / drainage line and 500m of a pan / wetland without authorisation.
  - Should any activities take place within the Regulated Area of a watercourse, an Aquatic/Wetland and/or Freshwater Specialist must conduct a Risk Matrix.
  - Quaternary catchment D54G is excluded from the General Authorisation and the water use must be applied for as a Water Use License Authorisation, regardless of the volume to be used.
  - The disposal of general waste and that of hazardous waste must be carried out in an environmentally safe manner so as to prevent and/or minimize the

potential for pollution of water resources and collect of which should be done by an accredited waste collector.
- Section 19 & 20 of the NWA should be adhered to.

A response letter was sent to DWS on 17 September 2018 addressing the abovementioned letter.

- Department: Water & Sanitation, Upington (Response sheet):
  - Request a copy of the BAR.

  A copy of the BAR was couriered to DWS, Upington on 22 August 2018.

- Department: Water & Sanitation, Upington (letter dated 31 August 2018 received via e-mail on 5 September 2018) after evaluation of the BAR:
  - There is zero abstraction rate of groundwater under General Authorizations in WMA 6. A Water Use License must be applied for.
  - It is illegal to engage in a water use activity before authorization is granted.
  - Disposal of water containing waste during construction and operational phase is regarded as a water use and should be authorized.
  - Waste needs to be collected and disposed of at registered municipal landfill sites, and a written agreement should be provided to DWS.
  - No development should take place within the 1:100 year flood line of the major episodic rivers.
  - A Stormwater Management Plan should be put in place and be available upon request.

  A response letter was sent to DWS on 7 September 2018 addressing the abovementioned letter.

- Eskom: Will raise no objection to the proposed operations provided Eskom's rights and services are acknowledged and respected at all times.

- SAHRA: Requested that all documents pertaining to the Environmental Authorisation Application Process be uploaded onto the SAHRIS online system.

  On the 27th of September 2018 the following documentation was uploaded unto the SAHRIS system:
  - Desktop Heritage Impact Assessment Report; and
  - BAR & EMPR, with all annexures.

  SAHRA provided an Interim Comment, dated 25 October 2018, which included the following recommendations:
  - Request that a desktop Palaeontologial Assessment be conducted.

  Alidabix appointed a Palaeontologist, who compiled the requested desktop study. The "Palaentological Heritage Report: Desktop Study" was submitted to SAHRA on 21 November 2018.

- Transnet: Has no objection with this proposal as the property in question is too far from Transnet land.

<u>Surface owner consultation process:</u>
A meeting was held with the surface owner; Mr. F. van der Westhuizen (Trustee of the Flip van der Westhuizen Trust) on the 22nd of May 2018 (refer to Appendix '7' for

the attendance register and meeting minutes). A copy of the BAR & EMPR was provided to Mr. van der Westhuizen during this meeting for comment.

Subsequent the meeting, Mr. van der Westhuizen of the Flip van der Westhuizen Trust appointed an attorney, Mr. P.S. Lange of Lange Carr & Wessels Inc., to assist with the consultation process between the Trust and Alidabix. Mr. van der Westhuizen completed the response form (as provided with the Background Information Document), which form was sent via the appointed attorney. Mr. van der Westhuizen requested a number of documentation on the response form to allow him to partake effectively and meaningfully in the consultative process.

On the 20th of June 2018 a response was sent to Lange Car & Wessels, providing a number of requested documents.

On the 28th of June 2018 Lange Car & Wessels provided a response form, which was completed by Mr. van der Westhuizen. Mr. van der Westhuizen's concerns as listed in the response form are as follows:

- Water resources will be at risk. A permit must be obtained in terms of the National Water Act, 1998 (Act 36 of 1998).
- Negative experience with Directors of Alidabix on previous prospecting operations on another property of Mr. van der Westhuizen.
- No prospecting boreholes may be drilled within 500m from existing boreholes.
- Alidabix must comply with BEE requirements.
- Existing security measures (CCV cameras) must be expanded by the applicant.
- Request that no boreholes be drilled deeper than 40m (beneath the groundwater table).

On the 2nd of July 2018 a response letter was sent to Lange Car & Wessels addressing the issues identified in the response sheet.

Public Participation process followed after granting of Environmental Authorisation:

Alidabix's Environmental Authorisation was granted on 20 November 2018, whereafter interested and affected parties were notified in terms of Section 4(2) of the NEMA Environmental Impact Assessment Regulations, 2014. These letters were sent on the 28th of November 2018 and either sent per e-mail or registered mail. SAHRA's notification was uploaded on the SAHRIS online system on the same date.

Responses received:

- Flip van der Westhuizen Trust (11 January 2019) sent an email requesting the following information:
  - Depths of percussion and core boreholes.
  - Locality of access tracks.
  - Volume of water use for drilling activities.
  - Security.

  On 11 February 2019 an e-mail was sent to Mr. van der Westhuizen in response to his e-mail of 11 January 2019.

- Eskom:
  Eskom will raise no objection.

Appeals against the grating of the Environmental Authorisation (refer to Appendix '8'):

- Flip van der Westhuizen Trust (18 January 2019)

  The grounds of appeal are as follows:
  - Location of subject property incorrect.
  - Applicant compelled to apply for water use license in terms of National Water Act, 1998 (Act 36 of 1998).

  A response to the appeal was submitted to the Director: Appeals and Legal Review on 7 February 2019.

- SAHRA (20 December 2018)

  The grounds of appeal are as follows:
  - The Environmental Authorisation was granted without a Final Comment from SAHRA as per Section 38(8) of the NHRA.
  - The Environmental Authorisation was granted without crucial heritage specific conditions for the protection and management of heritage resources as per Section 38(4) of the NHRA.

  A response to the appeal was submitted to the Director: Appeals and Legal Review on 25 January 2019.

- Appeal decision received from the Minister of Environmental Affairs:

  Flip van der Westhuizen Trust:
  - The appeal by the Flip van der Westhuizen Trust is dismissed.

  SAHRA:
  - The appeal by SAHRA is upheld and the decision by the DMR to grant the Environmental Authorisation is set aside.
  - The matter is remitted back to the DMR for further consultation and reconsideration.
  - Alidabix is afforded an opportunity to incorporate the HIA and the PIA reports into the BAR.
  - The revised BAR to be subjected to a public participation process of at least 30 days as required by Regulation 19(1)(b) of the 2014 EIA Regulations.

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

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

Interested and Affected Parties List the names of persons consulted in this column, and mark with an X where those who must be consulted were in fact consulted.		Date comments received	Issues raised	EAPs response to the issue of the I&AP
AFFECTED PARTIES				
Landowner/s	X			
Flip van der Westhuizen Trust	X	22/05/2018	Mr. van der Westhuizen stated that he is not in favour of the application and would seek legal advice in this regard.	Refer to Appendix '7'.
		07/06/2018	Lange, Carr & Wessels Inc., the attorneys of the Flip van der Westhuizen Trust requested that all documentation relating to the prospecting right application be provided to them.	The requested documentation was provided to Lange, Carr & Wessels Inc. Refer to Appendix '7'.
		28/06/2018	Mr. van der Westhuizen listed the following requests / concerns on the completed response form:	A letter addressing the concerns / requests listed in Mr. van der Westhuizen's response sheet was sent per e-mail on the 2nd of July 2018.
			• Water resources will be at risk. A permit must be obtained in terms of the National Water Act, 1998 (Act 36 of 1998).	• Water Use License is not required in terms of Clause 7 of the 2017 DWA General Authorisations.
			• Negative experience with Directors of Alidabix on previous prospecting operations on another property of Mr. van der Westhuizen.	• All prospecting work and rehabilitation were done in terms of an approved Prospecting Right and Environmental Management Plan.
			• No prospecting boreholes may be drilled	• Holes in the current Prospecting

			within 500m from existing boreholes.	Work Programme will not have any effect on existing boreholes.
			• Alidabix must comply with BEE requirements.	• Alidabix will be BEE compliant.
			• Existing security measures (CCV cameras) must be expanded by the applicant.	• Alidabix will commit to adhering to the security protocols of the surface owner, provided that such directions are reasonable.
			• Request that no boreholes be drilled deeper than 40m (beneath the groundwater table).	• A limit of 40m cannot be placed on boreholes as this will sterilise areas of the target to be drilled and will restrict optimal exploration.
		11/01/2019	Mr. van der Westhuizen sent an e-mail requesting the following information:	An e-mail was sent to Mr. van der Westhuizen on 11 February 2019 addressing his enquiry:
			• Depths of percussion and core boreholes	• Information provided in letter dated 2 July 2018.
			• Locality of access tracks.	• Existing roads to be used during phases 1, 2 and 3 of PWP. The access routes to drilling sites can only be determined after completion of the first three phases.
			• Volume of water use for drilling activities.	• Information provided in letter dated 2 July 2018.
			• Security	• Information provided in letter dated 2 July 2018.
		18/01/2019	Appeal lodged against the granting of the Environmental Authorisation.	Response to the appeal was submitted to the Director: Appeals and Legal Review on 7 Feb 2019.

Lawful occupier/s of the land				
Not applicable. The surface owner occupies the land.				
Landowners or lawful occupiers on adjacent properties	X			
National Government of the Republic of South Africa	X	N/A	To date no comment has been received.	N/A
du Toit, Francois Johannes Stephanus	X	N/A	To date no comment has been received.	N/A
Armscor Defence Institutes	X	N/A	To date no comment has been received.	N/A
Faro, Magrieta	X	N/A	To date no comment has been received.	N/A
Municipal Councillor	X			
Siyathemba Local Municipality	X	N/A	To date no comment has been received.	N/A
Municipality	X			
Pixley Ka Seme District Municipality	X	N/A	To date no comment has been received.	N/A
Organs of State (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA, etc.)				
Eskom	X	22/05/2018	No objection to the proposed operation.	
SANRAL	X	N/A	To date no comment has been received.	N/A
Transnet	X	12/06/2018	No objection to the proposed operation.	
Communities				
Not applicable: There are no communities in the immediate vicinity of the prospecting right application area.				
Department of Land Affairs				
Department: Rural Development and Land Affairs	X	N/A	To date no comment has been received.	N/A
Traditional Leaders				
Not applicable: There are no communities, with Traditional Leaders, in the immediate vicinity of the prospecting right application area.				
Department of Environmental Affairs				
The Department of Environmental Affairs is a competent authority in this Prospecting Right application process.				
Other Competent Authorities				
Department: Agriculture	X	N/A	To date no comment has been received.	N/A
Department: Science and Technology	X	N/A	To date no comment has been received.	N/A
Department: Water Affairs, Kimberley	X	26/07/2018	DWA sent a letter requesting the following: • Request a copy of BAR	A meeting was held with DWA on 30 July 2018: • A copy of the BAR was

				provided.
			• Apply and obtain water use authorisation.	• Alidabix is not required to apply for WUL or register its water use.
			• Request a pre-consultation meeting	• Meeting held on 30 July 2018.
			• Should activities be conducted within 500m buffer zone of a wetland, a Wetland Specialist must be appointed.	• No pans/wetlands occur on the area under application.
		10/09/2018	DWA sent a letter requesting the following:	E-mail response to DWA letter on 17 September 2018:
			• No activity within the 1:100 year floodline and 500m from a pan or wetland.	• Buffer zones have been placed around natural drainage lines. No pans / wetlands on the application area.
			• Should any activities take place within a watercourse, relevant specialists must conduct a risk matrix.	• No prospecting activities shall take place in any watercourse.
			• Quaternary catchment D54G is excluded from General Authorisations and WUL must be applied for.	• Alidabix shall source the water from a legal source in the area or bring water required in via a mobile water tanker or substitute core drilling for percussion drilling.
			• Disposal of waste must be carried out in an environmentally safe manner.	• Disposal of waste will be carried out in an environmentally safe manner.
			• Section 19 & 20 of NWA should be adhered to.	• Sections 19 & 20 of the NWA will at all times be adhered to.
Department: Water Affairs, Upington	X	01/08/2018	Response sheet sent per e-mail requesting a copy of the BAR.	A copy of the BAR was couriered to DWA on 22 August 2018.
		31/08/2018	Letter from DWA requesting the following:	A response letter was sent to DWA on 7 September 2018:

			• WUL must be applied for. • It is illegal to engage in a water use activity before authorisation is granted. • Disposal of water containing waste should be authorised. • Waste must be disposed at registered municipal landfill. • No development within the 1:100 year floodline of the major episodic rivers. • Stormwater Management Plan should be put in place.	• Alidabix shall source the water from a legal source in the area or bring water required in via a mobile water tanker or substitute core drilling for percussion drilling. • Noted • Alidabix shall not engage in any water use activity in terms of Section 21(f) and 21(g). • Disposal of general waste will be carried out in an environmentally safe way. • 100m buffer zones have been placed around natural drainage lines. • Erosion and storm-water control measures will be implemented on areas disturbed.
Other Affected Parties				
Not applicable: No other parties responded to the notification process.				
Interested Parties				
SKA South Africa	X	N/A	To date no comment has been received.	N/A
SAHRA	X	11/06/2018 25/10/2018	Requested that all documents pertaining to the Environmental Authorisation Application Process be uploaded onto the SAHRIS online system. Request that a desktop Palaeontological Assessment must be conducted.	On the 27th of September 2018 the BAR and HIA was submitted on the SAHRIS online system. A specialist was appointed and a Palaeontological Heritage Report: Desktop study was submitted to SAHRA on 21 November 2018.

		20/12/2018	Appeal against the granting of the Environmental Authorisation.	A response to the appeal was submitted to the Director: Appeals and Legal Review on 25 January 2019.

(iv) The Environmental attributes associated with the alternatives:

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

(1) Baseline Environment:

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

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

- **Air quality:**

  The only current source of nuisance dust is created from vehicles travelling on the gravel (farm) roads transecting the immediate surrounding area. The general air quality on the application area is expected to be good.

  The wind rose for Prieska (situated approximately 80km east of the application area) shows how many hours per year the wind blows from the indicated direction.

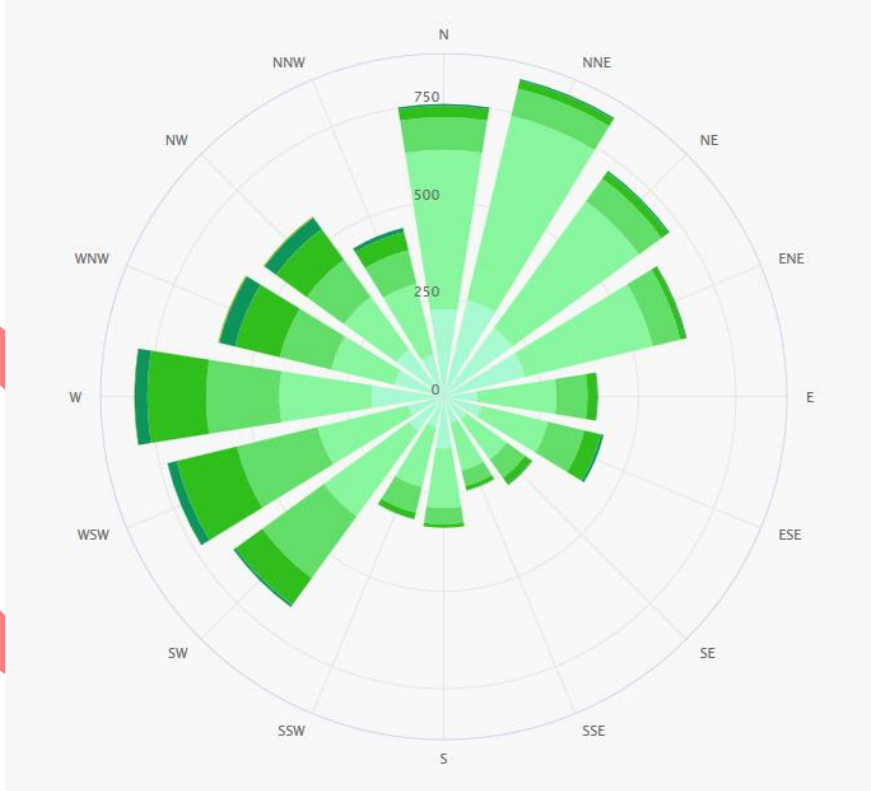


Figure 3 – Wind rose for Prieska area

The diagram for Prieska shows how many days within one month can be expected to reach certain wind speeds. Monsoons create steady strong winds from December to April, but calm winds from June to October.

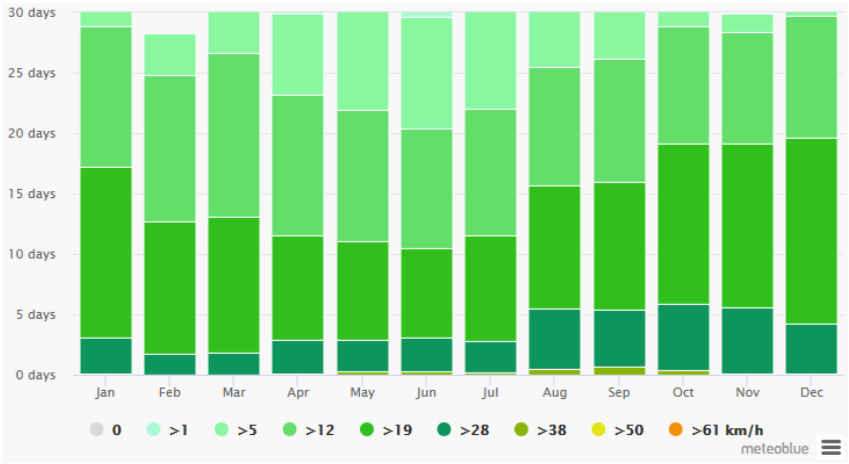


Figure 4 – Wind speed of the Prieska area

- **Archaeological, cultural & heritage environment:**
  A number of fossils of Cretaceous age have been found on the Farm Stompoor 109. The initial discovery of the fossils was the result of diamond exploration activities during the 1970's and 1980's. A number of paleaontological studies have since been undertaken.

  The fossils are thought to be hosted in deposits of a closed crater-lake of the Late Cretaceous age. The fossils include larvae and adult frogs that are thought to have been killed en masse following breakdown of the thermal stratification or possibly by CO_2 degassing from the underlying magma. Apart from frog fossils, fossils of fishes, bivalves, gastropods, ostracods, insect wings, and a possible bird bone has been found.

Figure 5 – Google Earth image showing potential locality of fossil excavations

Alidabix appointed G&A Heritage Management Consultants to compile a desktop Heritage Impact Assessment Report ("HIA").

The findings and conclusion of the HIA were:

- No archaeological sites could be found that have been previously documented in the study area. It is anticipated that the area will contain scatters of Middle – and Late Stone Age tools with the possibility of manufacturing sites occurring locally.
- The area was found to be important in terms of paleontology. Most of the paleontological deposits are located deeper than 10m underground. Information currently available is based on core drill samples taken from the area and as a result it is possible that the prospecting drilling could compliment the paleontological research rather than hinder it" (G&A Heritage, 2018).
- The HIA report stated that no fatal flaws were identified.

Recommendations of the HIA:

- There is a possibility of finding surface Stone Age manufacturing sites in the area. It is recommended that the specific borehole locations be checked by a suitably qualified heritage practitioner when their locations have been finalized.
- It is recommended that a suitably qualified palaeontologist be approached to assist with the core drill placements. This could result in the prospecting adding positively to the paleontological record rather than damage it.

Dr. John Almond was engaged to compile a desktop Paleontological Impact Assessment ("PIA") report on the Prospecting Right Area.

The PIA report concluded and recommended that:

- The Precambrian basement rocks of the Namaqua-Natal Province that underlie the Stomp Oor 109 study area at depth and that are a primary target of mineral prospecting are of no palaeontological heritage significance; they are either too old or too highly-metamorphosed to contain fossils, or they are igneous in origin.
- Overlying Permo-Carboniferous glacial-related sediments of the Mbizane Formation (Dwyka Group) cropping out in the southern portion of the study area are – at most – of moderate palaeontological palaeonsensitivity since they might contain plant remains and trace fossils.
- Most of the study area is mantled by superficial deposits of the Late Caenozoic Kalahir Group, including wind-blown

sands, calcretes and alluvium along shallow water courses. These superficial sediments are generally of low palaeontological sensitivity in the Bushmanland. However, important occurrences of fossil mammals have recently been recorded in association with stone artefacts within pan and alluvial gravel sediments near Copperton. Highly-fossiliferous crater lake deposits of Late Cretaceous age (*c.* 70 Ma = million years old) have been recorded on Farm Stomp Oor 109 and may present at more than one site here, buried beneath the superficial sediment cover.

- It is therefore recommended that a site visit by a professional palaeontologist be commissioned by the developer well before the commencement of the invasive phases of the prospecting programme. The resulting palaeontological heritage assessment report should make recommendations for any mitigation or monitoring measures to be following during siting, drilling and rehabilitation of the boreholes as well as for conservation of sedimentary borehole core material for future palaeontological analysis.
- There are no objections on palaeontological grounds regarding the non-invasive phases of the proposed mineral prospecting programme on Farm Stomp Oor 109.
- The ECO responsible for the mineral prospecting project should be aware of the potential for important fossil occurrences within near-surface or buried crater lake deposits and the necessity to conserve them for possible professional mitigation.
- Recommendations should be included within the Environmental Management Programme ("EMPr") for the proposed mineral prospecting programme.

- **Climate:**

  The Northern Cape experiences typical semi-desert and desert climatic conditions. The summers are hot and dry and the winters cold and frosty.

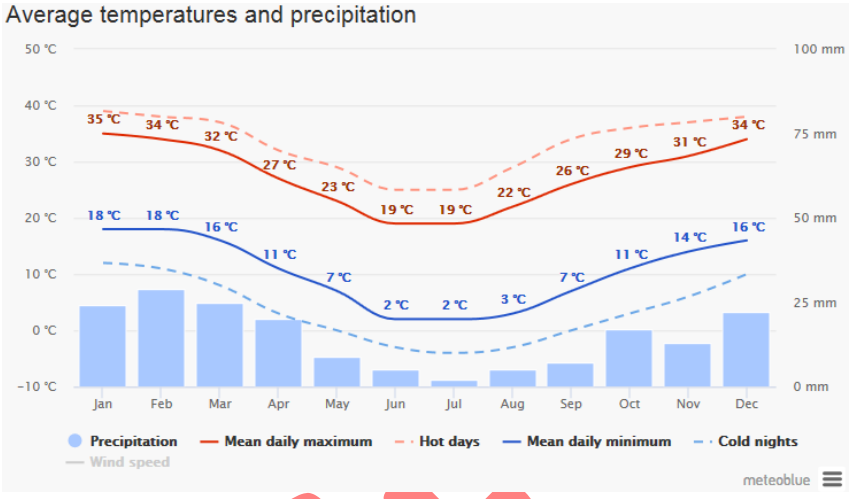


Figure 6 – Average temperatures and precipitation of the Prieska area

The "mean daily maximum" (solid red line) shows the maximum temperature of an average day for every month for Prieska. Likewise, "mean daily minimum" (solid blue line) shows the average minimum temperature. Hot days and cold nights (dashed red and blue lines) show the average of the hottest day and coldest night of each month of the last 30 years.

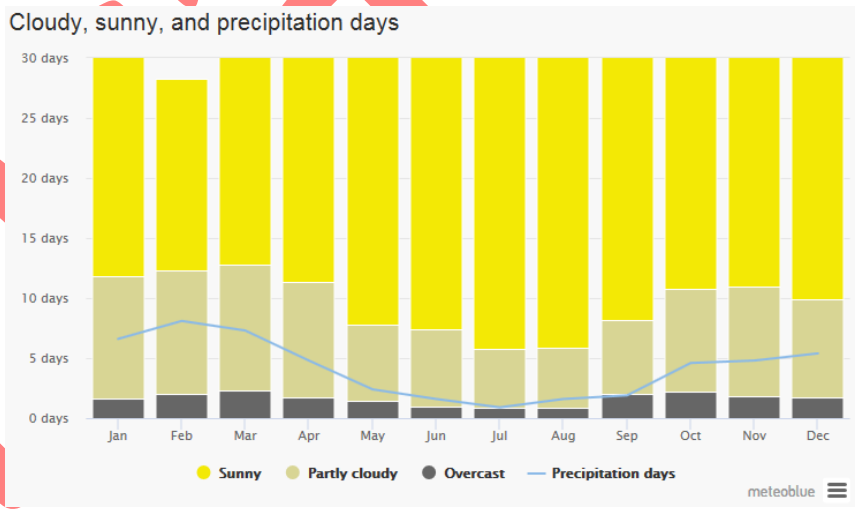


Figure 7 – Cloudy, sunny and precipitation days in the Prieska area

The graph shows the monthly number of sunny, partly cloudy, overcast and precipitation days. Days with less than 20% cloud cover are considered as sunny, with 20-80% cloud cover as partly cloudy and with more than 80% as overcast.

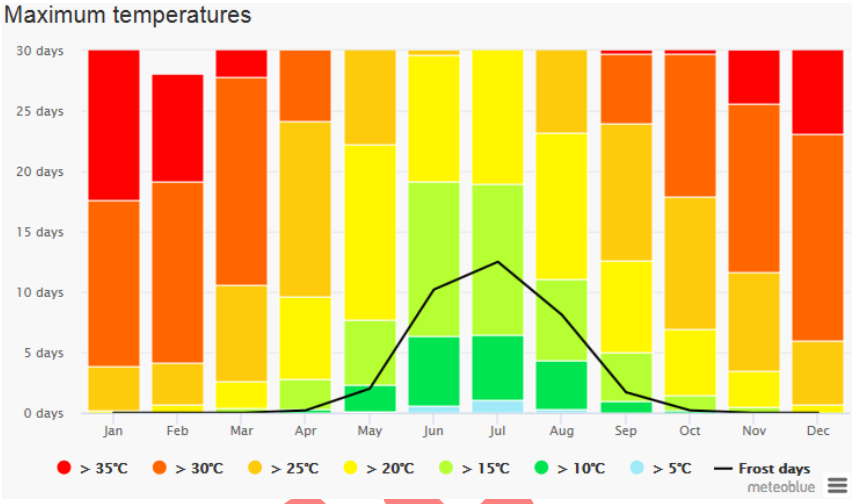


Figure 8 – Maximum temperatures in the Prieska area

The maximum temperature diagram for Prieska displays how many days per month reach certain temperatures.

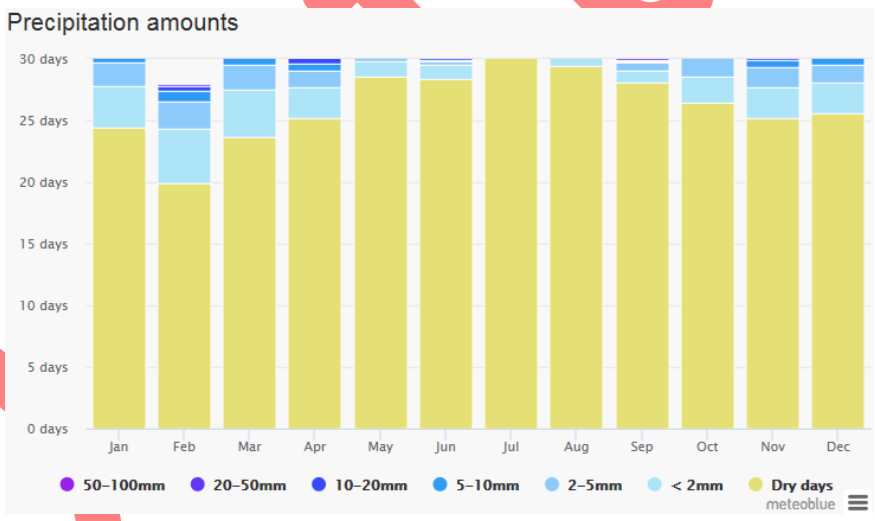


Figure 9 – Precipitation of the Prieska area

The precipitation diagram for Prieska shows on how many days per month, certain precipitation amounts are reached.

- **Fauna:**
  Animals likely to be found on the farm and surrounding environment include small mammals and birds that are associated with the Bushmanland Arid Grassland and Bushmanland Basin Shrubland Vegetation Types.

- **Flora:**
  The area under application falls within the Bushmanland Arid Grassland Vegetation Type (NKb3) and the Bushmanland Basin Shrubland Vegetation Type (NKb6) which form part of the Nama-Karoo Biome.

The following is normally found under the Bushmanland Arid Grassland Vegetation Type:

- Graminoids: *Aristida adscensionis* (d), *A. congesta* (d), *Enneapogon desvauxii* (d), *Eragrostis nindensis* (d), *Schmidtia kalahariensis* (d), *Stipagrostis ciliata* (d), *S. obtusa* (d), *Cenchrus ciliaris*, *Enneapogon scaber*, *Eragrostis annulata*, *E. porosa*, *E. procumbens*, *Panicumlanipes*, *Setaria verticillata*, *Sporobolus nervosus*, *Stipagrostis brevifolia*, *S. uniplumis*, *Tragus berteronianus*, *T. racemosus*.
- Small Trees: *Acacia mellifera* subsp. *detinens*, *Boscia foetida* subsp. *Foetida*.
- Tall Shrubs: *Lycium cinereum* (d), *Rhigozum trichotomum* (d), *Cadaba aphylla*, *Parkinsonia africana*.
- Low Shrubs: *Aptosimum spinescens* (d), *Hermannia spinosa* (d), *Pentzia spinescens* (d), *Aizoon asbesstinum*, *A. schellenbergii*, *Aptosimum elongatum*, *A. lineare*, *A. morlothii*, *Barleria rigida*, *Berkheya annectens*, *Blepharis mitrata*, *Eriocephalus ambiguus*, *E. spinescens*, *Limeum aethiopicum*, *Lophiocarpus polystachyus*, *Monechma incanum*, *M. spartioides*, *Pentzia pinnatisecta*, *Phaeoptilum spinosum*, *Polygala seminude*, *Pteronia leucoclada*, *P. mucronata*, *P. sordid*, *Rosenia humilis*, *Senecio niveus*, *Sericocoma avolans*, *Solanum capense*, *Talinum arnotii*, *Tetragonia arbuscula*, *Zygophyllum microphyllum*.
- Succulent Shrubs: *Kleinia longiflora*, *Lycium bosciifolium*, *Salsola tuberculata*, *S. glabrescens*.
- Herbs: *Acanthopsis hoffmannseggiana*, *Aizoon canariense*, *Amaranthus praetermissus*, *Barleria lichtensteiniana*, *Chamaesyce inaequilatera*, *Dicoma capensis*, *Indigastrum argyraeum*, *Lotononis platycarpa*, *Sesamum capense*, *Tribulus pterophorus*, *T. terrestris*, *Vahlia capensis*.
- Succulent Herbs: *Gisekia pharnacioides*, *Psilocaulon coriarium*, *Trianthema parvifolia*.
- Herb: *Moraea venenata*.

The following is normally found under the Bushmanland Basin Shrubland vegetation type:

- Tall Shrubs: *Lycium cinereum* (d), *Rhigozum trichotomum* (d).
- Low Shrubs: *Aptosimum spinescens* (d), *Hermannia spinosa* (d), *Pentzia spinescens* (d), *Zygophyllum microphyllum* (d), *Aptosimum elongatum*, *A. marlothii*, *Berkheya annectens*, *Eriocephalus microphyllus* var. *pubescens*, *E. pauperrimus*, *E. spinescens*, *Felicia clavipilosa* subsp. *clavipilosa*, *Limeum aethiopicum*, *Osteospermum armatum*, *O. spinescens*, *Pegolettia retrofracta*, *Phaeoptilum spinosum*, *Plinthus*

karooicus, *Polygala seminude*, *Pteronia glauca*, *P. inflexa*, *P. leucoclada*, *P. mucronata*, *P. sordid*, *Rosenia humilis*, *Selago albida*, *Senecio niveus*, *Tetragonia arbuscula*, *Zygophyllum lichtensteinianum*.

- Succulent Shrubs: *Salsola tuberculata* (d), *Aridaria noctiflora* subsp. *straminea*, *Brownanthus ciliates* subsp. *ciliates*, *Galenia sarcophylla*, *Lycium bosciifolium*, *Ruschia intricate*, *Salsola namibica*, *Sarcocaulon patersonii*, *S. salmoniflorum*, *Tripteris sinuate* var. *linearis*, *Zygophyllum flexuosum*.
- Semiparasitic Shrub: *Thesium hystrix*.
- Herbs: *Gazania lichtensteinii* (d), *Leysera tenella* (d), *Amaranthus praetermissus*, *Chamaesyce inaequilatera*, *Dicoma capensis*, *Indigastrum argyraeum*, *Lepidium desertorum*, *Monsonia umbellate*, *Radyera urens*, *Sesamum capense*, *Tribulus terrestris*, *T. zeyheri*.
- Succulent Herbs: *Mesembryanthemum crystallinum*, *M. stenandrum*, *Trianthema parvifolia*, *Zygophyllum simplex*.
- Graminoids: *Aristida adscensionis* (d), *Enneapogon desvauxii* (d), *Stipagrostis ciliate* (d), *S. obtuse* (d), *Aristida congesta*, *Enneapogon scaber*, *Stipagrostis anomala*, *Tragus berteronianus*, *T. racemosus*.

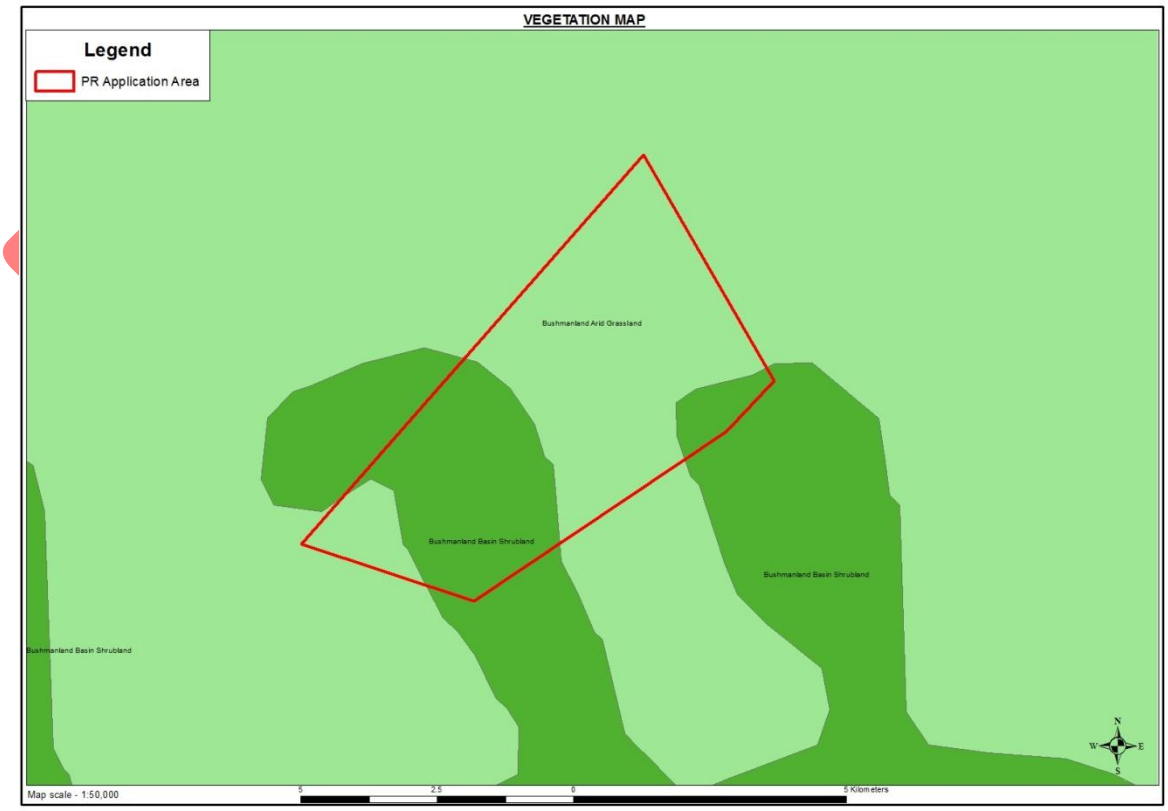


Figure 10 – Regional vegetation map

- **Geology:**

  The project area is situated some 45km northwest of the historical Copperton Mine. The Copperton mine, historically one of the largest of its kind in Southern Africa, was active between October 1972 and December 1991. During this time a total of 45,68 MT of ore was milled at a grade of 1.11% copper and 2.62% zinc. In addition to the copper and zinc, the mine also produced pyrite concentrate (for sulphur) and lead together with smaller amounts of silver and gold. Only one composite ore body, the Prieska ore body was exploited. The much smaller Annex deposit was left un-mined.

  The Prieska body's mineralization was confined to a tabular, strata-bound horizon, in the northern limb of a recumbent syn-form. It is believed that the application area could host similar deposits.

  The surrounding areas also host magmatic Nickel-Copper-Cobalt-PGM mineralization and it is believed that the application area could host similar mineralization. Tilites belonging to the Dwyka Formation (C-pd) outcrops in some parts of the application area. The application area is largely covered by windblown sand (Qg) and calcrete (Tec).

  Being located at the boundaries of the Kaapvaal Craton the property has the potential for primary diamond deposits and its weathered products.

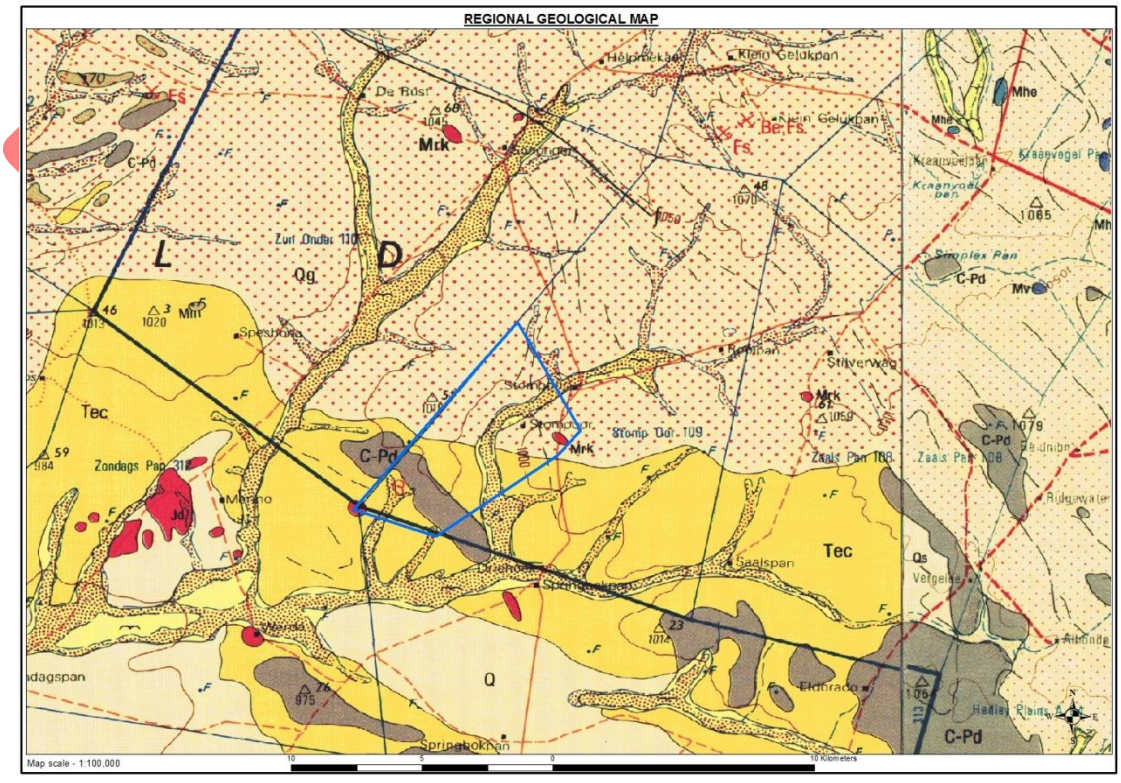


Figure 11 - Geological map

- **Groundwater:**

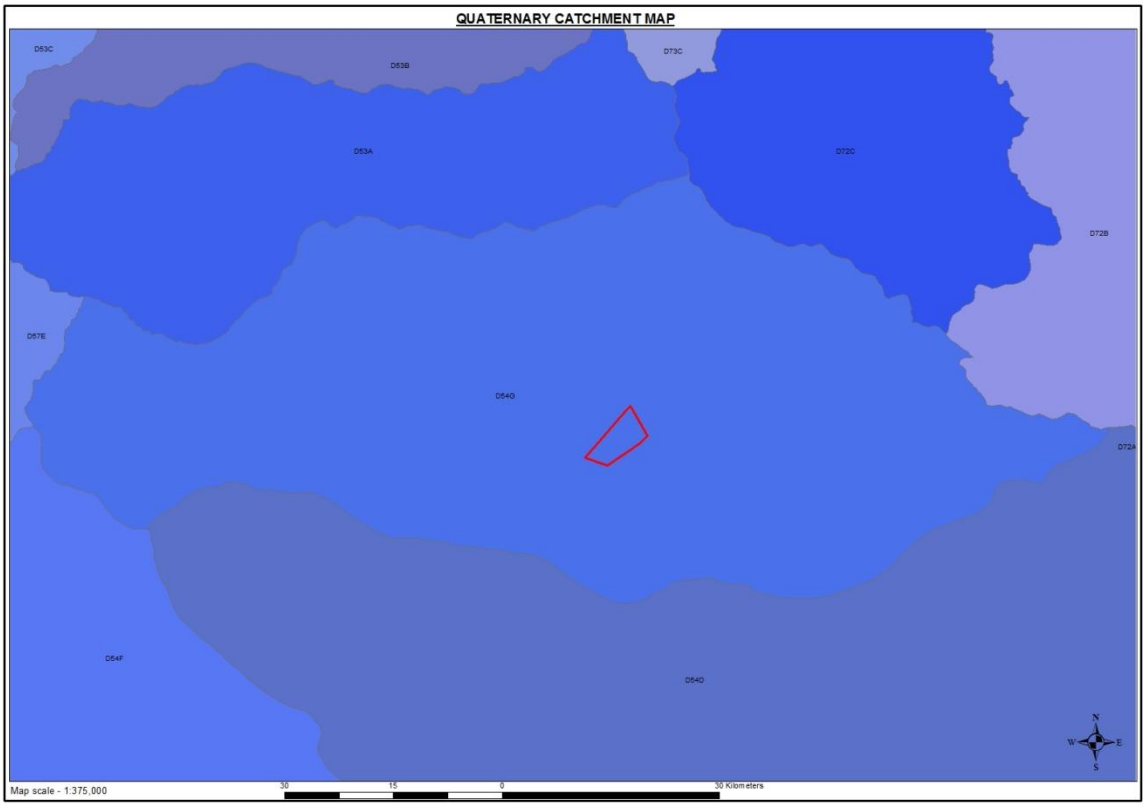


Figure 12 – Catchment map

The application area falls over the D54G quaternary drainage region. The drainage region forms part of the Lower Orange Water Management Area (nr. 14 in terms of the National Water Act, 1998 (Act no. 36 of 1998) as published in the Government Gazette 20491, 1 October 1999).

The surface owner use groundwater for livestock watering and domestic purposes. The ground water quality is expected to be reasonable.

- **Noise:**

  The only current source of noise is created from vehicles travelling on the secondary road and the gravel (farm) roads transecting the property and immediate surrounding area.

- **Sensitive landscapes:**

  "Sensitive environments" that have statutory protection are the following:

  - Limited development areas (section 23 of the Environment Conservation Act, 1989 (Act 73 of 1989).
  - Protected natural environments and national heritage sites.
  - National, provincial, municipal and private nature reserves.

- Conservation areas and sites of conservation significance.
- National monuments and gardens of remembrance.
- Archaeological and palaeontological sites.
- Graves and burial sites
- Lake areas, offshore islands and the admiralty reserve.
- Estuaries, lagoons, wetlands and lakes.
- Streams and river channels, and their banks.
- Dunes and beaches.
- Caves and sites of geological significance.
- Battle and burial sites.
- Habitat and /or breeding sites of Red Data Book species.
- Areas or sites of outstanding natural beauty.
- Areas or sites of special scientific interest.
- Areas or sites of special social, cultural or historical interest.
- Declared national heritage sites
- Mountain catchment areas.
- Areas with eco-tourism potential

The following sensitive environments have been identified within the boundaries of the prospecting area.

Archaeological and paleaontological sites:
G&A Hertiage's report, "Desktop Heritage Impact Assessment Report", states the following:

""No archaeological sites could be found that have been previously documented in the study area. It is anticipated that the area will contain scatters of Middle – and Late Stone Age tools with the possibility of manufacturing sites occurring locally."

Dr. J.E. Almond's report, "Palaeontological Heritage Report: Desktop Study", states the following:

Potential fossils on Farm Stomp Oor 109 near Copperton:
"Plant remains and trace fossils in Dwyka sediments. Well-preserved fossil frogs, fish, molluscs and plant remains, rare dinosaur bones in crater lake sediments. Bones, teeth, horn cores of mammals as well as calcretised burrows (e.g. termite nests, plant root and stem casts), non-marine molluscs".

Streams and river channels, and their banks:
There are a number of dry water courses, which traverses the application area. A 100m no-prospecting buffer zone has been placed around these dry water courses.

- **Socio-Economic:**

  The farm under application falls within the Siyathemba Local Municipality, which falls under management of the Pixley Ka Seme District Municipality.

  According to the 2011 Census data the following is a description of the Socio-Economic environment for the municipal area:

  Siyathemba Local Municipality is a local municipality in the Pixley Ka Seme District Municipality in the Northern Cape Province of South Africa. Siyathemba Municipality is a Category B Municipality (NC077), established in 2001, in accordance with the demarcation process. The municipality is located within the central eastern parts of the Northern Cape Province on the banks of the Orange River, and falls within the boundaries of the Pixley Ka Seme District. The nearest business centre is Kimberley, which is about 220km away.

  Siyathemba Municipality was initially made up of three entities, namely, Prieska, Marydale and Niekerkshoop. After demarcation the area was extended to include not only the towns and surrounding suburbs of Marydale, Niekerkshoop and Prieska but also Copperton. The municipal area encompasses a geographic area of approximately 8,200km², which implies that Siyathemba Municipality accounts for 8% of the total district surface area and approximately 3% of the provincial area. The municipality is divided into 4 Wards.

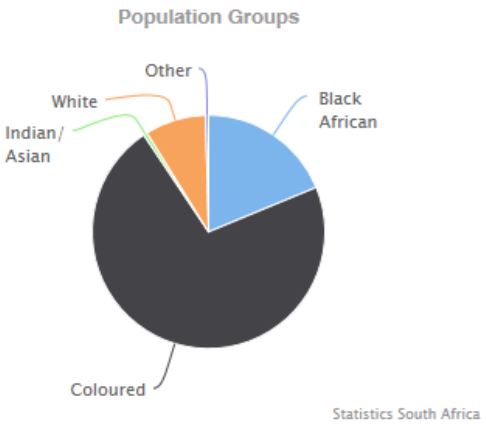
Key Statistics	2011
Total population	21,591
Young (0-14)	30,8%
Working Age (15-64)	63,2%
Elderly (65+)	6%
Dependency ratio	58,2
Sex ratio	99,3
Growth rate	1,57% (2001-2011)
Population density	1 persons/km2
Unemployment rate	24,3%
Youth unemployment rate	30,2%
No schooling aged 20+	11,5%
Higher education aged 20+	5,3%

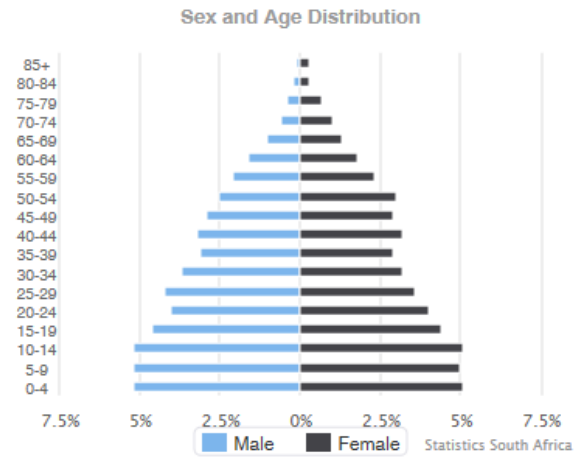
Matric aged 20+	18%
Number of households	5,831
Number of Agricultural households	1,334
Average household size	3,6
Female headed households	36,1%
Formal dwellings	88,6%
Housing owned/paying off	54,3%
Flush toilet connected to sewerage	64,9%
Weekly refuse removal	73,9%
Piped water inside dwelling	43,1%
Electricity for lighting	86,2%

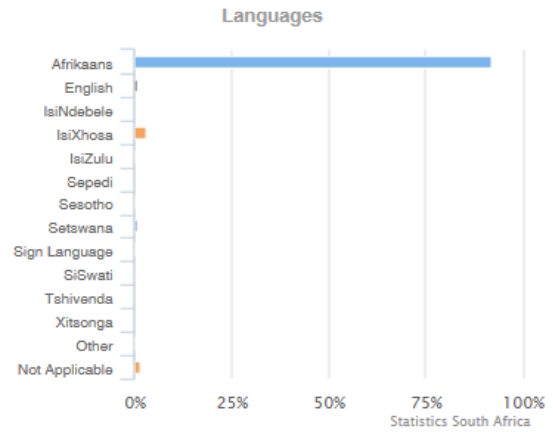
People:

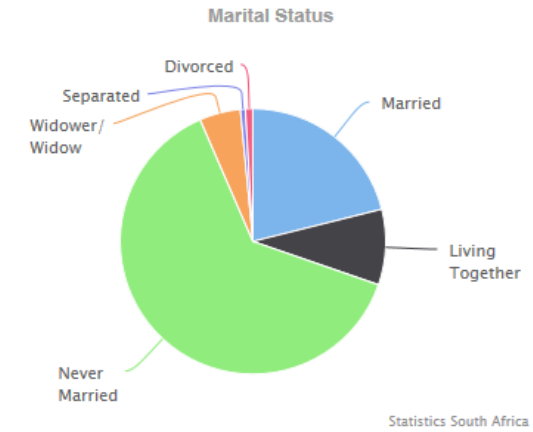
The total population in the municipality is 21 591 people with Xhosa and Afrikaans being the dominant languages. The most dominant population group is coloured people; they represent 80% of the total population in the municipal area. The other groups are black African (12%) and white people (8%).

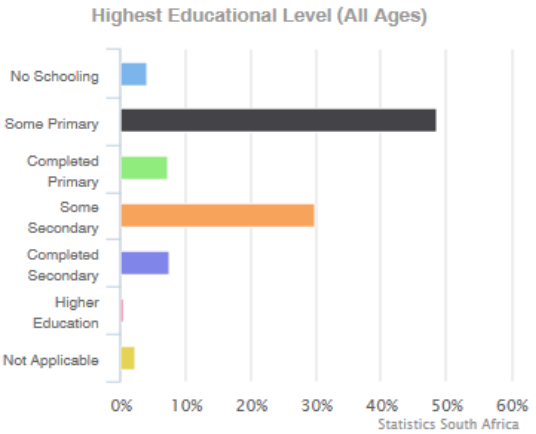
Afrikaans is the most widely spoken language (78%). There are an insignificant number of people who speak other languages. A total of 824 people indicated that IsiNdebele is their first language and 91 people speak Setswana.

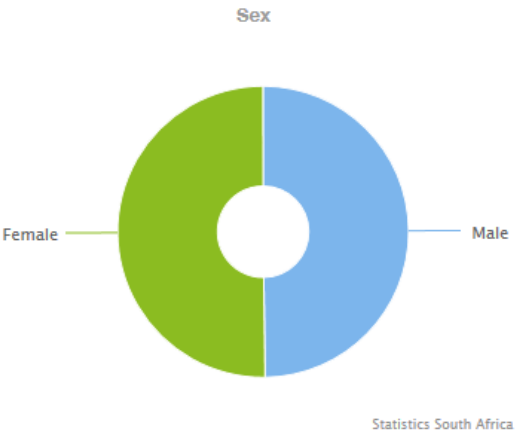








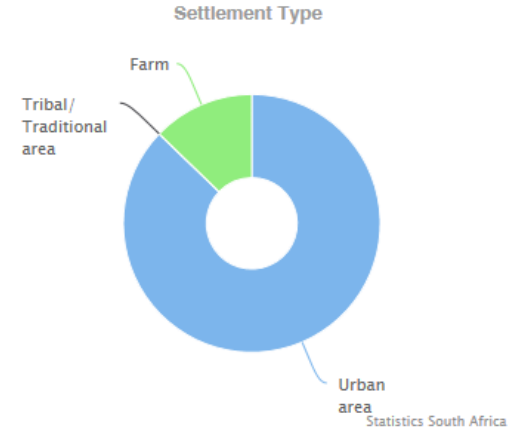


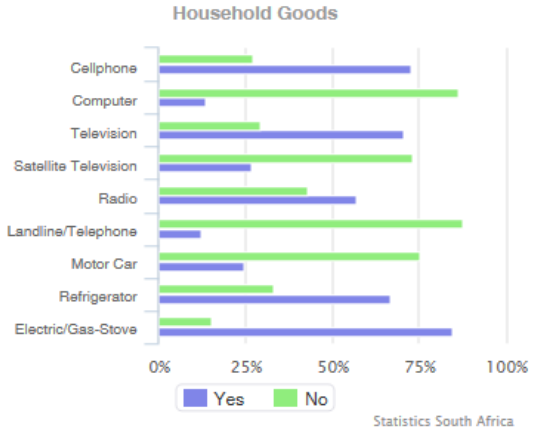


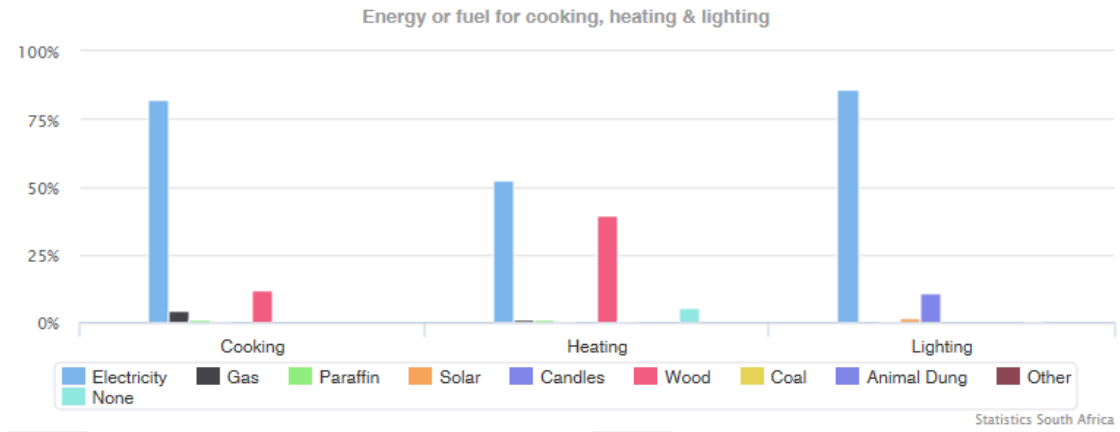
Living conditions:

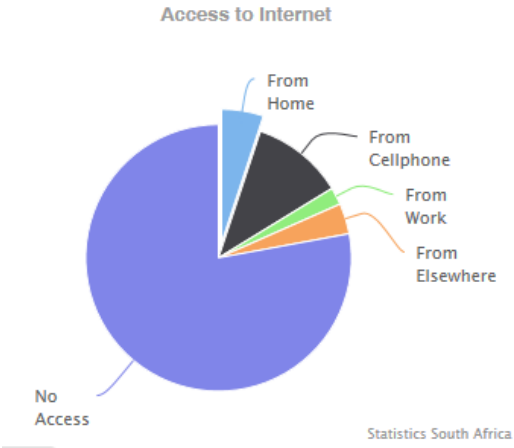
The educational profile in Siyathemba is that of 14% of the population had no schooling, while 34% had primary school education. Just 4% of the population has a degree or diploma. According to the 2011 census results:

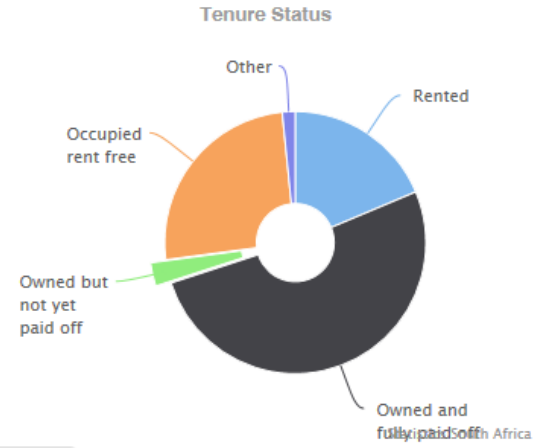
- 71.29% of people are using flush toilet.
- 74.88% access to refuse removal
- 97.46 % of people have access to piped water.

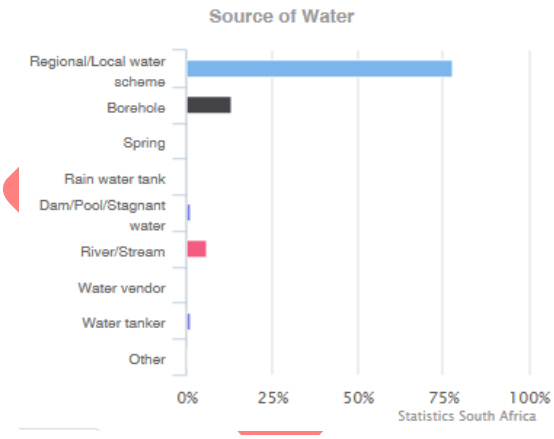


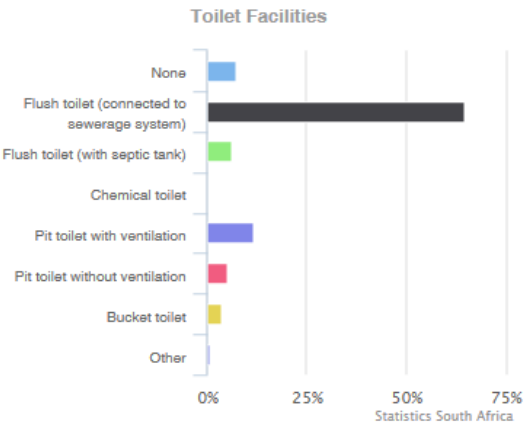


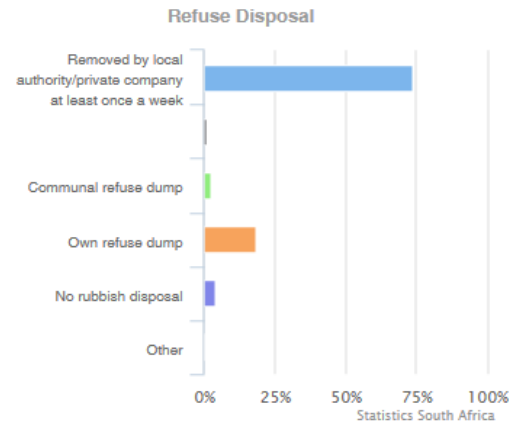

Energy or fuel for cooking, heating & lighting
100%
75%
50%
25%
0%
Cooking
Heating
Lighting
Electricity
Gas
Paraffin
Solar
Candles
Wood
Coal
Animal Dung
Other
None
Statistics South Africa


Access to Internet
From Home
From Cellphone
From Work
From Elsewhere
No Access
Statistics South Africa


Tenure Status
Other
Rented
Occupied rent free
Owned but not yet paid off
Owned and fully paid off
Statistics South Africa

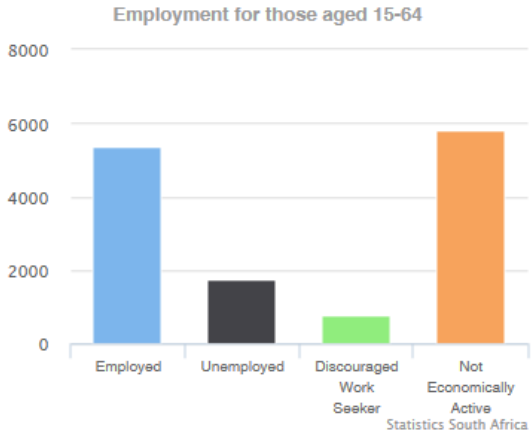

Source of Water
Regional/Local water scheme
Borehole
Spring
Rain water tank
Dam/Pool/Stagnant water
River/Stream
Water vendor
Water tanker
Other
0%
25%
50%
75%
100%
Statistics South Africa

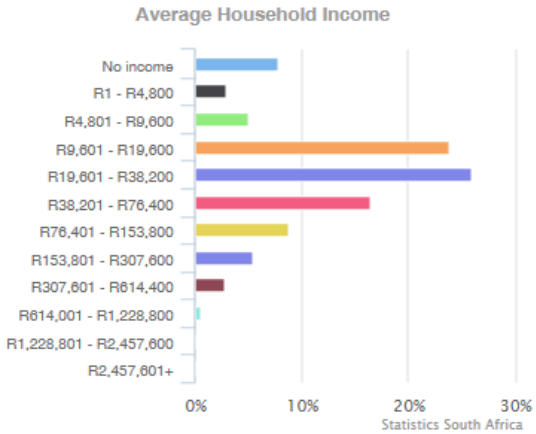

Toilet Facilities
None
Flush toilet (connected to sewerage system)
Flush toilet (with septic tank)
Chemical toilet
Pit toilet with ventilation
Pit toilet without ventilation
Bucket toilet
Other
0%
25%
50%
75%
Statistics South Africa


Refuse Disposal
Removed by local authority/private company at least once a week
Communal refuse dump
Own refuse dump
No rubbish disposal
Other
0%
25%
50%
75%
100%
Statistics South Africa

Economy:

The whole of the Siyathemba area is rich in semiprecious stones. The famed 'tiger's eye' is one of many gems mined in the region. An opportunity exists for adding value to the raw material and shipping out processed products of high quality.





- **Soil:**

  The soils of the application area are described per vegetation type:

  The soils of most of the area in the Bushmanland Arid Grassland vegetation type are red-yellow apedal soils, freely drained, with a high base status and <300mm deep, with about one fifth of the area deeper than 300mm, typical of Ag and Ae land types.

  The soils in the Bushmanland Basin Shrubland vegetation type are shallow Glenrosa and Mispah forms, with lime generally present in the entire landscape and, to a lesser extent, red-yellow apedal, freely drained soils with a high base status and usually <15% clay are also found. The salt content in these soils is very high.

- **Surface water:**

  There are a number of dry water courses, which traverses the application area. A 100m no-prospecting buffer zone has been placed around these dry water courses.

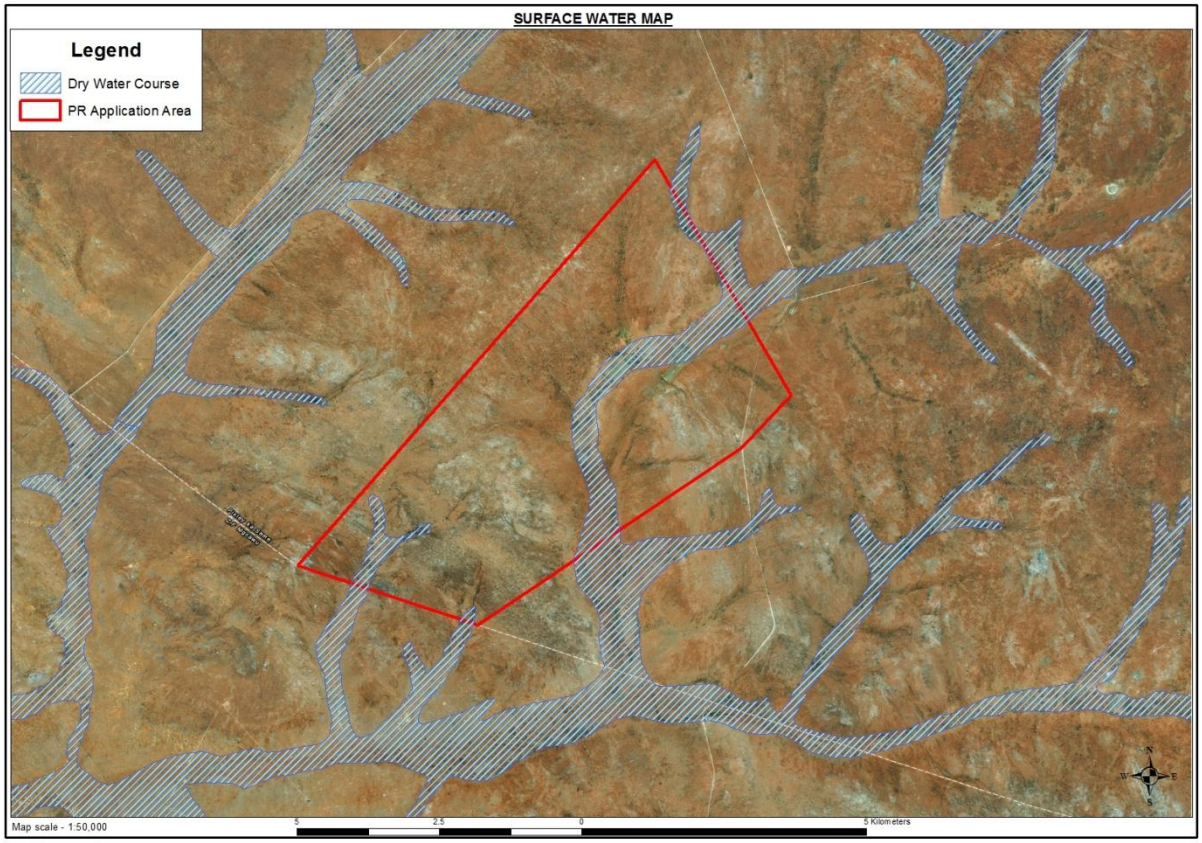


Figure 13 – Surface water map

- **Topography:**

  The application area's altitude varies between 986m and 1026 meters above sea level.

  The landscape features for the areas located within the Bushmanland Arid Grassland Vegetation type can be described as follows: Extensive to irregular plains on a slightly sloping plateau sparsely vegetated by grassland dominated by white grasses (*Stipagrostis* species) giving this vegetation type the character of semidesert 'steppe'. In places low shrubs of Salsola change the vegetation structure. In years of abundant rainfall rich displays of annual herbs can be expected.

  The landscape features for the areas located within the Bushmanland Basin Shrubland Vegetation type can be described as follows: Slightly irregular plains with dwarf shrubland dominated by a mixture of low sturdy and spiny (and sometimes also succulent) shrubs (*Rhigozum*, *Salsola*, *Pentzia*, *Eriocephalus*), 'white' grasses (*Stipagrostis*) and in years of high rainfall also by abundant annuals such as species of *Gazania* and *Leysera*.

(b) Description of the current land uses.

The surface owner currently utilizes the land under application for livestock (sheep and cattle) farming purposes.

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

- Infrastructure:
  - The on-site gravel (farm) roads are in a reasonable condition.
  - The secondary gravel road accessing the farm is in a reasonable condition.
  - There is a residence and associated infrastructure in the area under application.
  - There are only a few windmills and relating agricultural infrastructure within the area under application.

- Environmental:
  There are a number of dry water courses, which traverses the application area. A 100m no-prospecting buffer zone has been placed around these dry water courses.

(d) Environmental and current land use map:

(Show all environmental and current land use features.)

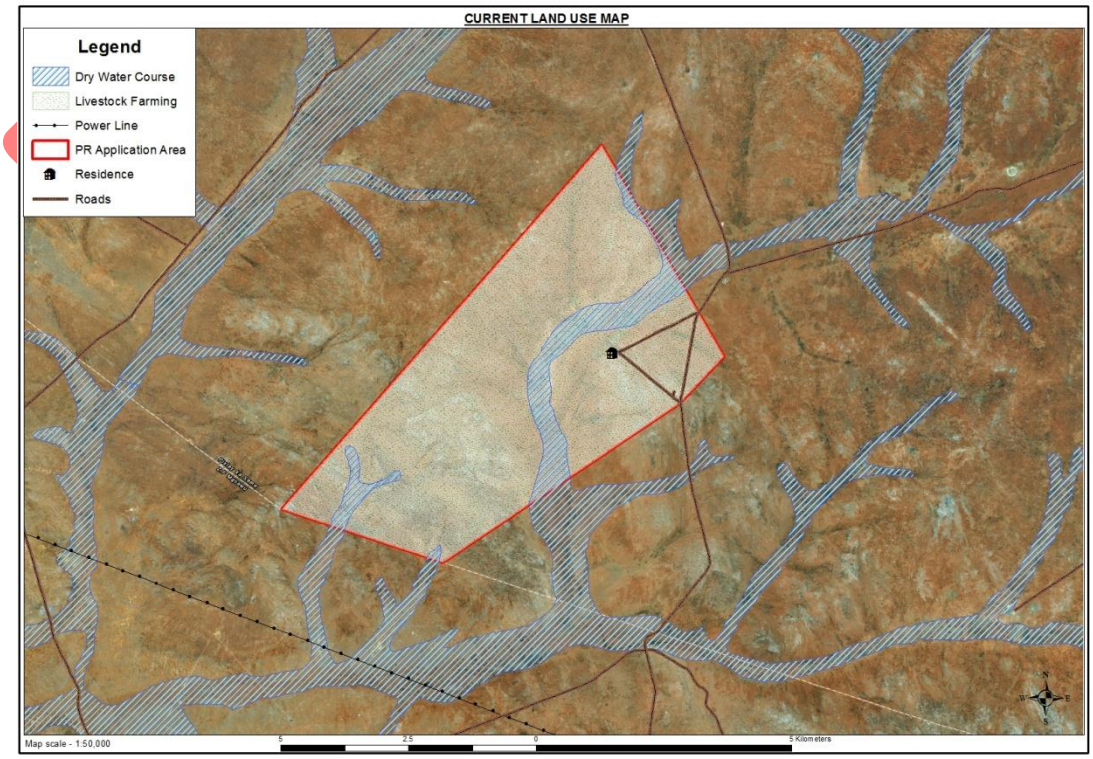


Figure 14 – Current land use and environmental map

(v) Impacts identified:

(Provide a list of the potential impacts identified of the activities described in the initial site layout that will be undertaken, as informed by both the typical known impacts of such activities, and as informed by the consultations with affected parties together with the significance, probability and duration of the impacts.)

Prospecting activity	Impact on	Extent	Duration	Intensity	Probability	Significance (without mitigation)	Significance (with mitigation)
Access Tracks	Air quality	Site	Short	Low	Definite	Low	Low
	Archaeological sites	Local	Short	Low	Probable	Low	Low
	Fauna	Local	Long	Medium	Definite	Medium	Medium
	Flora	Local	Long	High	Definite	High	Medium
	Groundwater	Site	Short	Low	Improbable	Low	Low
	Noise	Site	Short	Low	Definite	Low	Low
	Palaeontological sites	Local	Short	Low	Improbable	Low	Low
	Soil	Local	Medium	Low	Definite	Low	Low
	Surface water	N/A	N/A	N/A	N/A	N/A	N/A
	Topography	N/A	N/A	N/A	N/A	N/A	N/A
	Visual	Site	Medium	Low	Definite	Low	Low

Prospecting activity	Impact on	Extent	Duration	Intensity	Probability	Significance (without mitigation)	Significance (with mitigation)
Drilling activities	Air quality	Site	Short	Low	Definite	Low	Low
	Archaeological sites	Local	Short	Low	Probable	Low	Low
	Fauna	Local	Long	Medium	Definite	Medium	Medium
	Flora	Local	Long	High	Definite	High	Medium
	Groundwater	Site	Short	Low	Improbable	Very Low	Low
	Noise	Site	Short	Medium	Definite	Medium	Low
	Palaeontological sites	Local	Short	Medium	Probable	Medium	Low
	Soil	Local	Long	Medium	Definite	Medium	Low
	Surface water	N/A	N/A	N/A	N/A	N/A	N/A
	Topography	N/A	N/A	N/A	N/A	N/A	N/A
	Visual	Site	Medium	Low	Definite	Low	Low

(vi) Methodology used in determining the significance of environmental impacts:

(Describe how the significance, probability and duration of the aforesaid identified impacts that were identified through the consultation process were determined in order to decide the extent to which the initial site layout needs revision.)

The assessment of the impacts has been conducted according to a synthesis of criteria required by the integrated environmental management procedure.

Nature of impact

This is an appraisal of the type of effect the activity would have on the affected environmental component. Its description should include what is being affected, and how.

Extent

The physical and spatial size of the impact. This is classified as follows:

- **Local**
  The impacted area extends only as far as the activity, e.g. a footprint.
- **Site**
  The impact could affect the whole, or a measurable portion of the property.
- **Regional**
  The impact could affect the area including the neighbouring farms, transport routes and the adjoining towns.

Duration

The lifetime of the impact which is measured in the context of the lifetime of the proposed phase (i.e. construction or operation).

- **Short term**
  The impact will either disappear with mitigation or will be mitigated through natural process in a short time period.
- **Medium term**
  The impact will last up to the end of the mining period, where after it will be entirely negated.
- **Long term**
  The impact will continue or last for the entire operational life of the mine, but will be mitigated by direct human action or by natural processes thereafter.
- **Permanent**
  The only class of impact, which will be non-transitory. Mitigation either by man or natural process will not occur in such a way or in such a time span that the impact can be considered transient.

Intensity

This describes how destructive, or benign, the impact is. Does it destroy the impacted environment, alter its functioning, or slightly alter it. These are rated as:

- **Low**
  This alters the affected environment in such a way that the natural processes or functions are not affected.
- **Medium**
  The affected environment is altered, but function and process continue, albeit in a modified way.
- **High**
  Function or process of the affected environment is disturbed to the extent where it temporarily or permanently ceases.

  This will be a relative evaluation within the context of all the activities and the other impacts within the framework of the project.

Probability

This describes the likelihood of the impacts actually occurring. The impact may occur for any length of time during the life cycle of the activity, and not at any given time. The classes are rated as follows:

- **Improbable**
  The possibility of the impact occurring is very low, due either to the circumstances, design or experience.
- **Probable**
  There is a possibility that the impact will occur to the extent that provisions must be made therefore.
- **Highly probable**
  It is most likely that the impacts will occur at some or other stage of the development.
- **Definite**
  The impact will take place regardless of any preventative plans, and mitigation measures or contingency plans will have to be implemented to contain the impact.

Determination of significance

Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The classes are rated as follows:

- **No significance**
  The impact is not likely to be substantial and does not require any mitigatory action.
- **Low**
  The impact is of little importance, but may require limited mitigation.

- **Medium**
  The impact is of importance and therefore considered to have a negative impact. Mitigation is required to reduce the negative impacts to acceptable levels.
- **High**
  The impact is of great importance. Failure to mitigate, with the objective to reduce the impact to acceptable levels, could render the entire development option or entire project proposal unacceptable. Mitigation is therefore essential.

(vii) The positive and negative impacts that the proposed activity (in terms of the initial site layout) and alternatives will have on the environment and the community that may be affected:

(Provide a discussion in terms of advantages and disadvantages of the initial site layout compared to alternative layout options to accommodate concerns raised by affected parties.)

Infrastructure: No offices and storerooms will be established at the site as Alidabix shall make use of facilities in the town of Prieska.

Invasive prospecting: The proposed locality of the boreholes was placed on a 200m x 200m grid.

Alternatives considered:-

Infrastructure: The only alternative considered was the establishment of offices and storerooms on the farm under application. As Alidabix aims to minimize its impact on the natural environment as much as possible this option was decided against.

Invasive prospecting: The drilling of boreholes over the entire property was considered, but taking into account that Alidabix aims to minimize its impact on the natural environment as much as possible this option was decided against.

(viii) The possible mitigation measures that could be applied and the level of risk:

(With regard to the issues and concerns raised by affected parties provide a list of the issues raised and an assessment / discussion of the mitigations or site layout alternatives available to accommodate or address their concerns, together with an assessment of the impacts or risks associated with the mitigation or alternatives considered.)

Impact	Mitigation	Risk
Air quality	• Speed limits; • Spraying of surfaces with water; • Avoidance of unnecessary removal of vegetation; • Re-vegetation and monitoring of re-growth; • Rehabilitation of disturbed areas; and	Low

	• Controlled drilling operations, preferably on wind-free days.	
Archaeological sites and/or Palaeontological significant artefacts	• Should any heritage sites be encountered the appropriate heritage practitioner be informed; • Chance Fossil Finds Procedures listed in the EMPr for the non-invasive phases of the prospecting programme to be followed; and • Prior to the commencement of invasive prospecting activities, specific borehole locations be checked by a suitably qualified heritage practitioner and qualified palaeontologist when he borehole locations have been finalized.	Low
Fauna	• Speed limits; • Continuous rehabilitation of disturbed areas; • No snares or traps may be set for animals and strict adherence to be communicated to all employees and contractors; and • Maintenance of firebreaks.	Medium
Flora	• Continuous rehabilitation of disturbed areas; • Avoidance of unnecessary removal of vegetation; • Re-vegetation and monitoring of re-growth; • Maintenance of firebreaks; • No trees felled for firewood; • Obtain relevant permit before removal of protected tree or plant species; and • Re-seeding where necessary.	High
Ground water	• Immediate removal of any hydrocarbon spill; • Maintenance in dedicated area; • Re-fuelling in dedicated area; • Drip pans; • Storage of hydrocarbons in dedicated areas; and • Monitoring of groundwater quality.	Low
Noise	• Hearing protection; • Working hours; • Controlled drilling operations; • Silencers on equipment and vehicles; and	Medium

Soil	• Continuous rehabilitation of disturbed areas; • Ripping of compacted areas; • Maintenance & refuelling in dedicated areas; • Drip pans; • Storage of hydrocarbons in dedicated areas; and • Immediate removal of any hydrocarbon spill.	Medium
Surface water	• Storm water control; • Control and monitoring of erosion; • Immediate removal of any hydrocarbon spill; • Maintenance & re-fuelling in dedicated areas; • Adhering to buffer zones; • Drip pans; and • Storage of hydrocarbons in dedicated areas.	N/A
Topography	• Sloping of rehabilitated and disturbed areas.	N/A
Visual	• Sloping of rehabilitated and disturbed areas;	Low

(ix) Motivation where no alternative sites were considered:

No offices and storerooms will be established at the site as Alidabix shall make use of facilities in the town of Prieska.

(x) Statement motivating the preferred site:
(Provide a statement motivating the final site layout that is proposed.)

No offices and storerooms will be established at the site as Alidabix shall make use of facilities in the town of Prieska.

i) Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site (in respect of the final site layout plan) through the life of the activity.
(Provide a statement motivating the final site layout that is proposed.)

The methodology for the predication and assessment of impacts has been in accordance with *DEA Guideline 5: Assessment of Alternatives and Impacts*. Potential impacts have been rated in terms of the direct, indirect and cumulative impacts.

Criteria taken into account:

- Spatial extent – The size of the area that will be affected by the impact.

- Intensity –The anticipated severity of the impact.
- Duration –The timeframe during which the impact will be experienced.

Using the criteria above, the impacts have further been assessed in terms of the following:

- Probability –The probability of the impact occurring.
- Significance – Will the impact cause a notable alteration of the environment?
- Status - Whether the impact on the overall environment will be positive, negative or neutral.
- Confidence – The degree of confidence in predictions based on available information and specialist knowledge.

(j) Assessment of each identified potentially significant impact and risk

NAME OF ACTIVITY (e.g. For prospecting – drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access rout etc…etc…etc e.g. For mining - excavations, blasting, stockpiles, discard dumps or dams, loading, hauling and transport, water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc…)	POTENTIAL IMPACT (Including the potential impacts for cumulative impacts) (e.g. dust, noise, drainage, surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc…etc…)	ASPECTS AFFECTED	PHASE In which impact is anticipated. (e.g. Construction, commissioning, operational, decommissioning, closure, post-closure)	SIGNIFICANCE If not mitigated	MITIGATION TYPE modify, remedy, control or stop through: (e.g. noise control measures, stormwater control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc…etc…) (e.g. modify through alternative method. Control through noise control. Control through management and monitoring through rehabilitation.)	SIGNIFICANCE If mitigated
Access Tracks	• Dust • Disturbance of the natural habitat of fauna • Disturbance / destruction of natural vegetation cover • Groundwater contamination from hydrocarbon spills • Noise from vehicles	Air quality Fauna Flora Groundwater Soil Surface water	Phase 4 Percussion Drilling & Phase 6 & 8 Core Drilling	Low	• Maintenance of access tracks / roads • Dust control and monitoring • Groundwater quality monitoring • Noise control and monitoring	Very Low

	travelling on the access tracks • Compaction of soil. • Erosion				• Speed limits • Stormwater run-off control • Erosion control • Immediately clean hydrocarbon spills • Rip disturbed areas to allow re-growth of vegetation cover	
Chemical toilets	• Soil contamination • Groundwater contamination	Groundwater Soil	Phase 4 Percussion Drilling & Phase 6 & 8 Core Drilling	Very Low	• Maintenance of toilets on regular basis. • Removal of toilets upon closure.	N/A
Drilling activities	• Nuisance dust created by drill rig • Damage or loss of archaeological and/or palaeontological significant artefacts • Disturbance of the natural habitat of fauna • Disturbance / destruction of natural vegetation cover • Groundwater contamination from hydrocarbon spills • Noise from drill rig • Compaction and / or disturbance of soil structure • Changing of natural aesthetic view of	Air quality Archaeology site Fauna Flora Groundwater Palaeontology site Soil Surface water	Phase 4 Percussion Drilling & Phase 6 & 8 Core Drilling	Medium	• Avoidance of unnecessary removal of vegetation • Continuous rehabilitation of disturbed areas, re-vegetation and monitoring of re-growth • Controlled drilling operations, preferably on wind-free days • Immediate removal of any hydrocarbon spill • Maintenance and re-fuelling to take place in dedicated area • Drip pans • Storage of hydrocarbons in dedicated area • Hearing protection	Low

	environment by drill rig				• Working hours • Ripping of compacted areas • Should any heritage sites be encountered the appropriate heritage practitioner should be informed. • Chance Fossil Finds Procedures listed in the EMPr for the non-invasive phases of the prospecting programme to be followed. • Prior to the commencement of invasive prospecting activities, specific borehole locations be checked by a suitable qualified heritage practitioner and qualified palaeontologist when the borehole locations have been finalized.	

(k) Summary of specialist reports.

(This summary must be completed if any specialist reports informed the impact assessment and final site layout process and must be in the following tabular form):-

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
Desktop Heritage Impact Assessment Report, G&A Heritage, 2018 Refer to Appendix '10'	Field staff should be sensitised to the possibility of finding surface Stone Age manufacturing sites in the area. Field staff should look for the following indicators of unmarked sub-surface sites that could be encountered: • Ash deposits (unnaturally grey appearance of soil compared to the surrounding substrate); • Bone concentrations, either animal or human; • Ceramic fragments such as pottery shards either historic or pre-contact; and • Stone concentrations of any formal nature. The following recommendations are given should any sub-surface remains of heritage sites be identified as indicated above: ○ All operators of excavation equipment should be made aware of the possibility of the occurrence of sub-surface heritage features and the following procedures should they be encountered.	All of the recommendations have been included in this report.	Page 61 - 62

	○ All construction in the immediate vicinity (50m radius of the site) should cease. ○ The heritage practitioner should be informed as soon as possible. ○ In the event of obvious human remains the South African Police Services (SAPS) should be notified. ○ Mitigation measures (such as refilling etc.) should not be attempted. ○ The area in a 50m radius of the find should be cordoned off with hazard tape. ○ Public access should be limited. ○ The area should be placed under guard. ○ No media statements should be released until such time as the heritage practitioner has had sufficient time to analyse the finds. The specific borehole locations be checked by a suitably qualified heritage practitioner when their locations have been finalized and that a qualified palaeontologist be approached to assist with the core drill placements. This could result in the prospecting adding positively to the palaeontological record rather than damage it.		

Palaeontological Heritage Report: Desktop Study, Dr. J.E. Almond, Natura Viva CC, 2018 Refer to Appendix '11'	• A site visit by a professional palaeontologist be commissioned by the developer well before the commencement of the invasive phases of the prospecting programme. • The resulting palaeontological heritage assessment report should make recommendations for any mitigation or monitoring measures to be followed during siting, drilling and rehabilitation of the boreholes as well as for conservation of sedimentary borehole core material for future palaeontological analysis. • Chance Fossil Finds Procedure as outlined in the PIA report should be followed.	All of the recommendations have been included in this report.	Page 64

Attach copies of Specialist Reports as appendices.

(l) Environmental impact statement

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

- The creation of the access tracks will have a very low impact on air quality, fauna, flora, groundwater, soil and surface water after the implementation of mitigation measures.
- The chemical toilets are not expected to have an environmental impact should the mitigation measures be implemented.
- The drilling activities will have a low impact on air quality, fauna, flora, groundwater, soil and surface water after the implementation of mitigation measures.

(ii) Final Site Map

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

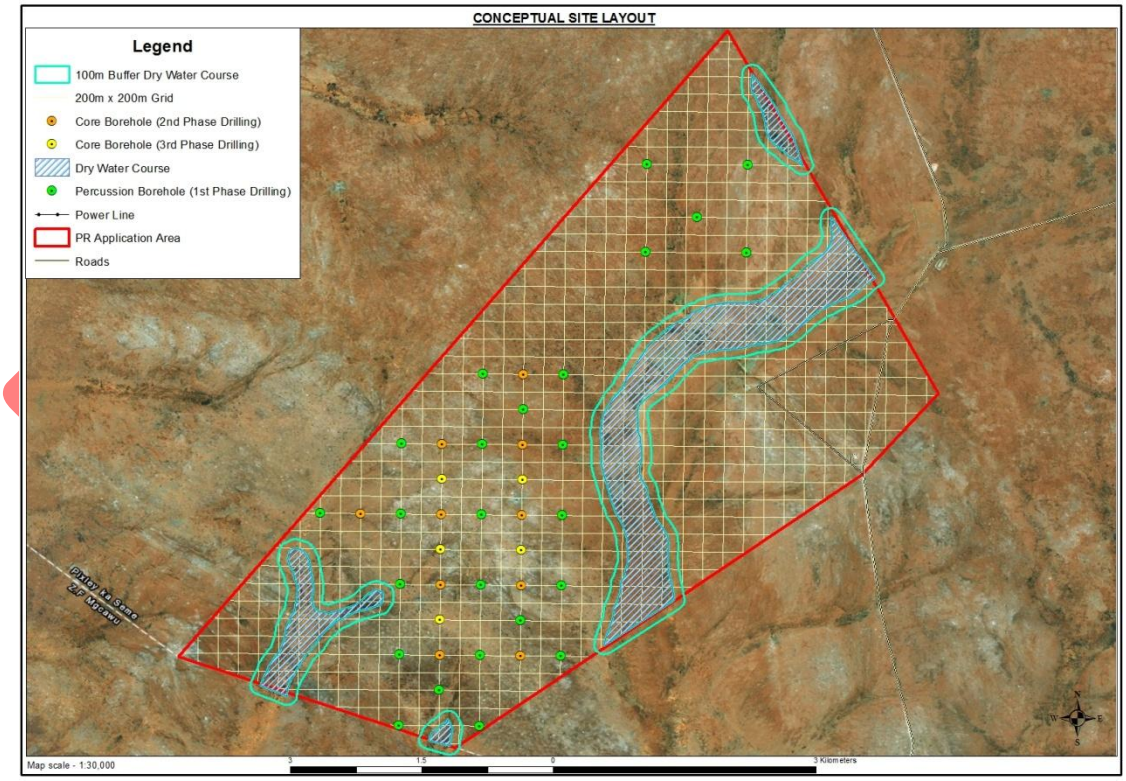


Figure 15 – Site layout with buffer zones

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

Infrastructure: No offices and storerooms will be established at the site as Alidabix shall make use of facilities in the town of Prieska.

Invasive prospecting: The proposed locality of the boreholes was placed on a 200m x 200m grid.

Alternatives considered:-
Infrastructure: The only alternative considered was the establishment of offices and storerooms on the farm under application. As Alidabix aims to minimize its impact on the natural environment as much as possible this option was decided against.

Invasive prospecting: The drilling of boreholes over the entire property was considered, but taking into account that Alidabix aims to minimize its impact on the natural environment as much as possible this option was decided against.

(m) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr;

Based on the assessment and where applicable the recommendations from specialist reports, the recording of proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation.

- Archaeological sites:
  Field staff should be sensitised to the possibility of finding surface Stone Age manufacturing sites in the area. Field staff should look for the following indicators of unmarked sub-surface sites that could be encountered:
  - Ash deposits (unnaturally grey appearance of soil compared to the surrounding substrate);
  - Bone concentrations, either animal or human;
  - Ceramic fragments such as pottery shards either historic or pre-contact; and
  - Stone concentrations of any formal nature.

  The following recommendations are given should any sub-surface remains of heritage sites be identified as indicated above:
  - All operators of excavation equipment should be made aware of the possibility of the occurrence of sub-surface heritage features and the following procedures should they be encountered.
  - All construction in the immediate vicinity (50m radius of the site) should cease.
  - The heritage practitioner should be informed as soon as possible.
  - In the event of obvious human remains the South African Police Services (SAPS) should be notified.
  - Mitigation measures (such as refilling etc.) should not be attempted.
  - The area in a 50m radius of the find should be cordoned off with hazard tape.
  - Public access should be limited.
  - The area should be placed under guard.
  - No media statements should be released until such time as the heritage practitioner has had sufficient time to analyse the finds.

The specific borehole locations be checked by a suitably qualified heritage practitioner when their locations have been finalized and that a qualified palaeontologist be approached to assist with the core drill placements. This could result in the prospecting adding positively to the palaeontological record rather than damage it.

- Air quality:
  To limit the creation of nuisance dust the following management guidelines should be followed:
  - Speed limits of vehicles inside the application area will be strictly controlled to avoid excessive dust or the excessive deterioration of the farm roads and access tracks to be used.
  - Routine spraying of unpaved site areas and access tracks utilized by the prospecting operation with water;
  - Avoidance of unnecessary removal of vegetation;
  - All cleared, disturbed or exposed areas must be rehabilitated as soon as practically possible to prevent the forming of additional sources of dust.
  - Monitoring of vegetation re-growth in rehabilitated areas.
  - Drilling activities preferably to take place on wind-free days.

- Fauna
  To ensure a minimum of impact to animals the following management guidelines should be followed:
  - Speed limits of vehicles inside the application area will be strictly controlled to avoid road kills.
  - Continuous rehabilitation of disturbed areas to allow the fauna habitat to be re-established.
  - No hunting (snares) will be allowed at the application area.
  - Maintenance of the firebreak.

- Flora
  - Continuous rehabilitation of disturbed areas to allow the natural vegetation cover to be re-established.
  - Avoidance of unnecessary removal of vegetation cover.
  - Monitoring of vegetation re-growth in rehabilitated areas.
  - Maintenance of firebreak.
  - No trees or shrubs will be felled or damaged for the purpose of obtaining firewood.
  - Management will take responsibility to control declared invader or exotic species on the site. The following control methods will be used:
    - "The plants will be uprooted, felled or cut off and can be destroyed completely."
    - "The plants will be treated with an herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such an herbicide."
  - Valid permits from Northern Cape Nature Conservation will be obtained before any protected plant species are removed.

- All rehabilitated areas, where applicable and possible, will be seeded with a vegetation seed mix adapted to reflect the local indigenous flora that was present prior to prospecting activities commenced, if the natural succession of vegetation is unacceptably slow.
- Fires will only be allowed in facilities or equipment specially constructed for this purpose.
- The end objective of the re-vegetation program will be to achieve a stable self-sustaining habitat unit.

- Groundwater
  - Immediate removal of any hydrocarbon spill.
  - Vehicle- and equipment maintenance will only be allowed within the dedicated maintenance area.
  - Only emergency breakdowns will be allowed in other areas. The following procedure will be followed if a vehicle or piece of equipment would break down outside of the maintenance area.
    - Drip pans will be placed at all points where diesel, oil or hydraulic fluid may drip and in so doing contaminate the soil.
    - All efforts will be made to move the broken down vehicle or piece of equipment to the maintenance area.
    - If the vehicle/piece of equipment cannot be moved, the broken part will firstly be drained of all fluid. The part will then be removed and taken to the maintenance area.
  - Equipment used as part of the proposed operation will be adequately maintained so as to ensure that oil, diesel, grease or hydraulic fluid does not leak during operation.
  - Fuel and other petrochemicals will be stored in steel receptacles that comply with SANS 10089-1:2003 (SABS 089-1:2003) standards.
  - Monitoring of groundwater quality.
  - Proper sanitation facilities will be provided for employees. No person will pollute the workings with faeces or urine, misuse the facilities provided or inappropriately foul the surrounding environment with faeces or urine. Acceptable hygienic and aesthetic practices will be adhered to.

- Noise
  - Hearing protection will be available for all employees where attenuation cannot be implemented.
  - Working hours will be kept between sunrise and sunset as far as possible.
  - As a minimum, ambient noise levels emanating from the prospecting activities will not exceed 82 dBA at the site boundary. When the equivalent noise exposure, as defined in the South African Bureau of Standards Code of Practice for the Measurement and Assessment of Occupational Noise for Hearing Conservation Purposes, SABS 083 as amended, in any place at or in any mine or works where persons may travel or work, exceeds 82 dB (A), the site manager will take the necessary steps to reduce the noise below this level.

- Alidabix will comply with the occupational noise Regulations of the Occupational Health and Safety Act, Act 85 of 1993.
- Alidabix will comply with the measures for good practice with regard to management of noise related impacts during construction and operation.
- The management objective will be to reduce any level of noise, shock and lighting that may have an effect on persons or animals, both inside the drilling area and that which may migrate outside the drilling area.
- If any complaints are received from the public or state department regarding noise levels the levels will be monitored at prescribed monitoring points.

Mechanical equipment:

- All mechanical equipment will be in good working order and vehicles will adhere to the relevant noise requirements of the Road Traffic Act.
- All vehicles in operation will be equipped with a silencer on their exhaust system.
- Safety measures, which generate noise such as reverse gear alarms on large vehicles, will be appropriately calibrated/adjusted.

- Palaeontological sites
  - A site visit by a professional palaeontologist be commissioned by the developer well before the commencement of the invasive phases of the prospecting programme.
  - The resulting palaeontological heritage assessment report should make recommendations for any mitigation or monitoring measures to be followed during siting, drilling and rehabilitation of the boreholes as well as for conservation of sedimentary borehole core material for future palaeontological analysis.
  - Chance Fossil Finds Procedure as outlined in PIA report should be followed.

- Soil
  - In all places of development the first 300mm of loose or weathered material found will be classified as a growth medium. The topsoil will be removed, where possible, from all areas where physical disturbance of the surface will occur.
  - In all areas where the above growth medium will be impacted on, it will be removed and stockpiled on a dedicated area. The maximum height of stockpiles will be 2 meters.
  - The growth medium/topsoil will be used during the rehabilitation of any impacted areas, after sloping in order to re-establish the same land capability.
  - If any soil is contaminated during the life of the prospecting area, it will either be treated on site or be removed together with the contaminant and placed in acceptable containers to be removed with the industrial waste to a recognized facility or company.

- Erosion control in the form of re-vegetation and contouring of slopes will be implemented on disturbed areas in and around the site.
- The stored topsoil will be adequately protected from being blown away or being eroded.
- Compacted areas will be ripped to a depth of 300mm, where possible, during the continuous rehabilitation, decommissioning and closure phases of the operation in order to establish a growth medium for vegetation.
- Vehicle movement will be confined to established roads and access tracks for as far as practical in order to prevent the compaction of soils.

- Surface water
  - The disposal of oil, grease and related industrial waste will be transported to the stores area in Prieska on a daily basis where it will be stored in steel containers supplied by an oil recycling contractor. All oil and grease will be removed on a regular basis from the operation by a registered approved contractor.
  - All refuse and waste from the different sections will be handled according to NEMA Guidelines. Recycling of waste is encouraged in all the consumer sections of the operation, where recyclable materials will be collected before dumping them in the domestic waste disposal area.
  - All non-biodegradable (recyclable) refuse such as glass bottles, plastic bags and metal scrap will be removed from the site on a regular basis and disposed of at a recognized disposal facility.
  - Erosion and storm water control measures will be implemented.
  - Vehicle repairs will only take place within the maintenance area for vehicles.
  - Re-fuelling will only take place in the re-fuelling area. If this is found not be practical, drip trays will be used whenever re-fuelling takes place outside of this area.
  - During rehabilitation the applicant will endeavour to reconstruct flow patterns in such a way that surface water flow is in accordance with the natural drainage of the area as far as practically possible.
  - Adhering to no-prospecting buffer zones placed around dry water courses.

- Topography
  - During rehabilitation the applicant will endeavour to reconstruct flow patterns in such a way that surface water flow is in accordance with the natural drainage of the area as far as practically possible.

- Visual
  - Waste material of any description will be removed from the prospecting area upon completion of the operation and be disposed of at a recognized landfill facility.
  - The drill rigs will be removed from the site upon completion of the prospecting operation.

(n) Aspects for inclusion as conditions of Authorisation.

Any aspects which must be made conditions of the Environmental Authorisation.

The general conditions; including management of activity, monitoring, recording and reporting to the Department, commissioning of the activity, operation of the activity, site closure and decommissioning as well as non-compliances; as required in terms of the Environmental Impact Assessment Regulations promulgated in terms of NEMA (Act 107 of 1998) as well as objectives and requirements of relevant legislation, policies and guidelines must be included in the Authorisation.

The recommendations included in the HIA report and the PIA report to be followed.

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

(Which relate to the assessment and mitigation measures proposed.)

The abovementioned mitigatory measures are tried and tested over many years in the prospecting / mining industry. Alidabix will monitor the potential impacts throughout the life of operation, and mitigate any deviations detected. This has been proven to be very effective in existing operations.

The EAP who compiled this document and its annexures have extensive knowledge in her field and it is hereby assumed that the above assumptions are adequate and that the information provided is in the region of 85% - 95% correct.

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

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

Five measures of economic impacts can be used to demonstrate the potential effect of the proposed prospecting operation on the local economy:

- Employment - The extent of employment can be measured as number of jobs or in terms of full time equivalents.
- Payroll income - The gross remuneration of employees in terms of salaries and wages.
- Capital Expenditure (CAPEX) - The total amount spent on the purchasing of fixed assets and total spent on construction.
- Operating expenditure and maintenance (OPEX) - The total amount spent locally by businesses on goods and services, excluding salaries and wages as well as rents or interest.
- Revenue - The total value of sales arising from business activity at the prospecting operation.

It is recommended that the activity should be authorized for the above reasons.

ii) Conditions that must be included in the authorisation

The general conditions; including management of activity, monitoring, recording and reporting to the Department, commissioning of the activity, operation of the activity, site closure and decommissioning as well as non-compliances; as required in terms of the Environmental Impact Assessment Regulations promulgated in terms of NEMA (Act 107 of 1998) as well as objectives and requirements of relevant legislation, policies and guidelines must be included in the Authorisation.

The recommendations included in the HIA report and the PIA report to be followed.

(q) Period for which the Environmental Authorisation is required.

Eight years

(r) Undertaking

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

Alidabix's undertaking to meet the requirements of the Basic Assessment Report and Environmental Management Programme Report is attached at the end of the EMPr and is applicable to both documents.

(s) Financial Provision

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

R154 006.43

(i) Explain how the aforesaid amount was derived.

No	Description	Quantity
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines) Not applicable – There will be no processing plant.	0
2(A)	Demolition of steel buildings and structures Not applicable – There will be no steel buildings and structures on the site.	0
2(B)	Demolition of reinforced concrete buildings and structures Not applicable – There will be no reinforced concrete buildings or structures on the site.	0

3	Rehabilitation of access roads The operation shall utilize existing farm roads as far as possible. Provision is made for 500m access tracks x 3m wide.	1 500m²
4(A)	Demolition and rehabilitation of electrified railway lines There are no electrified railway lines on the site.	0
4(B)	Demolition and rehabilitation of non-electrified railway lines There are no non-electrified railway lines on the site.	0
5	Demolition of housing and/or administration facilities Not applicable – There will be no housing and/or administration on the site.	0
6	Opencast rehabilitation including final voids and ramps Not applicable – There will be no bulk sampling activities	0
7	Sealing of shafts adits and inclines There will be no shafts, adits or inclines on the site.	0
8(A)	Rehabilitation of overburden and spoils Not applicable – There will be no bulk sampling activities	0
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential) Not applicable – There will be no processing waste deposits and evaporation ponds on the site.	0
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential) Not applicable – There will be no processing waste deposits and evaporation ponds on the site.	0
9	Rehabilitation of subsided areas There are no subsided areas on the mine	0
10	General surface rehabilitation - Boreholes (25 percussion boreholes: 10m x 10m disturbance each) - Boreholes (15 core boreholes: 10m x 10m disturbance each)	0.25 Ha 0.15 Ha 0.40 Ha
11	River diversions There are no rivers on the site.	0

12	Fencing There will be no fences established on the site.	0
13	Water management There are no areas where water management is necessary	0
14	2 to 3 years maintenance and aftercare Not applicable – Due to the small size of the operation no aftercare and maintenance is proposed.	0
15 (A) & 15(B)	Specialist study Al specialist studies have been conducted and paid	0

CALCULATION OF THE QUANTUM

Applicant: **ALIDABIX (PTY) LTD** **Ref No:** **NC 12131 PR**
Date: **MAY 2018**

No.	Description	Unit	A Quantity	B Master Rate	C Multiplication factor	D Weighting factor 1	E=A*B*C*D Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and pow erlines)	m3	0.00	14.74	1	1	0.00
2 (A)	Demolition of steel buildings and structures	m2	0.00	205.30	1	1	0.00
2(B)	Demolition of reinforced concrete buildings and structures	m2	0.00	302.55	1	1	0.00
3	Rehabilitation of access roads	m2	1 500.00	36.74	1	1	55 107.16
4 (A)	Demolition and rehabilitation of electrified railw ay lines	m	0.00	356.58	1	1	0.00
4 (A)	Demolition and rehabilitation of non-electrified railw ay lines	m	0.00	194.50	1	1	0.00
5	Demolition of housing and/or administration facilities	m2	0.00	410.60	1	1	0.00
6	Opencast rehabilitation including final voids and ramps	ha	0.000	208 974.98	1	1	0.00
7	Sealing of shafts adits and inclines	m3	0.00	110.21	1	1	0.00
8 (A)	Rehabilitation of overburden and spoils	ha	0.000	139 172.58	1	1	0.00
8 (B)	Rehabilitation of processing w aste deposits and evaporation ponds (non-polluting potential)	ha	0.00	178 720.07	1	1	0.00
8 (C)	Rehabilitation of processing w aste deposits and evaporation ponds (polluting potential)	ha	0.00	519 087.80	1	1	0.00
9	Rehabilitation of subsided areas	ha	0.00	120 155.21	1	1	0.00
10	General surface rehabilitation	ha	0.40	113 672.02	1	1	45 468.81
11	River diversions	ha	0.00	113 672.02	1	1	0.00
12	Fencing	m	0.00	129.66	1	1	0.00
13	Water management	ha	0.00	43 221.30	1	1	0.00
14	2 to 3 years of maintenance and aftercare	ha	1.05	15 127.45	1	1	15 883.83
15 (A)	Specialist study	Sum	0.00			1	0.00
15 (B)	Specialist study	Sum	0.00			1	0.00
					Total of 1 - 15 above		**116 459.79**

weighting factor 2
1

Subtotal 1	**116 459.79**

1	Preliminary and General	6 987.59	6 987.59
2	Contingencies	11 645.98	11 645.98
		Subtotal 2	**135 093.36**
		VAT (14%)	18 913.07
		Grand Total	**154 006.43**

An escalation at inflation cost per annum of the master rate was calculated from 2004 – 2016 according to the Consumer Price Index as published on Stats SA. (2005 – 3.0; 2006 – 4.0; 2007 – 6.0; 2008 – 9.3; 2009 – 8.1; 2010 – 6.2; 2011 – 3.7; 2012 – 6.3; 2013 – 5.4; 2014 – 5.8; 2015 – 4.4; 2016 – 6.2; 2017 – 6.6; 2018 – 4.4)

(ii) Confirm that this amount can be provided for from operating expenditure.

(Confirm that the amount, is anticipated to be an operating cost and is provided for as such in the Mining Work Programme, Financial and Technical Competence Report or Prospecting Work Programme as the case may be.)

Provision has been made in table 9.1 of the Prospecting Work Programme for rehabilitation.

(t) Specific information required by the competent Authority
Compliance with the provisions of Sections 24(4)(a) and (b) read with Section 24(3)(a) and (7) of the National Environmental Management Act (Act 107 of 1998). The EIA report must include the:-

(1) Impact on the socio-economic conditions of any directly affected parson.

(Provide the results of investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any directly affected person including the landowner, lawful occupier, or, where applicable, potential beneficiaries of any land restitution claim, attach the investigation report as an Appendix.)

- Impact on landowner:
  Positive: Compensation of land lost to prospecting.
  Negative: Temporary loss of grazing land.

- Impact on other I&AP:
  - Employment - The extent of employment can be measured as number of jobs or in terms of full time equivalents.
  - Payroll income - The gross remuneration of employees in terms of salaries and wages.
  - Capital Expenditure (CAPEX) - The total amount spent on the purchasing of fixed assets and total spent on construction.
  - Operating expenditure and maintenance (OPEX) - The total amount spent locally by businesses on goods and services, excluding salaries and wages as well as rents or interest.
  - Revenue - The total value of sales arising from business activity at the prospecting operation.

(2) Impact on any national estate referred to in Section 3(2) of the National Heritage Resources Act.

The Desktop Heritage Impact Assessment Report and Palaeontological Heritage Report: Desktop Study lists a number of recommendations relating to any archaeological or palaeontological finds.

Should these recommendations be adhered to by Alidabix, no impact on any national estate in terms of Section 3(2) of the National Heritage Resources Act is foreseen.

(u) Other matters required in terms of Sections 24(4)(a) and (b) of the Act.

(The EAP managing the application must provide the competent authority with detailed, written proof of an investigation as required by Section 24(4)(b)(i) of the Act and motivation if no reasonable or feasible alternatives, as contemplated in sub-regulation 22(2)(h), exist. The EAP must attach such motivation as Appendix.)

No viable alternatives were found. Find attached motivation as Appendix '9'.

PART B
ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

a) Details of the EAP

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

Refer to Part A, page 4 of this document for the details of M and S Consulting (Pty) Ltd.

b) Description of the Aspects of the Activity

(Confirm that the requirement to describe the aspects of the activity that are covered by the draft environmental management programme is already included in Part A, Section (1)(h) herein as required.)

Alidabix's prospecting activities for Copper, Zinc, Gold, Silver, Diamond General, Diamond Alluvial, Diamond in Kimberlite, Molybdenum, Nickel and Platinum Group Metals shall be conducted in ten phases over a period of five years.

Phase	Activity (what are the activities that are planned to achieve optimal prospecting)	Skill(s) required (refers to the competent personnel that will be employed to achieve the required results)	Timeframe (in months) for the activity)	Outcome (What is the expected deliverable, e.g. Geological report, analytical results, feasibility study, etc.)	Timeframe for outcome (deadline for the expected outcome to be delivered)	What technical expert will sign off on the outcome? (e.g. geologist, mining engineer, surveyor, economist, etc)
1	**Non-invasive Prospecting** Review of historical activities	Geologist	Month 1 – 6	Maps, Plan & Report	Month 7	Geologist
2	**Non-invasive Prospecting** Geological Mapping	Geologist	Month 7 - 12	Map & Report	Month 13	Geologist
3	**Non-invasive Prospecting** Geophysical Survey	Geophysicist	Month 13 - 18	Map & Report	Month 19	Geophysicist
4	**Invasive Prospecting** Percussion drilling	Geologist & Drilling contractor	Month 19 - 24	Drill logs	Month 24	Geologist
5	**Non-invasive Prospecting** Analysis of drill samples	Laboratory	Month 25 - 30	• Analyses sheets • Laboratory report • Map • Report	Month 31	Laboratory & Geologist
6	**Invasive Prospecting** Core drilling	Geologist & Drilling contractor	Month 31 - 36	Drill logs	Month 36	Geologist
7	**Non-invasive Prospecting** Analysis of drill samples	Laboratory	Month 37 - 42	• Analyses sheets • Laboratory report • Map • Report	Month 43	Laboratory & Geologist
8	**Invasive Prospecting** Core drilling	Geologist & Drilling contractor	Month 43 - 48	Drill logs	Month 48	Geologist
9	**Non-invasive Prospecting** Analysis of drill samples	Laboratory	Month 49 - 54	• Analyses sheets • Laboratory report • Map • Report	Month 54	Laboratory & Geologist
10	**Non-Invasive Prospecting** Feasibility study	Geologist	Month 55 - 60	Resource Calculations to evaluate economic viability of the project	Month 60	Geologist & CEO

c) Composite Map

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

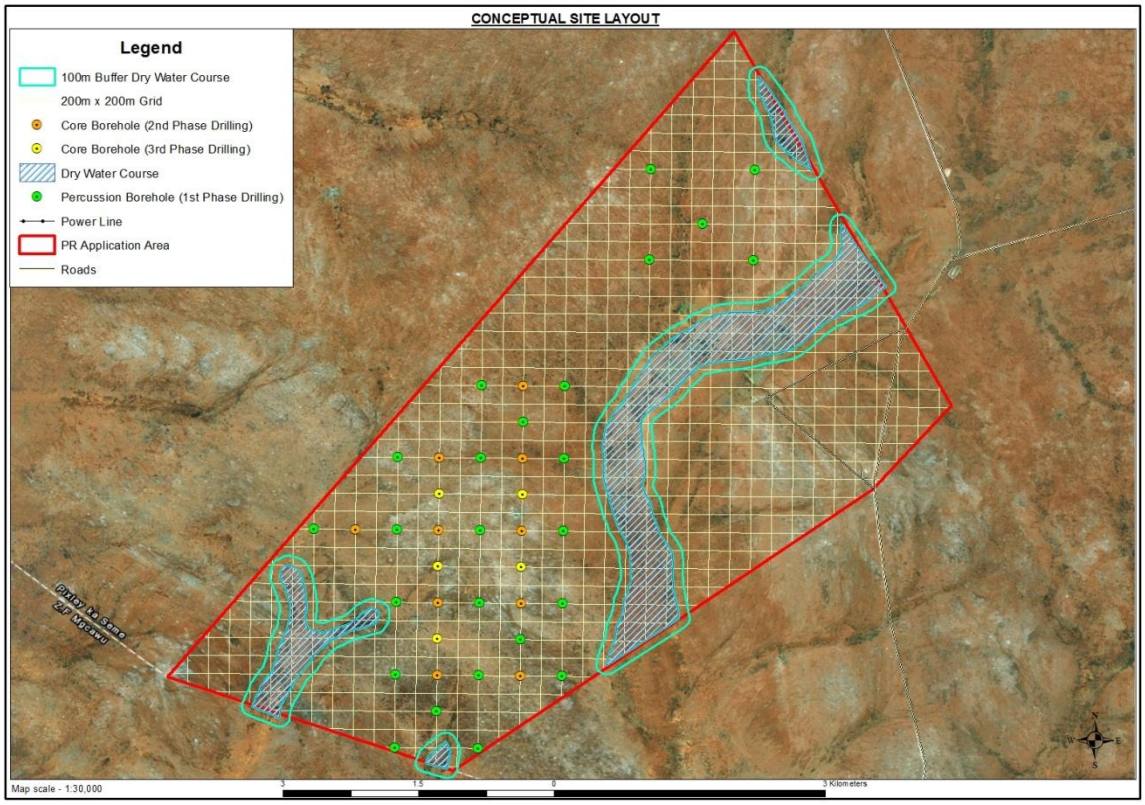


Figure 16 – Conceptual site layout (See Appendix '4')

d) Description of Impact Management Objectives including management statements

(i) Determination of closure objectives

(Ensure that the closure objectives are informed by the type of environment described.)

- The main closure objective of Alidabix's planned prospecting operation is to restore the site to its current land capability in a sustainable matter.
- To prevent the sterilization of any ore reserves.
- To prevent the establishment of any permanent structures or features.
- To manage and limit any impact to the surface and groundwater aquifers in such a way that an acceptable water quality and yield can still be obtained, when a closure certificate is issued.
- To establish a stable and self sustainable vegetation cover.
- To limit and rehabilitate any erosion features and prevent any permanent impact to the soil capability.
- To limit and manage the visual impact of the prospecting activities.
- To safeguard the safety and health of humans and animals on the site.
- To close the prospecting operation efficiently, cost effectively and in accordance with Government Policy.

(ii) Volumes and rate of water use required for the operation.

There will only be two water uses at the site, being:

- Domestic use (drinking water)
  The drilling team, consisting of five people, will be on the site during Phases 4, 6 and 8 of the prospecting operation. Provision for 50 litres of water per day is made for drinking water.

- Water use to keep the core bit of the drilling rig cool
  Water for the core drill rig will be needed during Phases 6 and 8 of the prospecting operation. Alidabix plans to drill a total of fifteen core boreholes at fifty meters deep each. Provision is made for 5 000 – 8 000 liters of water per day for the drill rig.

  General prospecting operations' water use requirement will not exceed 8 000 litres per day on average over a year on the property.

(iii) Has a water use license been applied for?

The Acting Director-General of Water and Sanitation has, in terms of Section 39 of the National Water Act, published the revised General Authorisation (GNR 538 of 02 September 2016) pertaining to the taking and storing of water, water uses in terms of Section 21(a) and 21(b) of the National Water Act respectively.

The General Authorisation came into effect on 1 March 2017 and replaced the General Authorisation for the taking and storing of water contained in GNR399 of 26 March 2004.

In terms of clause 7.2 of the Schedule to the 2017 General Authorisations, registration of a water use is only required if more than 10m³ of water is taken from a groundwater resource per day on average over a year on a property.

As stated in paragraph d(ii) above, Alidabix's water use shall not exceed 10 000 litres (10m³) per day.

Our understanding of the NWA was that, with the removal of "Small Industrial Users" in the amendments made to Schedule 1 of the NWA, the introduction of the revised General Authorisation (GNR 538 of 02 September 2016) catered for the "Small Industrial Users" who has lawful access to the property, albeit at a lower rate of 10m³ per day (Regulation 7.2 of GNR 538, registration of a water use is only required if more than 10m³ of water is taken from a groundwater resource per day on average over a year on a property).

Alidabix's water requirement for core drilling during phases 6 and 8 of the Prospecting Work Programme ("PWP") will be 5 000 – 8 000 litres of water per day when the core drill is operational. In the event that water is not available on the property under GNR538, without the requirement to register, Alidabix will:

- Source the water required for the prospecting activities from a legal source in the area or bring the water required in via a mobile water tanker; and/or
- Substitute the core drilling (phases 6 & 8 of the PWP) with reverse circulation drilling (RC drilling), which does not use water.

In the event that either one, or both of the two alternatives above is implemented, Alidabix will not be engaging in a Water Use activity in terms of the NWA, and will therefore not be required to apply for a Water Use License.

(iv) Impacts to be mitigated in their respective phases
Measures to rehabilitate the environment affected by the undertaking of any listed activity.

ACTIVITY (e.g. For prospecting – drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access rout etc…etc…etc e.g. For mining - excavations, blasting, stockpiles, discard dumps or dams, loading, hauling and transport, water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc…)	**PHASE** Of operation in which activity will take place State: Planning and design, pre-construction, construction, operational, rehabilitation, closure, post-closure	**SIZE AND SCALE of disturbances** Volumes, tonnages and hectares or m^2)	**MITIGATION MEASURES** (describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants.)	**COMPLIANCE WITH STANDARDS** (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to rehabilitation specifically this must take place at the earliest opportunity. With regard to rehabilitation, therefore state either: - Upon cessation of the individual activity, or - Upon cessation of the mining, bulk sampling or alluvial diamond prospecting as the case may be.
Access Tracks	Operational Rehabilitation Closure	1 500m^2	• Maintenance of roads / access tracks. • Dust control and monitoring. • Groundwater quality monitoring • Noise control and monitoring. • Speed limits.	The following must be placed at the site and is applicable to all activities: ○ Relevant Legislation; ○ Acts; ○ Regulations; ○ COP's; and ○ SOP's	Ripping of access tracks upon closure of prospecting right.

			• Stormwater run-off control • Erosion control • Immediately clean hydrocarbon spills • Ripping of access tracks / roads upon closure.	Management and staff must be trained to understand the contents of these documents, and to adhere to thereto. • Environmental Awareness Training must be provided to employees. • The operation must have a rehabilitation and closure plan. Management and staff must be trained to understand the contents of these documents, and to adhere to thereto. Biennially Performance Assessment Reports and Quantum Calculations must be done to ensure that the operation adheres to the contents of the BAR & EMPr documents.	
Chemical toilets	Operational Closure	6m² each	• Maintenance of the toilets. • Removal of toilets upon closure.		Removal of toilets upon closure of prospecting right.
Drilling activities	Operational Rehabilitation Closure	4 000m²	• Avoidance of unnecessary removal of vegetation. • Continuous rehabilitation of disturbed areas, re-vegetation and monitoring of re-growth • Controlled drilling operations, preferably on wind-free days • Immediate removal of any hydrocarbon spills • Maintenance and re-fuelling to take place in dedicated area • Drip pans • Storage of hydrocarbons in dedicated area • Hearing protection • Working hours kept between sun-up and sun-down • Ripping of compacted / disturbed areas		Ripping of disturbed areas upon closure of prospecting right.

e) Impact Management Outcomes

(A description of impact management outcomes, identifying the standard of impact management required for the aspects contemplated in paragraph.)

ACTIVITY (whether listed or not listed) (e.g. excavations, blasting, stockpiles, discard dumps or dams, loading, hauling and transport, water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc…)	**POTENTIAL IMPACT** (Including the potential impacts for cumulative impacts) (e.g. dust, noise, drainage, surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc…etc…)	**ASPECTS AFFECTED**	**PHASE** In which impact is anticipated. (e.g. Construction, commissioning, operational, decommissioning, closure, post-closure)	**MITIGATION TYPE** modify, remedy, control or stop through: (e.g. noise control measures, stormwater control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc…etc…) (e.g. modify through alternative method. Control through noise control. Control through management and monitoring through rehabilitation.)	**STANDARD TO BE ACHIEVED** (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives etc.)
Access tracks	• Dust • Disturbance of the natural habitat of fauna • Disturbance / destruction of natural vegetation cover • Groundwater contamination from hydrocarbon spills • Noise from vehicles travelling on the access tracks • Compaction of soil. • Erosion	Air quality Fauna Flora Groundwater Soil Surface water	Operational Rehabilitation Closure	• Maintenance of access tracks • Dust control and monitoring • Groundwater quality monitoring • Noise control and monitoring • Speed limits • Stormwater run-off control. • Erosion control	• Safety ensured. • Dust levels minimized. • Minimize potential for hydrocarbon spills to infiltrate into groundwater. • Noise levels minimized. • Rehabilitation standards and closure objectives met. • Erosion potential

				• Immediately clean hydrocarbon spills • Rip disturbed areas to allow re-growth of vegetation cover	minimized.
Chemical toilets	• Soil contamination • Groundwater contamination	Groundwater Soil	Operational Closure	• Maintenance of toilets on regular basis. • Removal of toilets upon closure.	• Minimize the potential for a chemical spill on soil, which could infiltrate to groundwater.
Drilling activities	• Nuisance dust created by drill rig • Disturbance of the natural habitat of fauna • Disturbance / destruction of natural vegetation cover • Groundwater contamination from hydrocarbon spills • Noise from drill rig • Compaction and / or disturbance of soil structure • Changing of natural aesthetic view of environment by drill rig	Air quality Fauna Flora Groundwater Soil Surface water	Operational Rehabilitation Closure	• Avoidance of unnecessary removal of vegetation • Continuous rehabilitation of disturbed areas, re-vegetation and monitoring of re-growth • Controlled drilling operations, preferably on wind-free days • Immediate removal of any hydrocarbon spill • Maintenance and re-fuelling to take place in dedicated area • Drip pans • Storage of hydrocarbons in dedicated area • Hearing protection • Working hours • Ripping of compacted areas	• Dust levels minimized. • Rehabilitation standards and closure objectives met. • Minimize potential for hydrocarbon spills to infiltrate into groundwater. • Erosion potential minimized. • Noise levels minimized.

f) Impact Management Actions

(A description of impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated in paragraphs © and (d) will be achieved.)

ACTIVITY (whether listed or not listed) (e.g. excavations, blasting, stockpiles, discard dumps or dams, loading, hauling and transport, water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc…)	POTENTIAL IMPACT (Including the potential impacts for cumulative impacts) (e.g. dust, noise, drainage, surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc…etc…)	MITIGATION MEASURES (describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants.)	TIME PERIOD FOR IMPLEMENTATION Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to rehabilitation specifically this must take place at the earliest opportunity. With regard to rehabilitation, therefore state either: - Upon cessation of the individual activity, or - Upon cessation of the mining, bulk sampling or alluvial diamond prospecting as the case may be.	COMPLIANCE WITH STANDARDS (A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed management standards or practices that have been identified by Competent Authorities.)
Access tracks	• Dust • Disturbance of the natural habitat of fauna • Disturbance / destruction of natural vegetation cover • Groundwater contamination from hydrocarbon spills • Noise from vehicles travelling on the access tracks • Compaction of soil. • Erosion	• Maintenance of access tracks / roads • Dust control and monitoring • Groundwater quality monitoring • Noise control and monitoring • Speed limits • Stormwater run-off control. • Erosion control • Immediately clean hydrocarbon spills	Ripping of access tracks upon closure of prospecting right.	The following must be placed at the site and is applicable to all activities: ○ Relevant Legislation; ○ Acts; ○ Regulations; ○ COP's; and ○ SOP's Management and staff must be trained to understand the contents of these documents, and to adhere to thereto.

		• Rip disturbed areas to allow re-growth of vegetation cover		
Chemical toilets	• Soil contamination • Groundwater contamination	• Maintenance of toilets on regular basis. • Removal of toilets upon closure.	Removal of toilets upon closure of prospecting right.	The following must be placed at the site and is applicable to all activities: ○ Relevant Legislation; ○ Acts; ○ Regulations; ○ COP's; and ○ SOP's Management and staff must be trained to understand the contents of these documents, and to adhere to thereto.
Drilling activities	• Nuisance dust created by drill rig • Disturbance of the natural habitat of fauna • Disturbance / destruction of natural vegetation cover • Groundwater contamination from hydrocarbon spills • Noise from drill rig • Compaction and / or disturbance of soil structure • Changing of natural	• Avoidance of unnecessary removal of vegetation • Continuous rehabilitation of disturbed areas, re-vegetation and monitoring of re-growth • Controlled drilling operations, preferably on wind-free days • Immediate removal of any hydrocarbon spill • Maintenance and re-fuelling to take place in dedicated area	Ripping of drilling sites upon closure of prospecting right. Chance Fossil Find Procedure for the duration of opearions.	The following must be placed at the site and is applicable to all activities: ○ Relevant Legislation; ○ Acts; ○ Regulations; ○ COP's; and ○ SOP's Management and staff must be trained to understand the contents of these documents, and to adhere to thereto.

	aesthetic view of environment by drill rig • Damage or loss of Archaeological significant artefacts • Damage or loss of Palaeontological significant artefacts.	• Drip pans • Storage of hydrocarbons in dedicated area • Hearing protection • Working hours • Ripping of compacted areas • Archaeological: Field staff should be sensitised to the possibility of finding surface Stone Age manufacturing sites in the area. Field staff should look for the following indicators of unmarked sub-surface sites that could be encountered: ○ Ash deposits (unnaturally grey appearance of soil compared to the surrounding substrate); ○ Bone concentrations, either animal or human; ○ Ceramic fragments such as pottery shards either historic or pre-contact; and ○ Stone concentrations of any formal nature. Should any sub-surface		

		remains of heritage sites be identified as indicated above: ○ All operators of excavation equipment should be made aware of the possibility of the occurrence of sub-surface heritage features and the following procedures should they be encountered. ○ All construction in the immediate vicinity (50m radius of the site) should cease. ○ The heritage practitioner should be informed as soon as possible. ○ In the event of obvious human remains the South African Police Services (SAPS) should be notified. ○ Mitigation measures (such as refilling etc.) should not be attempted. ○ The area in a 50m radius of the find should be cordoned off with hazard tape. ○ Public access should		

		be limited. ○ The area should be placed under guard. ○ No media statements should be released until such time as the heritage practitioner has had sufficient time to analyse the finds. The specific borehole locations be checked by a suitably qualified heritage practitioner when their locations have been finalized and that a qualified palaeontologist be approached to assist with the core drill placements. This could result in the prospecting adding positively to the palaeontological record rather than damage it. • Palaeontological: ○ A site visit by a professional palaeontologist to be commissioned before the commencement of the invasive phases of the prospecting programme. ○ The resulting palaeontological		

		heritage assessment report should make recommendations for any mitigation or monitoring measures to be followed during siting, drilling and rehabilitation of the boreholes as well as for conservation of sedimentary borehole core material for future palaeontological analysis. ○ Chance Fossil Finds Procedure as outlined in the PIA report should be followed.		

g) Financial Provision

(1) Determination of the amount of Financial Provision.

a. Describe the closure objectives and the extent to which they have been aligned to the baseline environment described under the Regulation.

- The main closure objective of Alidabix's planned prospecting operation is to restore the site to its current land capability in a sustainable matter.
- To prevent the sterilization of any ore reserves.
- To prevent the establishment of any permanent structures or features.
- To manage and limit any impact to the surface and groundwater aquifers in such a way that an acceptable water quality and yield can still be obtained, when a closure certificate is issued.
- To establish a stable and self sustainable vegetation cover.
- To limit and rehabilitate any erosion features and prevent any permanent impact to the soil capability.
- To limit and manage the visual impact of the prospecting activities.
- To safeguard the safety and health of humans and animals on the site.
- To close the prospecting operation efficiently, cost effectively and in accordance with Government Policy.

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

Surface owner consultation process:
A meeting was held with the surface owner; Mr. F. van der Westhuizen (Trustee of the Flip van der Westhuizen Trust) on the 22nd of May 2018 (refer to Appendix '7' for the attendance register and meeting minutes). A copy of the BAR & EMPR was provided to Mr. van der Westhuizen during this meeting for comment.

Subsequent the meeting, Mr. van der Westhuizen of the Flip van der Westhuizen Trust appointed an attorney, Mr. P.S. Lange of Lange Carr & Wessels Inc., to assist with the consultation process between the Trust and Alidabix. Mr. van der Westhuizen completed the response form (as provided with the Background Information Document), which form was sent via the appointed attorney. Mr. van der Westhuizen requested a number of documentation on the response form to allow him to partake effectively and meaningfully in the consultative process.

On the 20th of June 2018 a response was sent to Lange Car & Wessels, providing a number of requested documents.

On the 28th of June 2018 Lange Car & Wessels provided a response form, which was completed by Mr. van der Westhuizen. Mr. van der Westhuizen's concerns as listed in the response form are as follows:

- Water resources will be at risk. A permit must be obtained in terms of the National Water Act, 1998 (Act 36 of 1998).
- Negative experience with Directors of Alidabix on previous prospecting operations on another property of Mr. van der Westhuizen.
- No prospecting boreholes may be drilled within 500m from existing boreholes.
- Alidabix must comply with BEE requirements.

- Existing security measures (CCV cameras) must be expanded by the applicant.
- Request that no boreholes be drilled deeper than 40m (beneath the groundwater table).

On the 2nd of July 2018 a response letter was sent to Lange Car & Wessels addressing the issues identified in the response sheet.

Public Participation process followed after granting of Environmental Authorisation:
Alidabix's Environmental Authorisation was granted on 20 November 2018, whereafter interested and affected parties were notified in terms of Section 4(2) of the NEMA Environmental Impact Assessment Regulations, 2014. These letters were sent on the 28th of November 2018 and either sent per e-mail or registered mail.

Responses received:

- Flip van der Westhuizen Trust (11 January 2019) sent an email requesting the following information:
  - Depths of percussion and core boreholes.
  - Locality of access tracks.
  - Volume of water use for drilling activities.
  - Security.

On 11 February 2019 an email was send to Flip van der Westhuizen in response to his email of 11 January 2019.

Appeals against the granting of the Environmental Authorisation (refer to Appendix '8'):

- Flip van der Westhuizen Trust (18 January 2019)

  The grounds of appeal are as follows:
  - Location of subject property incorrect.
  - Applicant compelled to apply for water use license in terms of National Water Act, 1998 (Act 36 of 1998).

  A response to the appeal was submitted to the Director: Appeals and Legal Review on 7 February 2019.

- Appeal decision received from the Minister of Environmental Affairs

  The appeal by the Flip van der Westhuizen Trust is dismissed.

c. Provide a rehabilitation plan that describes and shows the scale and aerial extent of the main prospecting activities, including the anticipated prospecting area at the time of closure.

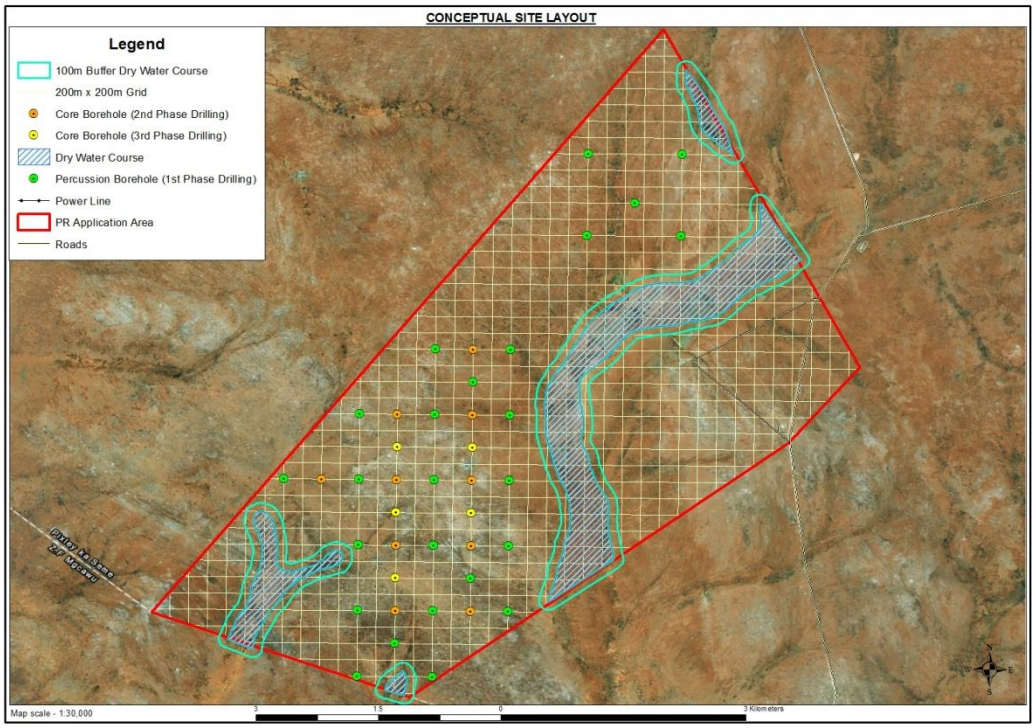


Figure 17 – Conceptual site layout map indicating proposed activities

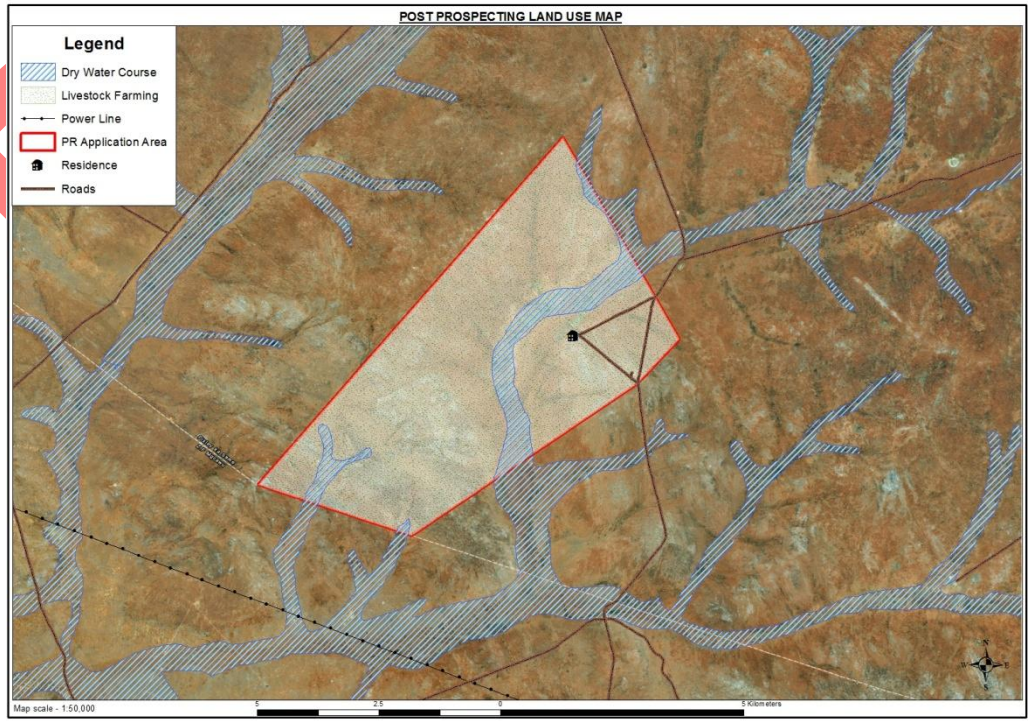


Figure 18 – Post prospecting land use map

Rehabilitation Plan:

- Rehabilitation of boreholes
  - All shallow boreholes (i.e. <10m) will be backfilled and levelled.
  - All boreholes deeper than 10m will be covered with a metal plate and 1000mm of previously stored topsoil.

- Final rehabilitation of access tracks and / roads
  After rehabilitation has been completed, all roads will be ripped or ploughed, providing the landowner does not want them to remain that way and with written approval from the Director Mineral Development of the Department of Mineral Resources.

- Submission of information
  Reports on rehabilitation and monitoring will be submitted biennially to the Department of Mineral Resources - Kimberley, as described in Regulation 55.

- Maintenance (Aftercare)
  Maintenance after closure will mainly concern the regular inspection and monitoring and/or completion of the re-vegetation programme for a period of at least two rainy seasons.

  The aim of this Environmental Management Plan is for rehabilitation to be stable and self-sufficient, so that the least possible aftercare is required.

  The aim with the closure of the prospecting operation will be to create an acceptable post-prospecting environment and land-use. Therefore all agreed commitments will be implemented by Prospecting Management.

- After-effects following closure
  - Acid drainage
    No potential for bad quality leach ate or acid drainage development exists.

  - Long term impact on ground water and / or surface water.
    No after effect on the groundwater yield or quality or surface water quality is expected.

  - Long-term stability of rehabilitated land
    One of the main aims of any rehabilitated ground will be to obtain a self-sustaining and stable end result. Alidabix's prospecting activities will not include bulk sampling which could impact on the stability of the land.

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

The main closure objective of Alidabix's planned prospecting operation is to restore the site to its current land capability in a sustainable matter. The rehabilitation activities proposed in the above rehabilitation plan will ensure that the land reverts back to grazing land upon closure of the prospecting right.

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

CALCULATION OF THE QUANTUM

Applicant: **ALIDABIX (PTY) LTD** **Ref No:** **NC 12131 PR**
Date: **MAY 2018**

No.	Description	Unit	A Quantity	B Master Rate	C Multiplication factor	D Weighting factor 1	E=A*B*C*D Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and pow erlines)	m3	0.00	14.74	1	1	0.00
2 (A)	Demolition of steel buildings and structures	m2	0.00	205.30	1	1	0.00
2(B)	Demolition of reinforced concrete buildings and structures	m2	0.00	302.55	1	1	0.00
3	Rehabilitation of access roads	m2	1 500.00	36.74	1	1	55 107.16
4 (A)	Demolition and rehabilitation of electrified railw ay lines	m	0.00	356.58	1	1	0.00
4 (A)	Demolition and rehabilitation of non-electrified railw ay lines	m	0.00	194.50	1	1	0.00
5	Demolition of housing and/or administration facilities	m2	0.00	410.60	1	1	0.00
6	Opencast rehabilitation including final voids and ramps	ha	0.000	208 974.98	1	1	0.00
7	Sealing of shafts adits and inclines	m3	0.00	110.21	1	1	0.00
8 (A)	Rehabilitation of overburden and spoils	ha	0.000	139 172.58	1	1	0.00
8 (B)	Rehabilitation of processing w aste deposits and evaporation ponds (non-polluting potential)	ha	0.00	178 720.07	1	1	0.00
8 (C)	Rehabilitation of processing w aste deposits and evaporation ponds (polluting potential)	ha	0.00	519 087.80	1	1	0.00
9	Rehabilitation of subsided areas	ha	0.00	120 155.21	1	1	0.00
10	General surface rehabilitation	ha	0.40	113 672.02	1	1	45 468.81
11	River diversions	ha	0.00	113 672.02	1	1	0.00
12	Fencing	m	0.00	129.66	1	1	0.00
13	Water management	ha	0.00	43 221.30	1	1	0.00
14	2 to 3 years of maintenance and aftercare	ha	1.05	15 127.45	1	1	15 883.83
15 (A)	Specialist study	Sum	0.00			1	0.00
15 (B)	Specialist study	Sum	0.00			1	0.00
					Total of 1 - 15 above		**116 459.79**

weighting factor 2
1

		Subtotal 1	**116 459.79**
1	Preliminary and General	6 987.59	6 987.59
2	Contingencies	11 645.98	11 645.98
		Subtotal 2	**135 093.36**
		VAT (14%)	18 913.07
		Grand Total	**154 006.43**

An escalation at inflation cost per annum of the master rate was calculated from 2004 – 2016 according to the Consumer Price Index as published on Stats SA. (2005 – 3.0; 2006 – 4.0; 2007 – 6.0; 2008 – 9.3; 2009 – 8.1; 2010 – 6.2; 2011 – 3.7; 2012 – 6.3; 2013 – 5.4; 2014 – 5.8; 2015 – 4.4; 2016 – 6.2; 2017 – 6.6; 2018 – 4.4)

No	Description	Quantity
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines) Not applicable – There will be no processing plant.	0
2(A)	Demolition of steel buildings and structures Not applicable – There will be no steel buildings and structures on the site.	0
2(B)	Demolition of reinforced concrete buildings and structures Not applicable – There will be no reinforced concrete buildings or structures on the site.	0
3	Rehabilitation of access roads The operation shall utilize existing farm roads as far as possible. Provision is made for 500m access tracks x 3m wide.	1 500m²
4(A)	Demolition and rehabilitation of electrified railway lines There are no electrified railway lines on the site.	0
4(B)	Demolition and rehabilitation of non-electrified railway lines There are no non-electrified railway lines on the site.	0
5	Demolition of housing and/or administration facilities Not applicable – There will be no housing and/or administration on the site.	0
6	Opencast rehabilitation including final voids and ramps Not applicable – There will be no bulk sampling activities	0
7	Sealing of shafts adits and inclines There will be no shafts, adits or inclines on the site.	0
8(A)	Rehabilitation of overburden and spoils Not applicable – There will be no bulk sampling activities	0
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential) Not applicable – There will be no processing waste deposits and evaporation ponds on the site.	0
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential) Not applicable – There will be no processing waste deposits and evaporation ponds on the site.	0

9	Rehabilitation of subsided areas There are no subsided areas on the mine	0
10	General surface rehabilitation - Boreholes (25 percussion boreholes: 10m x 10m disturbance each) - Boreholes (15 core boreholes: 10m x 10m disturbance each)	0.25 Ha 0.15 Ha 0.40 Ha
11	River diversions There are no rivers on the site.	0
12	Fencing There will be no fences established on the site.	0
13	Water management There are no areas where water management is necessary	0
14	2 to 3 years maintenance and aftercare Not applicable – Due to the small size of the operation no aftercare and maintenance is proposed.	0
15 (A) & 15(B)	Specialist study Al specialist studies have been conducted and paid	0

f. Confirm that the financial provision will be provided as determined.

Alidabix has a financial guarantee to the amount of R154 007-00 at the DMR.

h) Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon, including:

a. **Monitoring of Impact Management Actions**
b. **Monitoring and reporting frequency**
c. **Responsible persons**
d. **Time period for implementing impact management actions**
e. **Mechanism for monitoring compliance**

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
- Access tracks - Drilling activities	Air quality	A single bucket monitoring system must be placed on the site during the drilling phase to measure the air quality levels and to ensure that Alidabix's operation adheres to the Management Standards as set out in the Atmospheric Pollution Prevention Act (45 of 1965), the Regulations of the MPRDA (28 of 2002) and the Mine, Health and Safety Act (29 of 1996).	Project manager Environmentalist	Monthly fall-out dust sampling and quarterly reporting to DMR during phases 4, 6 and 8.
- Access tracks - Drilling activities	Flora	A registered mine surveyor must conduct measurements of disturbed and rehabilitated areas on a quarterly basis. The measurements must be plotted on plans and kept for life of operation.	Project manager Environmentalist	Annual surveys and included with performance assessment reports submitted to the DMR biennially.

- Access tracks - Drilling activities	Groundwater	Water samples must be taken and analysed to ensure that they comply with the SANS 241-1:2011 drinking water quality.	Project manager Environmentalist	Biennial analysis and included with performance assessment reports and submitted to the DMR biennially.
- Access tracks - Drilling activities	Noise	Noise readings must be taken at pre-determined noise monitoring points with sufficient, calibrated sound level meter.	Project manager Environmentalist	Monthly analysis and included with performance assessment reports and submitted to the DMR biennially.
- Drilling activities	Archaeological and/or palaeontological significant artefacts	• Should any heritage sites be encountered the appropriate heritage practitioner should be informed; • Chance Fossil Finds Procedures listed in the EMPr for the non-invasive phases of the prospecting programme to be followed; • Chance Fossil Finds Procedure as outlined in the PIA report should be followed; and • Prior to the commencement of invasive prospecting activities, specific borehole locations be checked by a suitably qualified heritage practitioner and qualified palaeontologist when the borehole locations have been finalized.	Project manager Environmentalist Heritage specialist	Prior to the commencement of invasive prospecting activities.

i) Indicate the frequency of the submission of the performance assessment / environmental audit report.

An Audit Report will be conducted biennially in line with Regulation 26(e) of the Environmental Impact Assessment Regulations, 2014 of the National Environmental Management Act, 1998 (Act no 107 of 1998) (NEMA) and per Regulation 55(2) of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA).

j) Environmental Awareness Plan

(1) Manner in which the applicant intends to inform his or her employees of any environmental risk which may result from their work.

Alidabix shall provide and discuss the Environmental Awareness Plan with each employee during pre-employment induction. Monthly Environmental Awareness training shall be provided during life of operation.

(2) Manner in which risks will be dealt with in order to avoid pollution or the degradation of the environment.

Alidabix shall ensure that there is an Emergency Response Plan on site, clearly indicating the different procedures to potential incidents.

k) Specific information required by the Competent Authority
(Amongst others, confirm that the financial provision will be reviewed annually.)

The financial quantum will be conducted annually as is prescribed by Regulation 54 of the MPRDA and Regulations pertaining to the financial provision for prospecting, exploration, mining or production operations of the NEMA.

Alidabix shall provide the DMR with a progress and results report annually.

UNDERTAKING

The EAP herewith confirms:

a) the correctness of the information provided in the reports; ☒

b) the inclusion of comments and inputs from stakeholders and I&APs; ☒

c) the inclusion of inputs and recommendations from the specialist reports where relevant; and ☒

d) the acceptability of the project in relation to the finding of the assessment and level of mitigation proposed; ☒

Signature of the Environmental Assessment Practitioner:

Name of company:

Date: