

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT AND ENVIRONMENTAL MANAGEMENT PROGRAMME FOR THE PROPOSED MINING OF CLAY, SAND AND COAL ON A PORTION OF PORTION 85 OF THE FARM GROOTFONTEIN 165 IR AND A PORTION OF THE REMAINDER OF THE FARM VOGELSTRUISBULT 127, NIGEL, GAUTENG PROVINCE

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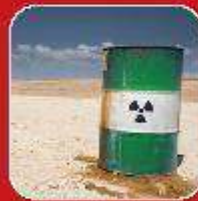
Department of Mineral Resources

Gauteng Region

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REPUBLIC OF SOUTH AFRICA

DRAFT

**ENVIRONMENTAL IMPACT ASSESSMENT REPORT
AND
ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT**

**FOR LISTED ACTIVITIES ASSOCIATED WITH THE MINING OF CLAY, SAND
AND COAL ON A PORTION OF PORTION 85 OF THE FARM GROOTFONTEIN
165 IR AND A PORTION OF THE REMAINDER OF THE FARM
VOGELSTRUISBULT 127, NIGEL, GAUTENG PROVINCE**

SUBMITTED FOR ENVIRONMENTAL AUTHORISATIONS 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)

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1. IMPORTANT NOTICE

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

Unless an Environmental 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 a permit are submitted in the exact format of, and provide all the information required in terms of, this template. Furthermore please be advised that failure to submit the information required in the format provided in this template will be regarded as 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.

2. OBJECTIVE OF THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

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

- (a) determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context;
- (b) describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
- (c) identify the location of the development footprint within the preferred site based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment;
- (d) determine the—
 - (i) nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives; and
 - (ii) degree to which these impacts—
 - (aa) can be reversed;
 - (bb) may cause irreplaceable loss of resources, and
 - (cc) can be avoided, managed or mitigated;
- (e) identify the most ideal location for the activity within the preferred site based on the lowest level of environmental sensitivity identified during the assessment;
- (f) identify, assess, and rank the impacts the activity will impose on the preferred location through the life of the activity;
- (g) identify suitable measures to manage, avoid or mitigate identified impacts; and
- (h) identify residual risks that need to be managed and monitored.

EXECUTIVE SUMMARY

Environmental Assurance (Pty) Ltd (ENVASS), as independent environmental consultant, was appointed by Brikor Limited to undertake the environmental authorisation process for the proposed mining of clay, sand and coal. The mining is proposed on a portion of Portion 85 of the Farm Grootfontein 165 IR and a portion of the Remainder of the Farm Vogelstruisbult 127 IR, constituting a total area of 105 ha (hectares). The proposed site is located approximately 5 km northwest of the town of Nigel within the Ekurhuleni Metropolitan Municipality in the Gauteng Province of South Africa.

Description of the Scope of the Proposed Overall Activity

The proposed Grootfontein opencast quarry mine will be used for the extraction of clay, sand and coal, (i.e. brick making raw materials).

The Brikor factory will be the only consumer of the brick clay mined from the proposed quarry. The clay will be used to make bricks and these products will be sold to the open market. The bricks will be burnt in a conventional “clamp” kiln on the Brikor site in the nearby vicinity and on completion of the process, the bricks will be sorted into two categories, - both of which is specified under SABS 227. The specified categories are FBA (Face brick “Aesthetic”) and NFP (Non-face bricks).

The mining operation will consist of earthmoving equipment that will be used to mine and stockpile the clay. The earth moving equipment on site will consist of the following:

- A number of 30 ton articulated dump trucks;
- 45 ton excavators;
- Bell water carts;
- Graders; and
- Bulldozers (D6 or equivalent).

The mining will be conducted over a wide face, which is progressively advanced with the appropriate benching, on the advancing face. The terrain also requires additional earthworks, after mining, to slope sidewalls, etc. Vegetation and topsoil will be removed annually, in advance of the mining exercise. Removed topsoil shall be kept

separate from overburden and shall not be used for building or maintenance of access and haul roads. In the event that vegetation does not naturally and quickly establish itself on the bund wall, the bund wall will be protected from being eroded by watering or wind. Rehabilitation of the disturbed surface will be done each year during the mining period. The topsoil and overburden removed yearly, will be used to rehabilitate the area disturbed during the previous year. That is, each year, a further area will be mined/disturbed and an equivalent area will be rehabilitated.

Clay will be used in the brick making process at the nearby Brikor factory. Coal will be used in the brick burning process. Once the bricks have been burnt/fired in a conventional “clamp” kiln at the Brikor brick factory which is in close proximity of the mining site, the following products can be sorted for sale:

- NFP – as “common” building bricks;
- FBA – as “face brick aesthetic” (i.e. a semi-face).

Existing infrastructure on the site includes Eskom power lines, telephone lines and basic secondary roads.

The construction phase will be limited to the grading of haul roads and the removal of overburden in preparation of the mining operations as well as constructing the pollution control dam.

The opening of the initial box-cut involves the removal of topsoil and subsoil in order to acquire access to the ore body. The removal of topsoil usually takes place with an excavator to an average depth of 0.5m. Extracted top soil material is then stored in piles for later use as backfill material during rehabilitation procedures.

Operational Phase (Process Description)

Mining will be done by means of opencast methods, using heavy-duty earth moving equipment as listed above. By using an excavator, the mining is done over a wide face, which is progressively advanced with prominent high walls in the advancing face. An excavator will be employed to remove the clay and mining trucks will transport the clay to a stockpile close to the adjacent factory, which will then be used for the production of bricks. As and when coal is exposed after the mining of clay, the coal

will be excavated in exactly the same way as the clay. The raw coal will be transported for coal washing, off site. The material is then washed for better use as an energy resource. As and when sand is exposed, sand will be excavated. Sand will be transported to the nearby brick making factory, crushed, screened, and washed and to be sold off as building material.

Legislative Requirements

The most important legislation applicable to the proposed project are the following:

- National Environmental Management Act (No. 107 of 1998) [as amended]

Section 24

Section 28 (1)

Duty of Care and responsibilities to minimise and remediate environmental degradation.

- Environmental Impact Assessment Regulations, 2014 [as amended]

The proposed construction, operational and closure activities of the proposed development triggers the following listed activity, listed in the EIA Regulations, for which a Scoping and Environmental Impact Assessment (EIA) process have to be conducted:

Activity 17:

Any activity including the operation of that activity which requires a mining right as contemplated in Section 22 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including associated infrastructure, structures and earthworks, directly related to the extraction of a mineral resource, including activities for which and exemption has been issued in terms of section 106 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).

- National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) [as amended] List of Waste Management Activities that have, or are likely to have a detrimental effect on the environment as promulgated in terms of the

National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
[as amended]

The proposed construction, operational and closure activities of the proposed development may trigger the following listed activities that are listed for which a Scoping and Environmental Impact Assessment (EIA) process have to be conducted:

Category B: “Residue stockpiles or residue deposits” - Activity 11:

The establishment or reclamation of a residue stockpile or residue deposit resulting from activities which require a mining right, exploration right or production right in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).

- National Water Act, 1998 (Act No. 36 of 1998) [as amended]; and
- Minerals and Petroleum Resources Development Act (Act No. 28 of 2002) (as amended)

Other legislation applicable to the proposed project include inter alia the following:

- Constitution of South Africa, 1996 (Act No. 108 of 1996) [as amended];
- Mineral and Petroleum Resources Development Act, 2002 (Act. 28 of 2002) [as amended];
- Waste Classification and Management Regulations and Norms and Standards for the assessment of for landfill disposal and for disposal of waste to landfill, 2013 (Government Notice 634 – 635 of 2013) promulgated in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) [as amended];
- Regulations regarding the planning and management of residue stockpiles and residue deposits from a prospecting, mining, exploration or production operation (GN R. 632 of 2015);
- National Water Act, 1998 (Act No. 36 of 1998) [as amended];
- Mine Health and Safety Act, 1996 (Act No. 29 of 1996) [as amended] and associated regulations;
- National Heritage Resources Act, 1999 (Act No. 25 of 1999);

- National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) [as amended];
- National Dust Control Regulations, 2013 (Government Notice 827 of 2013);
- Veld and Forest Fire Act, 1998 (Act No. 101 of 1998) [as amended];
- National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) [as amended];
- Alien and Invasive Species Regulations (Government Notice 598 of 2014) and Alien and Invasive Species List, 2016 in terms of NEMBA (Government Notice 864 of 2016);
- Conservation of Agricultural Resources Act (no. 43 of 1983);
- Hazardous Substances Act, 1973 (Act 15 of 1973) [as amended];
- Hazardous Chemical Substances Regulations, 1995 (Government Notice 1179 of 1995);
- Gauteng Transport Infrastructure Act, 2001 (Act No. 8 of 2001) [as amended];
- All other relevant national, provincial, district and local municipality legislation and guidelines that may be applicable to the application. Some of these are discussed in the next section; and
- All relevant SANS Standards.

Need and Desirability

The main benefits of the proposed Grootfontein Mine are:

- It contributes to the economic welfare of the surrounding community by sustaining working opportunities, in-house training and housing assistance;
- It contributes to the upliftment of living standards of the local community.

The net benefit to South Africa as a whole is a product produced for the world commodity market, earning South Africa the necessary foreign exchange and capital needed for a healthy economy and further capital investments in development projects for the long term future of the country.

The project is aligned with the objectives of the municipal Spatial Development Framework (SDF) and Integrated Development Plan (IDP) including job creation, investment creation, rural and urban development, combating crime, skills

development, combating the impact of HIV/AIDS and poverty alleviation. The Social and Labour Plan (SLP) drafted for the proposed project addresses the social priorities.

Ilangabi Investments, of which Brikor Limited is a subsidiary, is currently holding the mining right and mining on the adjacent Vlakfontein Mine. The Vlakfontein Mine is close to the end of its Life of Mine (LOM) and the proposed Grootfontein Mine will enable the continuation of employment for workers currently employed at the Vlakfontein Mine, for another 10 to 15 years. Therefore, the benefits for South Africa as a whole as well as for the local communities as described above will also be extended.

Alternatives

The following alternatives were investigated as feasible alternatives:

- The site on which the proposed facility is to be located and location of infrastructure on the site (site and layout alternatives);
- The mining method (technology alternatives)
- Recycling (technology alternatives); and
- Not implementing the mining activities (No – Go alternative).

Public Participation

A joint Public Participation Process is undertaken for the proposed mine. The process is undertaken to ensure compliance with regard to the requirements in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) [as amended] (MPRDA), the National Environmental Management Act, 1998 (Act No. 107 of 1998) [as amended] (NEMA), the National Environmental Management: Waste Act, 2008 (Act No 59 of 2008) [as amended] (NEMWA), the National Water Act, 1998 (Act No. 36 of 1998) [as amended] (NWA) and the Environmental Impact Assessment Regulations (2014) [as amended].

Tasks undertaken for the Public Participation Process (PPP):

- Identification of key interested and affected parties (affected and adjacent landowners) and other stakeholders (organs of state and other parties);

- Formal notification of the application to interested and affected parties (including all affected and adjacent landowners) and other stakeholders through newspaper legal notice, written notices and site notices;
- Consultation with I&AP's through a Public Open Day and workshop meeting with community leaders;
- Providing opportunities to review draft scoping report and Environmental Impact Assessment Report and Environmental Management Programme and Specialist Studies;
- Correspondence with I&APs and stakeholders.

Several comments were received from Interested and Affected Parties during the Scoping Phase of the application. Issues raised are summarised in this report and the comments and responses report attached in Appendix 6.4. Additional specialist studies as described below have been conducted in response to issues raised e.g. an Acid Mine Drainage Study appended and discussed within the Geohydrological Study. Preliminary results of the study have been interpreted and discussed in the geohydrological study, as well as within this report. However, the final results are still outstanding, but will be made available to Interested and Affected Parties for comments as soon as they become available.

The NEMA Draft Environmental Impact Assessment (EIA) Report and Environmental Management Programme (EMPR) are herewith released for a period of 30 days from 15 November 2016 14 December 2016.

Hardcopies of the Draft EIA and EMPR are herewith submitted to all organs of state and relevant authorities. In addition copies are placed at the Brikor Plant 3 in Nigel, for I&APs to review the EIA/EMPR. The EIA/EMPR are also available on the ENVASS website for download.

Specialist studies

Specialist studies that were conducted for the Environmental Impact Assessment phase to assess the above aspects include the following:

- Geohydrological Study;
- Ecological Scan;

- Wetland Delineation and Impact Assessment;
- Soil and Land Capability Study;
- Waste Classification;
- Cultural and Heritage Impact Assessment;
- Palaeontological study;
- Hydrological Assessment and Conceptual and Final Design Report and Designs;
- Traffic Impact Assessment;
- Closure Cost Assessment (results included in the EIA / EMPR), the report will be included in the final EIA/EMPR to be submitted to the DMR;
- Air Quality Impact Assessment (currently in progress). The AQIA will be conducted and the report, together with the Air Pollution Prevention Plan be submitted to the relevant Competent Authority for approval.

Environmental Impact Statement

Potential Impacts Associated with the Proposed Activity

The following potential major direct, indirect and cumulative impacts were identified:

- Land degradation;
- Property values;
- Contamination from coal and hydrocarbons and compaction of soils;
- Erosion;
- Acid mine drainage;
- Climate change;
- Blasting of coal;
- Altered landforms - topography;
- Limited loss of agricultural potential and land capability;
- Reduced crop growth;
- Contamination of ground- and surface water quality and decline in quantity;
- Impacts on biodiversity;
- Loss and displacement of fauna;
- Impacts on existing land use of the study and surrounding area;

- Deterioration of local roads used by heavy duty vehicles;
- Mudslides form stockpiles and overburden;
- Destruction or loss of heritage features including graves and other historical sites of importance that may be uncovered during excavations;
- Decreased aesthetic value and impact on “Sense of Place”;
- Poor air quality and decreased visibility due to dust pollution;
- Increased noise levels and impact on surrounding communities and the Marievale Bird Sanctuary;
- Waste generation;
- Increased demand on service infrastructure and resources;
- Slight increase in traffic and need for maintenance of road infrastructure;
- Health and safety impacts;
- Potential injury and loss of health and life of humans; and
- Altered Socio-Economic Environment (Positive or negative).

The following aspects will be assessed as part of the environmental assessment process:

- Topography;
- Geology and Soils;
- Geohydrology;
- Hydrology;
- Climate;
- Biodiversity;
- Socio-economic;
- Dust fallout;
- Ambient noise levels;
- Aesthetic quality (visual); and
- Archaeological aspects.

Reasoned Opinion of the EAP

Based on the findings of the environmental impact assessment and the specialist studies, the EAP recommends that the proposed development be considered favourably, due to the positive social and economic impacts for the local and regional

communities that may occur as a result of the Grootfontein Mine. The majority of the potential negative impacts can be mitigated to very low and low levels, and some to medium levels, provided that the mitigation measures are strictly implemented and monitored. However, there are sensitive wetlands occurring on the study area that will be affected by the proposed mining. The study area has been impacted on since prior to 1966 and the area is thus, greatly impacted. However, loss of the wetlands on the study area, could have a significant negative downstream effect. It is thus imperative that activities resulting in wetland loss should be mitigated and offset as outlined in the wetland mitigation offset manual (Bootsma & Bezuidenhout, 2017). The activities within the 500m buffer zones of the wetlands occurring on and adjacent to the study area, must be approved by the Department of Water and Sanitation upon submission of a Water Use License Application in terms of the National Water Act, 1998 (Act No. 36 of 1998).

Recommendations

In order to achieve appropriate environmental management standards and ensure that the findings of the environmental studies are implemented through physical measures, the recommendations from the scoping report are included within the Environmental Management Programme (EMP). The EMP will be based on all the information to be contained in the Environmental Impact Report (EIR), as well as all the specialists' reports.

It is recommended by the EAP that the following conditions be included in the authorisation:

- All Category C listed activities in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) [as amended] (NEMWA) must comply with the requirements and standards of the Norms and Standards for storage of waste, 2013;
- The EMPR, once approved, is a contractual document and must be implemented at the Brikor Grootfontein Mine at all times;
- An independent environmental control officer (ECO) must be appointed to monitor the implementation of the EMPR and audit reports kept by the applicant;

- All contractors and employees of Brikor, must be made aware of the EMPR and its requirements as well as the impact of not implementing the measures of the EMPR;
- The Water Use License (WUL) that will be applied for, need to be issued before any activities may commence on site;
- The activities resulting in wetland loss should be mitigated and offset as outlined in the wetland mitigation offset manual (Bootsma & Bezuidenhout, 2017);
- The activities within the 500m buffer zones of the wetlands occurring on and adjacent to the study area, must be approved by the Department of Water and Sanitation upon submission of a Water Use License Application in terms of the National Water Act, 1998 (Act No. 36 of 1998);
- An air quality impact assessment should be conducted and an Air Pollution Prevention Plan should be submitted to and approved by the relevant authorities, before commencement of any activity on the proposed mining site; and
- Copies of the EMPR, Environmental Authorisation, Mining Right and Waste Management License, as well as the Water Use License and any emergency procedures and method statements, must be kept on site and be available on request of the Competent Authority.

Framework of the report

The report is based on the template provided by the Department of Mineral Resources for Environmental Impact Assessment (EIA) Reports and Environmental Management Programmes (EMPRs). The report include all the Requirements for EIAs / EMPRs listed in Appendix 3 and 4 of the EIA Regulations, 2014, Government Notice Regulation (GNR) 982, promulgated in terms of the National Environmental Management Act, 1998 (Act No. 1998) [as amended] (NEMA).

Table 1: Framework of the EIA/EMPR

GNR 982 Appendix 3	Section	Page Number
Scope of assessment and content of Environmental Impact Assessment Report		
(a) details of- (i) the EAP who prepared the report; and (ii) the expertise of the EAP, including a curriculum vitae.	PART A: SECTION 1 (a) (i) and (ii)	1
(b) the location of the activity, including: (i) the 21 digit Surveyor General code of each cadastral land parcel; (ii) where available, the physical address and farm name; and (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties.	PART A: SECTION 1 (b) (i), (ii) and (iii)	3
(c) a plan which locates the proposed activity or activities applied for as well as the associated structures and infrastructure at an appropriate scale, or, if it is- (i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; (ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken.	PART A: SECTION 1 (c) (i) and (ii)	3
(d) a description of the scope of the proposed activity, including- (i) all listed and specified activities triggered and being applied for; and	PART A: SECTION 1 (d) (i) and (ii)	5

GNR 982 Appendix 3	Section	Page Number
(ii) a description of the associated structures and infrastructure related to the development.		
(e) a description of the policy and legislative context within which the development is located and an explanation of how the proposed development complies with and responds to the legislation and policy context.	PART A: SECTION 1 (e)	11
(f) a motivation for the need and desirability for the proposed development, including the need and desirability of the activity in the context of the preferred location.	PART A: SECTION 1 (f)	19
(g) a motivation for the preferred development footprint within the approved site.	PART A: SECTION 1 (g)	22
<p>(h) a full description of the process followed to reach the proposed development footprint within the approved site, including:</p> <p>(i) details of the development footprint alternatives considered;</p> <p>(ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;</p> <p>(iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;</p> <p>(iv) the environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;</p> <p>(v) the impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts-</p> <p>(aa) can be reversed;</p>	PART A: SECTION 1 (h)	22

GNR 982 Appendix 3	Section	Page Number
<p>(bb) may cause irreplaceable loss of resources; and</p> <p>(cc) can be avoided, managed or mitigated;</p> <p>(vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks;</p> <p>vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;</p> <p>(viii) the possible mitigation measures that could be applied and level of residual risk;</p> <p>(ix) if no alternative development locations for the activity were investigated, the motivation for not considering such; and</p> <p>(x) a concluding statement indicating the preferred alternative development location within the approved site.</p>		
<p>(i) a full description of the process undertaken to identify, assess and rank the impacts the activity and associated structures and infrastructure will impose on the preferred location through the life of the activity, including-</p> <p>(i) a description of all environmental issues and risks that were identified during the environmental impact assessment process; and</p> <p>(ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures.</p>	PART A: SECTION 1 (I) (i), (ii)	148
<p>(j) an assessment of each identified potentially significant impact and risk, including-</p>	PART A: SECTION 1 (j) (i) – (vii)	151

GNR 982 Appendix 3	Section	Page Number
<ul style="list-style-type: none"> (i) cumulative impacts; (ii) the nature, significance and consequences of the impact and risk; (iii) the extent and duration of the impact and risk; (iv) the probability of the impact and risk occurring; (v) the degree to which the impact and risk can be reversed; (vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and (vii) the degree to which the impact and risk can be mitigated. 		
<p>(k) where applicable, a summary of the findings and recommendations of any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final assessment report.</p>	PART A: SECTION 1 (k)	201
<p>(l) an environmental impact statement which contains-</p> <ul style="list-style-type: none"> (i) a summary of the key findings of the environmental impact assessment; (ii) a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and (iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives. 	PART A: SECTION 1 (l) (i), (ii) and (iii)	210
<p>(m) based on the assessment, and where applicable, 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.</p>	PART A: SECTION 1 (m)	214

GNR 982 Appendix 3	Section	Page Number
(n) the final proposed alternatives which respond to the impact management measures, avoidance, and mitigation measures identified through the assessment.	PART A: SECTION 1 (n)	216
(o) any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation.	PART A: SECTION 1 (o)	216
(p) a description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed.	PART A: SECTION 1 (p)	217
(q) a reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation.	PART A: SECTION 1 (q)	220
(r) where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required and the date on which the activity will be concluded and the post construction monitoring requirements finalised.	PART A: SECTION 1 (r)	222
(s) an undertaking under oath or affirmation by the EAP in relation to: (i) the correctness of the information provided in the reports; (ii) the inclusion of comments and inputs from stakeholders and I&APs; (iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and (iv) any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties.	PART A: SECTION 1 (s) (i) - (iv)	222

GNR 982 Appendix 3	Section	Page Number
(t) where applicable, details of any financial provisions for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts.	PART A: SECTION 1 (t)	223
(u) an indication of any deviation from the approved scoping report, including the plan of study, including- (i) any deviation from the methodology used in determining the significance of potential environmental impacts and risks; and (ii) a motivation for the deviation.	PART A: SECTION 1 (u) (i) and (ii)	226
(v) any specific information that may be required by the competent authority.	PART A: SECTION 1 (v)	227
(w) any other matters required in terms of section 24(4)(a) and (b) of the Act.	PART A: SECTION 1 (w)	228
Content of Environmental Management Programme		
(a) details of (i) the EAP who prepared the EMP; and (ii) the expertise of that EAP to prepare an EMP, including a curriculum vitae.	PART B: SECTION 1 (b) (i) and (ii)	229
(b) a detailed description of the aspects of the activity that are covered by the EMP as identified by the project description.	PART B: SECTION 1 (b)	229
(c) a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that any areas that should be avoided, including buffers.	PART B: SECTION 1 (c)	229
(d) a description of the impact management objectives, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including-	PART B: SECTION 1 (d) (i) - (v)	229

GNR 982 Appendix 3	Section	Page Number
<ul style="list-style-type: none"> (i) planning and design; (ii) pre-construction activities; (iii) construction activities; (iv) rehabilitation of the environment after construction and where applicable post closure; and (v) where relevant, operation activities. 		
(e) a description and identification of impact management outcomes required for the aspects contemplated in paragraph (d).	PART B: SECTION 1 (e)	291
<p>(f) a description of proposed impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated in paragraphs (d) and (e) will be achieved, and must, where applicable, include actions to –</p> <ul style="list-style-type: none"> (a) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (i) comply with any prescribed environmental management standards or practices; (ii) comply with any applicable provisions of the Act regarding closure, where applicable; and (iii) comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable. 	PART B: SECTION 1 (f) (a) (i), (ii) and (iii)	292
(g) the method of monitoring the implementation of the impact management actions contemplated in paragraph (f).	PART B: SECTION 1 (g)	299
(h) the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f); management actions.	PART B: SECTION 1 (h)	299

GNR 982 Appendix 3	Section	Page Number
(i) an indication of the persons who will be responsible for the implementation of the impact.	PART B: SECTION 1 (i)	299
(j) the time periods within which the impact management actions contemplated in paragraph (f) must be implemented.	PART B: SECTION 1 (j)	299
(k) the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f).	PART B: SECTION 1 (k)	299
(l) a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations.	PART B: SECTION 1 (l)	305
(m) an environmental awareness plan describing the manner in which- (i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and (ii) risks must be dealt with in order to avoid pollution or the degradation of the environment.	PART B: SECTION 1 (m) (i) and (ii)	305
(n) any specific information that may be required by the competent authority.	PART B: SECTION 1 (n)	306

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LIST OF ABBREVIATIONS

CA	Competent Authority
CSA	Constitution of South Africa (Act No. 108 of 1996)
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
DEAT	Department of Environmental Affairs and Tourism (currently known as DEA)
DMR	Department of Mineral Resources
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMP	Environmental Management Programme
ENVASS	Environmental Assurance (Pty) Ltd
GN	Government Notice
GIS	Geographic Information System
GPS	Global Positioning System
HDPE	High-density polyethylene
I&APs	Interested and Affected Parties
IDP	Integrated Development Plan
IEM	Integrated Environmental Management
IWULA	Integrated Water Use License Application

IWWMP	Integrated Water and Waste Management Plan
MHSA	Mine Health and Safety Act (Act No. 29 of 1996) [as amended]
MPRDA	Minerals and Petroleum Resources Development Act (Act No. 28 of 2002) (as amended)
NEMA	National Environmental Management Act, 1998 (Act no 107 of 1998, as amended)
NEMAQA	National Environmental Management: Air Quality Act (Act No. 39 of 2004)
NEMBA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
NEMWA	National Environmental Management: Waste Act (Act No. 59 of 2008)
NHRA	National Heritage Resource Act, 1999 (Act No. 25 of 1999)
NVFFA	National Veld and Forest Fire Act (Act No. 101 of 1998)
NWA	National Water Act, 1998 (Act No. 36 of 1998)
PM	Public Meeting
PPP	Public Participation Process
ROM	Run of Mine
RWD	Return Water Dam
SAHRA	South African Heritage Resources Agency
SAWS	South African Weather Service
SDF	Spatial Development Framework
SM	Site Manager
tpm	tonne per month

WRD	Waste Rock Dump
BIC	Bushveld Igneous Complex
BPG	Best Practice Guidelines
COM	Chamber of Mines
CSIR	Council of Scientific and Industrial Research
DEA	Department of Environmental Affairs
DEMC	Default Ecological Management Class
DESC	Default Ecological Status Class
DMR	Department of Minerals and Resources
DO	Dissolved Oxygen
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
EC	Electrical Conductivity
EIA	Environmental Impact Assessment
EIS	Environmental Importance and Sensitivity
EISC	Ecological Importance and Sensitivity Class
EMPr	Environmental Management Programme
ENVASS	Environmental Assurance (Pty) Ltd
FRAI	Fish Response Assessment Index
GN 704	Government Notice No. 704 of 4 June 1999
GN	Government Notice
GPS	Global Positioning System
Ha	Hectares

I&APs	Interested and Affected Parties
IDP	Integrated Development Plan
IHAS	Invertebrate Habitat Assessment System
IHIA	Intermediate Habitat Integrity Assessment
IUCN	International Union for the Conservation of Nature
IWUL	Integrated Water Use License
IWULA	Integrated Water Use License Application
IWWMP	Integrated Water and Waste Management Plan
LED	Local Economic Development
LHD	Load Haul Dump
LM	Local Municipality
LOM	Life of Mine
MAP	Mean Annual Precipitation
MAR	Mean Annual Runoff
MPRDA	Mineral Petroleum Resources Development Act (No. 28 of 2002) [as amended]
NEMA	National Environmental Management Act (No. 107 of 1998) [as amended]
NEMWA	National Environmental Management: Waste Act (No. 59 of 2008) [as amended]
NWA	National Water Act (No. 36 of 1998)
PCD	Pollution Control Dam
PES	Present Ecological Status
PESC	Present Ecological Status Class

PPP	Public Participation Process
ROM	Run of Mine
SAIAB	South African Institute for Aquatic Biodiversity
SANBI	South African National Biodiversity Institute
SANParks	South African National Parks
SANS	South African National Standard
SASS5	South African Scoring System
SLP	Social and Labour Plan
TDS	Total Dissolved Solids
TMM	Trackless Mobile Machine
TSF	Tailings Storage Facility
USCS	Unified Soil Classification System
WMA	Water Management Area
WQM	Water Quality Management
WRC	Water Research Commission
WRD	Waste Rock Dump
WULA	Water Use License Application
WUL	Water Use License

GLOSSARY OF TERMS

Activity: An activity is any water use or related activity which requires a water use license in terms of section 40 of the National Water Act no. 36 of 1998, and includes mines, industries and related processes.

Applicant / Developer: Any person who applies for an authorisation to undertake an activity or undertake an Environmental Process in terms of the Environmental Impact Assessment Regulations – National Environmental Management Act, 1998 (Act No. 107 of 1998) as amended (NEMA) as contemplated in the scheduled activities listed in Government Notice (GN) No R. 544, 545 and 546.

Archaeological resources: This includes:

- Material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years including artefacts, human and hominid remains and artificial features and structures;
- Rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation;
- Wrecks, being any vessel or aircraft, or any part thereof which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the republic as defined in the Maritimes Zones Act, and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation; features, structures and artefacts associated with military history which are older than 75 years and the site on which they are found.

Aspect: An element of an organisation's activities, products, or services that can interact with the environment. The element may cause a significant environmental impact, either beneficial or harmful. For example: Refrigerant use, wash water discharge, it could involve a discharge, an emission, or consumption or reuse of a material.

Biodiversity: The variety of life in an area, including the number of different species, the genetic wealth within each species, and the natural areas where they are found.

Catchment: The area from which any rainfall will drain into the watercourse or watercourses or part of the water course, through surface flow to a common point or common points.

Clean water: Clean water is any water that has not been in contact with carbonaceous material or other potential contaminants and includes run-off from areas unaffected by mining activities, as well as areas that have been rehabilitated.

Construction activities: Activities associated with physical disturbance to the land, including the storage, machinery, equipment and materials.

Construction phase: The construction phase is the period of commencement of physical disturbance to the land, excluding rehabilitation activities, such as re-vegetation and replacing of topsoil.

Container: Disposable or re-usable vessel in which waste is placed for the purposes of storing, accumulating, handling, transporting, treating or disposing of that waste and include bins, bin liners and skips.

Contaminated water: Means any water contamination by the Contractor's activities, e.g. run-off from plant or personnel wash areas.

Contractor: Persons/organisations contracted by the Applicant to provide a service. The Contractor shall ensure compliance with this EMP and shall request advice from the Environmental Assessment Practitioner where considered necessary and appropriate.

Corrective (remedial) action: Response required to addressing an environmental problem that is in conflict with the requirements of the IWWMP. The need for corrective action may be determined through monitoring, audits or management review.

Degradation: The lowering of the quality of the environment through human activities, e.g. river degradation, soil degradation.

Dirty water: Dirty water is any water that has been in contact with carbonaceous material or other contaminants (i.e. water containing waste), and of which the water quality has been affected and therefore has the potential to cause pollution of a water resource.

Disposal: The burial, deposit, discharge, abandoning, dumping, placing or release of waste into or onto any land.

Domestic waste: Waste (excluding hazardous waste) that emanates from premises that are used wholly or mainly for residential, educational, health care, sport or recreation purposes (including garden and park wastes as well as municipal and food waste).

Ecology: The study of the interrelationships between organisms and their environments.

Emergency: An unexpected sudden occurrence, including a major emission, fire or explosion leading to serious danger to the public or potentially serious pollution of or detriment to the environment, whether immediate or delayed.

Environment: The surroundings within which humans live and that consist of:

- (i) The land, water and atmosphere of the earth;
- (ii) Micro-organisms, plant and animal life;
- (iii) Any part or combination of (i) and (ii) and the interrelationships among and between them; and the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

Existing lawful use: An existing lawful use means a water use which has taken place at any time during a period of two years immediately before the date of commencement of the National Water Act 1998, (Act 36 of 1998) or which has been declared an existing lawful water use under section 33 and which was authorised by or under any law which was in force immediately before the date of commencement of the National Water Act.

General waste: Waste that does not pose an immediate threat or hazard to health or to the environment, and includes:

- (a) Domestic waste;
- (b) Building and demolition waste;
- (c) Business waste;
- (d) Inert waste; and
- (e) Any waste classified as non-hazardous waste in terms of the regulations made under section 69.

Groundwater: Water that occurs in the voids of saturated rock and soil material beneath the ground surface is referred to as groundwater and the body within which the groundwater is found is referred to as an aquifer.

Hazardous waste: Waste that contains organic or inorganic elements or compound that may, owing to the inherent physical, chemical or toxicological characteristics of that waste, have a detrimental impact on health and the environmental and includes hazardous substances, materials or object within business waste, residue deposits and residue stockpiles.

Holder of waste: Any person who imports, generates, stores, accumulates, transports, processes, treats or exports waste or dispose of waste.

Hydrogeological: The study of distribution and movement of groundwater.

Hydrological: The study of movement, distribution and quality of surface water and groundwater.

Impact: Any change to the environment, whether adverse or beneficial, wholly or partly resulting from an organization's activities, products, or services. For example: Ozone depletion, surface water quality degradation, impacts might include contamination of air or water, depletion of a natural resource or harm to human health.

Inert waste: waste that:

- (a) Does not undergo significant physical, chemical or biological transformation after disposal;
- (b) Does not burn, react physically or chemically, biodegrade or otherwise adversely affect any other matter or environment with which it may come into contact; and
- (c) Does not impact negatively on the environment because of its pollutant content and because the toxicity of its leachate is insignificant and which include discarded concrete, bricks, tiles and ceramics; discarded glass as well as discarded soil, stones and dredging spoil.

Infrastructure: The network of facilities and services that are needed for economic activities, e.g. roads, electricity, water, sewerage.

Integrated: Mixing or combining all useful information and factors into a joint or unified whole. See Integrated Environmental Management.

Integrated Environmental Management (IEM): A way of managing the environment by including environmental factors in all stages of development. This includes thinking about physical, social, cultural and economic factors and consulting with all the people affected by the proposed developments.

Interested and/or Affected Parties: Those individuals or organisations that have an interest in the proposed development or will be directly affected by the activities of the development, as identified in the Environmental Impact Assessment (EIA) process.

Mitigation measures: Measures designed to avoid, reduce or remedy adverse impacts.

Monitoring program: A program for taking regular measurements of the quantity and/or quality of a water resource, waste or wastewater discharge at specified intervals and at specific locations to determine the chemical, physical and biological nature of the water resource, waste or wastewater discharge.

Pollutant: A contaminant at a concentration high enough to endanger the environment or the public health.

Pollution:

- National Water Act, 36 of 1998: “Water pollution means the direct or indirect alteration of the physical, chemical or biological properties of a water resource so as to make it –
 - (a) less fit for any beneficial purpose for which it may reasonably be expected to be used; or
 - (b) harmful or potentially harmful –
 - (aa) to the welfare, health or safety of human beings;
 - (bb) to any aquatic or non-aquatic organisms;
 - (cc) to the resource quality; or

(dd) to property”.

- National Environmental Management Act, No. 107 of 1998:- “pollution means any change in the environment caused by –

(i) substances;

(ii) radioactive or other waves; or

(iii) noise, odours, dust or heat emitted from any activity, including the storage or treatment of waste or substances, construction and the provision of services, whether engaged in by any person or an organ of state, where that change has an adverse effect on human health or well-being or on the composition, resilience and productivity of natural or managed ecosystems, or on materials useful to people, or will have such an effect in the future.”

Protection: in relation to a water resource, means –

1 (1) (xvii) (a): maintenance of the quality of the water resource to the extent that the water resource may be used in an ecologically sustainable way;

1.(1) (xvii) (b): prevention of the degradation of the water resource; and

1.(1) (xvii) (c): the rehabilitation of the water resource;

Public Participation Process: A process of involving the public in order to identify issues and concerns, and obtain feedback on options and impacts associated with a proposed project, program or development. Public Participation Process in terms of NEMA refers to: a process in which potential interested and affected parties are given an opportunity to comment on, or raise issues relevant to specific matters.

Recycle: A process where waste is reclaimed for further use, this process involves the separation of waste from a waste stream for further use and the processing of that separated materials as a product or raw material.

Rehabilitation: Rehabilitation is defined as the return of a disturbed area to a state which approximates the state (wherever possible) in which it was before disruption.

Reserve: the quantity and quality of water required:

(a) To satisfy basic human needs by securing a basic water supply, as prescribed under the Water Services Act, 1997 (Act No. 108 of 1997), for people who are now or who will, in the reasonably near future, be -

- (i) Relying upon;
- (ii) Taking water from; or
- (iii) Being supplied from, the relevant water resource; and

(b) To protect aquatic ecosystems in order to secure ecologically sustainable development and use of the relevant water resource.

Re-use: To utilise articles from the waste stream again for a similar or different purpose without changing the form or properties of the articles.

Runoff: Surface runoff is water that finds its way into a surface water body without infiltration into the soil and may include overland flow, return flow, interflow and base flow.

SANS 10234: Latest edition of the South African National Standard Globally harmonised System of the Classification and Labelling of Chemicals (GHS).

Significant Impact: The activity that results in substantial breach of statutory regulations under abnormal conditions.

Surface water: All water naturally open to the atmosphere (rivers, lakes, reservoirs, streams, impoundments, seas, estuaries, etc.); also refers to springs, wells, or other collectors that are directly influenced by surface water.

Storage: The accumulation of waste in a manner that does not constitute a treatment or disposal of that waste.

Storm water: Water that accumulates on land as a result of precipitation events, and includes runoff from areas such as roads and roofs.

Waste:

(a) any substance, material or object, that is unwanted, rejected, abandoned, discarded or disposed of, or that is intended or required to be discarded or disposed

of, by the holder of that substance, material or object, whether or not such substance, material or object can be re-used, recycled or recovered and includes all wastes as defined in Schedule 3 of NEMWA [as amended]; or

(b) any other substance, material or object that is not included in Schedule 3 of NEM:WA [as amended] that may be defined as a waste by the Minister by notice in the Gazette, but any waste or portion of waste, referred to in paragraphs (a) and (b), ceases to be a waste-

(i) once an application for its re-use, recycling or recovery has been approved or, after such approval, once it is, or has been re- used, recycled or recovered;

(ii) where approval is not required, once a waste is, or has been re-used, recycled or recovered;

(iii) where the Minister has, in terms of section 74, exempted any waste or a portion of waste generated by a particular process from the definition of waste; or

(iv) where the Minister has, in the prescribed manner, excluded any waste stream or a portion of a waste stream from the definition of waste.

Waste generator: Any person whose actions, production processes or activities including waste management activities, results in the generation of waste.

Waste management: Classifying, recycling, treatment and disposal of waste generated during operational activities.

Watercourse is:

(a) A river or spring;

(b) A natural channel in which water flows regularly or intermittently;

(c) A wetland, lake or dam into which, or from which, water flows; and

(d) Any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse, and a reference to a watercourse includes, where relevant, its bed and banks.

Water quality: the physical, chemical, toxicological, biological (including microbiological) and aesthetic properties of water that determine sustained (1) healthy functioning of aquatic ecosystems and (2) fitness for use (e.g. domestic, recreational, agricultural, and industrial). Water quality is therefore reflected in (a) concentrations or loads of substances (either dissolved or suspended) or micro-organisms, (b) physicochemical attributes (e.g. temperature) and (c) certain biological responses to those concentrations, loads or physicochemical attributes.

Water resource: A water resource includes any watercourse, surface water, estuary or aquifer. Watercourses include rivers, springs, and natural perennial and non-perennial channels. Wetlands, lakes, dams, or any collection identified as such by the Minister in the Government Gazette.

Water Use License: An authorisation from the Department to a designated water user to use water. The authorisation will provide details on the time-frames and conditions for the designated water use.

PART A

**SCOPE OF ASSESSMENT AND ENVIRONMENTAL IMPACT ASSESSMENT
REPORT**

Contact Person and correspondence address

a) Details of:

i) The EAP who prepared the report

Name of The Practitioner: Corrie Retief

Tel No.: 012 460 9768

Fax No.: 012 460 3071

e-mail address: corrie@envass.co.za

ii) Expertise of the EAP

(1) The qualifications of the EAP

(With evidence attached as Appendix 1)

- University of South Africa, BA Hons Geography - 2007
- University of South Africa, BA Environmental – 2005
- Registered with SACNASP as Pri.Sci.Nat (Reg. No. 113960) – 2016

(2) Summary of the EAP's past experience.

(Attach the EAP's curriculum vitae as Appendix 2)

Corrie Retief is an Environmental Scientist with more than 11 years of experience in applying the principles of Integrated Environmental Management, and in applying the Environmental Legislation to a number of development projects and initiatives in Southern Africa. He has co-ordinated and managed number of diverse projects and programs related to the Environment and Waste within both the public and private sectors and for national, multi-national and international companies. His interpersonal and organisational skills have enabled him to efficiently direct these projects from

initiation to implementation. Furthermore his training in sustainability and sustainable project delivery has helped him to deliver profitable sustainability into customers operations throughout the asset lifecycle.

A significant element of public participation is required throughout the life cycle of an EIA process. Corrie has successfully liaised with interested and affected parties, ensuring that all communication procedures and dialogues are open and transparent, and that capacity building is conducted where necessary. His proficient report-writing skills have been utilised for the compilation of a wide variety of reports, which include but is not limited to Basic Assessment Reports, Scoping and Environmental Impact Assessment Reports, Environmental Management Plans (Planning, Construction, Operation and Closure), Environmental Audit Reports, Opportunities and Constraints Analyses, Feasibility studies, Waste License Applications, Water-Use Application Reports and Mining Right Applications.

The EAP have experience in the following disciplines:

- Environmental risk assessments;
- Environmental site screening, investigation and evaluations;
- Environmental legal screenings;
- Environmental feasibility studies;
- Environmental impact assessments;
- Basic assessments;
- Environmental compliance auditing;
- Compilation, implementation and monitoring of environmental management plans;
- Waste Management;
- Waste Disposal site selection screenings;
- Waste license applications;
- Water-Use License Applications;
- Mining Right applications; and
- Managing and facilitating public participation.

b) Description of the property

Table 1: Description of the property

Farm Name:	A portion of Portion 85 of the Farm Grootfontein 165 IR and a portion of the Remainder of the Farm Vogelstruisbult 127 IR
Application area (Ha)	96.3384 ha
Magisterial district:	Ekurhuleni Metropolitan Municipality
Distance and direction from nearest town	Approximately 5 km north-west of Nigel.
21 digit Surveyor General Code for each farm portion	T0IR00000000016500085 T0IR00000000012700000

c) Locality map

(Show nearest town, scale not smaller than 1:250000 attached as Appendix 3) The locality map is also appended in Appendix 3 on an A3 paper size in colour).

The study area is located on the Remainder of the Farm Vogelstruisbult 127 IR and a portion of Portion 85 of the Farm Grootfontein 165 IR, situated approximately 5 km north-west of the town of Nigel. The study area falls within the Ekurhuleni Metropolitan Municipality in the Gauteng Province. The locality of the application area is indicated in Figure 1.

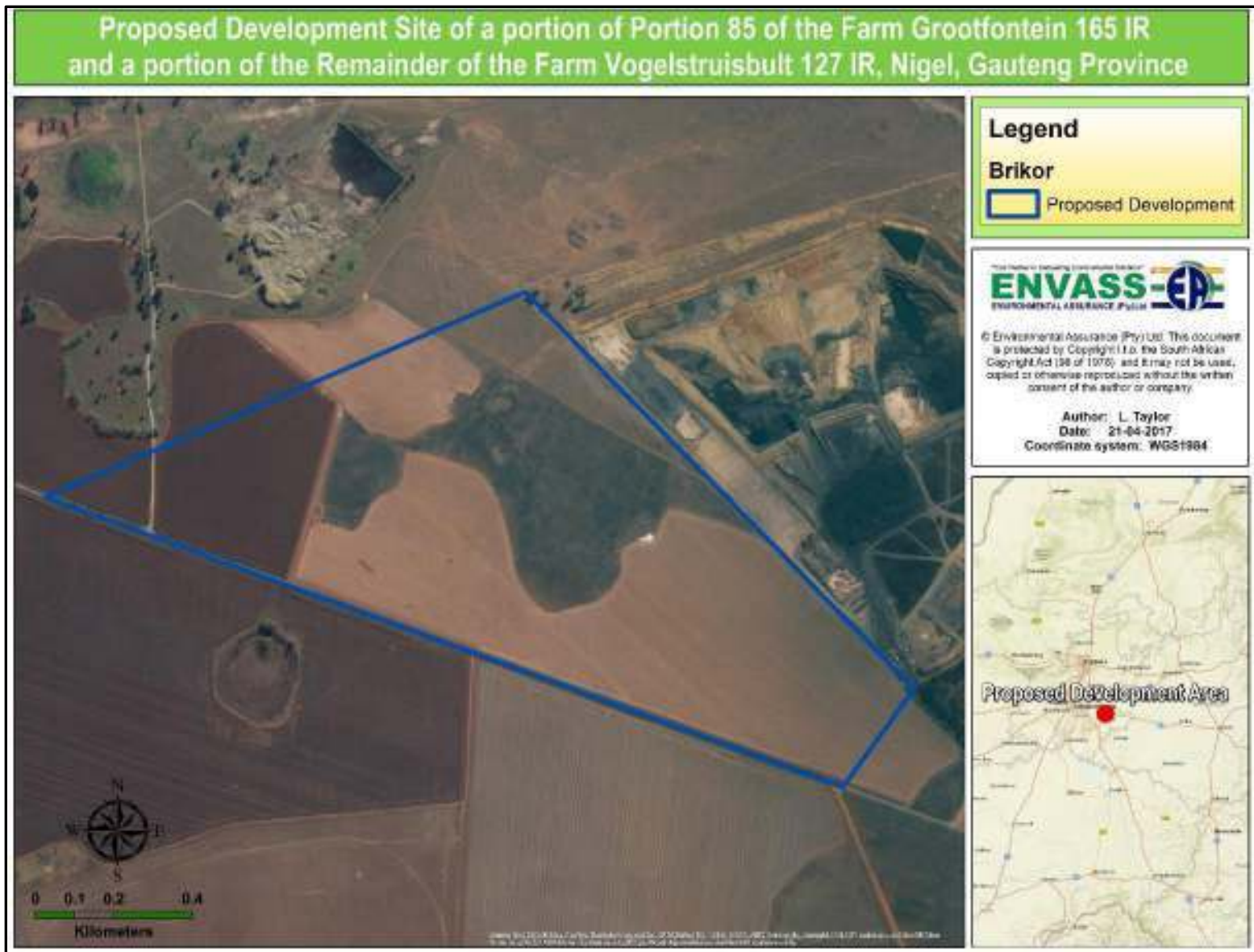


Figure 1: Locality of the Application Area

d) Description of the scope of the proposed overall activity

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

(i) Listed and specified activities

Table 2: Listed and specified activities

NAME OF ACTIVITY (All activities including activities 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.)	Aerial extent of the Activity Ha or m²	LISTED ACTIVITY Mark with an X where applicable or affected.	APPLICABLE LISTING NOTICE (GNR 983, GNR 984 or GNR 985 /NOT LISTED	WASTE MANAGEMENT AUTHORISATION (Indicate whether an authorisation is required in terms of the Waste Management Act)
CONSTRUCTION PHASE				
Clearing of vegetation and topsoil and excavation for the access and haul roads, pollution control dam footprint and opencast areas.	TBC	-	NOT LISTED	NOT LISTED
Earthworks to excavate the pollution control dam	TBC	-	NOT LISTED	NOT LISTED
Constructing the pollution control dam liner and walls.	TBC	-	NOT LISTED	NOT LISTED
Dust Suppression	Extent of dirt roads open, non-paved areas.		NOT LISTED	NOT LISTED
OPERATIONAL PHASE				
Clearing of vegetation and topsoil by bulldozer/front-end-loader.	TBC	-	NOT LISTED	NOT LISTED
Stockpiling of overburden in 2 m high wind rows positioned for later rehabilitation.	TBC	-	NOT LISTED	NOT LISTED
Opencast mining using heavy duty earth moving equipment. After removal of overburden, benches are created by the effect of selective mining as well as by the limitation of the machinery regarding excavation depth. The maximum bench height is 3m. The low bench is served by a down ramp that is kept in close proximity to the working face. Excavator employed to remove clay.	TBC	X	Listing Notice 2 Activity 17	NOT LISTED
Loading, hauling and transport by truck of the clay to a stockpile close to the brick making factory to be used for the production of bricks.	N/A	-	NOT LISTED	NOT LISTED

NAME OF ACTIVITY (All activities including activities 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.)	Aerial extent of the Activity Ha or m²	LISTED ACTIVITY Mark with an X where applicable or affected.	APPLICABLE LISTING NOTICE (GNR 983, GNR 984 or GNR 985 /NOT LISTED	WASTE MANAGEMENT AUTHORISATION (Indicate whether an authorisation is required in terms of the Waste Management Act)
As and when coal is exposed after mining of clay, coal will be excavated in the same manner as the clay.	TBC	X	Listing Notice 2 Activity 17	NOT LISTED
Raw coal will be transported to the Plant on the adjacent property where the coal will be washed and used as an energy resource.	N/A	-	NOT LISTED	NOT LISTED
As and when sand is exposed, sand will be excavated.	TBC	X	Listing Notice 2 Activity 17	NOT LISTED
Sand will be transported to the Plant on the nearby property for crushing, screening and washing and to be sold off as building sand.	N/A		NOT LISTED	NOT LISTED
Deposition of waste rock onto waste rock dump and storage, if any and to construct berms on the perimeter of the mine.	TBC	X	Category B: Residue stockpiles or residue deposits Activity (11)	The WRD is an existing dump on the adjacent Vlakfontein Mine and the berms to be constructed with waste rock is listed and triggers this listed activity.
Maintenance of the pollution control dam and stormwater management system.	TBC		NOT LISTED	NOT LISTED
Dust Suppression	Extent of dirt roads open, non-paved areas.		NOT LISTED	NOT LISTED

ii) Description of the activities to be undertaken

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

The proposed Grootfontein opencast mine quarry will be used for the extraction of clay, sand and coal, (i.e. brick making raw materials).

The brick making raw materials found in the area occur in Ecca aged sediments which are locally, flat lying with minor flexing in nature. Typically, Ecca sediments in this area consist of shales, with occasional interlayered sandstones and siltstones. The shales typically weather to clays, (i.e. close to surface), which can be used for making

bricks whilst the sandstones are of little use as brick making raw materials. The sandstones generally, weather irregularly, resulting in the occurrence of large rocks and boulders. The Geological plan of this area shows the widespread occurrence of Eccca shales with scattered Witwatersrand inliers. Clearly the Eccca is a relatively thin “cover layer”, overlying older Witwatersrand members.

A number of diamond drill holes were initially sunk over the prospect area in order to investigate the geology and define the available clay and coal deposits. Subsequently, in 2015, a further 6 diamond drill holes were sunk, ahead of the current Brikor quarry (Vlakfontein) face, to verify the thickness and quality of the coal and clay raw materials available for mining in the future. The results of this drilling and geological work done, is given in the Mine Works Programme (MWP) and the assessment and the Borehole Logs of the drilling exercise are attached to the MWP (Appendix 5). A number of shallow core drill holes were drilled over the current mining area (Vlakfontein Quarry) and the prospect area to depths ranging to approximately 45 m. In the case of each hole, drilling was, in most cases, stopped as and when Dwyka Tillite was encountered or when the drilling had definitely intersected materials below the brick-making raw materials,(i.e. below the Eccca shales), that is, as non-useable materials were intersected. Considerable thicknesses of clay were found in the central-to-eastern section of the area ahead of the current quarry (Vlakfontein) face. To the north, away from the current quarry (Vlakfontein) face, the deeper, low-iron clays are less weathered and therefore not always suitable as a brick-making raw material. However, areas of extractable brick clays are found in the prospecting area.

The Brikor factory will be the only consumer of the brick clay mined from the proposed quarry. The clay will be used to make bricks and these products will be sold to the open market. The bricks will be burnt in a conventional “clamp” kiln on the Brikor/Vlakfontein site and on completion of the process, the bricks will be sorted into two categories, - both of which is specified under SABS 227. The specified categories are FBA (Face brick “Aesthetic”) and NFP (Non-face bricks).

The mining operation will consist of a team of earthmoving equipment that will be used to mine and stockpile the clay. Open cast mining will be done using conventional earth moving equipment. The earth moving equipment on site will consist of the following:

- A number of 30 ton Articulated dump trucks;
- 45 ton excavators;
- Bell water carts;
- Graders; and
- Bulldozers (D6 or equivalent).

The mining will be conducted over a wide face, which is progressively advanced with the appropriate benching, on the advancing face. The advantages of the method are that the mining advances at a slow rate and has a greater operating depth over a limited exposed area. The machinery is also suitable for working in adverse conditions. The disadvantages of this method are that additional machines are required for hauling the extracted product to the processing plant. The terrain also requires additional earthworks, after mining, to slope sidewalls, etc. Benches are cut which allow for selective mining of different clay types and also for reasons of safety. As a result of selective mining, the quarry slopes do not always resemble a simple benched operation. Benches are created by the effect of selective mining as well as by the limitation of the machinery excavating depth. The maximum bench height is 3 m. The lower bench is descended by a down ramp which is kept in close proximity to the working face to clear the clay. Topsoil shall be removed from all areas where physical disturbance of the surface will occur (i.e. where mining is about to take place).

Vegetation and topsoil are removed annually, in advance of the mining exercise. Topsoil removed shall be kept separate from overburden and shall not be used for building or maintenance or backfill of access and haul roads. In the event that vegetation does not naturally and quickly establish itself on the bund wall, the bund wall will be protected from being eroded by watering or wind.

Rehabilitation of the disturbed surface will be done each year during the mining period. The topsoil and overburden removed each year will be used to rehabilitate the area disturbed during the previous year. That is, each year, a further area will be mined/disturbed and an equivalent area will be rehabilitated.

Inputs and Outputs

Raw materials

Clay will be used in the brick making process at the nearby Brikor factory and plant adjacent to the site.

Coal will be used in the brick burning process.

Products

Once the bricks have been burnt/fired in a conventional “clamp” kiln on the site, the following products can be sorted for sale:

- NFP – as “common” building bricks;
- FBA – as “face brick aesthetic” (i.e. a semi-face).

Existing Infrastructure

Existing infrastructure on the site includes Eskom power lines, telephone lines and basic secondary roads.

Construction Phase

The construction phase will be limited to the grading of haul roads and the removal of overburden in preparation of the mining operations as well as the construction of the pollution control dam. If the infrastructure has to make way for the mining of specific clay bodies, then the monitoring suggested in the operational phase will still apply.

The opening of the initial box-cut involves the removal of topsoil and subsoil in order to acquire access to the ore body. The removal of topsoil usually takes place with an excavator to an average depth of 0.5m, extracted top soil material is then stored in piles for later use during rehabilitation procedures.

Operational Phase (Process Description)

Mining will be done by means of opencast methods using heavy-duty earth moving equipment as listed above. By using an excavator, the mining is done over a wide face, which is progressively advanced with prominent high walls in the advancing face. The method ensures that the mining advances at a slow rate and has a greater operating depth over a limited exposed area. The machinery is also suitable for working in adverse wet conditions.

The disadvantages of the method are that additional machines are required for hauling the extracted product to the processing plant. The terrain also requires additional earthworks, post-mining, to slope sidewalls, etc. Numerous benches are to be cut which allows for selective mining of different clay types and horizons. Because of selective mining, the quarry slopes do not always resemble a simple two-bench operation. Vegetation and topsoil are to be removed by bulldozer/front-end loader in advance of the face to clear the clay. The overburden will be stockpiled in 2 m high wind rows positioned for later rehabilitation. Benches are created by the effect of selective mining as well as by the limitation of the machinery regarding excavation depth. The maximum bench height is 3 m. The lower bench is served by a down ramp that is kept in close proximity to the working face.

An excavator will be employed to remove the clay and mining trucks will transport the clay to a stockpile close to the factory adjacent which will then be used for the production of bricks.

As and when coal is exposed after the mining of clay, the coal will be excavated in exactly the same way as the clay is. The raw coal will be transported to the coal washing section of the Plant at the Vlakfontein Mine quarry. The material is then washed for better use as an energy resource.

As and when sand is exposed, sand will be excavated. Sand will be transported to the nearby brick making factory, crushed, screened and washed to be sold off as building material.

Mining Schedule

The proposed Grootfontein Mine will be developed as a new operation.

YEAR ONE - An initial box-cut, 80m wide will be developed on the north-western corner of the mining area.

YEAR TWO, THREE, etc. - The long, south-eastern facing open cut of the mine will be advanced to the south west, in a series of blocks, such that the overall south-western side of the mine remains a straight cut. This allows for even side-to side backfilling of overburden over the north-western boundary of the proposed open-cast

mine. Topsoil will be stored separately for later rehabilitation / covering, of back-filled areas. Further information is available in the Mining Work Programme attached to this report as Appendix 5.

e) Policy and Legislative Context

Table 3: 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
Constitution of South Africa, 1996 (Act No. 108 of 1996) [as amended] <ul style="list-style-type: none"> • Section 24 Environment.-Everyone has the right- (a) to an environment that is not harmful to their health or well-being; and (b) to have the environment protected, for the benefit of present and future generations through reasonable legislative and other measures that- <ol style="list-style-type: none"> i) prevent pollution and ecological degradation; ii) promote conservation; and iii) Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development. 	The proposed development could potentially harm the environment, posing a risk to the health and wellbeing of people. The development, however, also have the potential to secure ecologically sustainable economic and social development through reusing process products and limiting the use of natural resources. The Applicant has the overall responsibility to ensure that the rights of people in terms of Section 24 of the Constitution is protected. The Applicant is required to ensure the activities related to the proposed development will not result in pollution and degradation of the environment.
National Environmental Management Act (No. 107 of 1998) [as amended]Principles of NEMA <ul style="list-style-type: none"> • Section 28 (1) Duty of Care and responsibilities to minimise and remediate environmental degradation. 	The Applicant is the developer and overall responsibility of the mine rests with him of the responsibility includes liabilities associated with the operational phase.
EIA Regulations, 2014 (Government Notices 982 and 984) [as amended] <p>The proposed construction, operational and closure activities of the proposed development triggers the following listed activity that are listed in the EIA regulations for which a Scoping and Environmental Impact Assessment (EIA) process have to be conducted:</p> <ul style="list-style-type: none"> • Activity 17: Any activity including the operation of that activity which requires a mining right as contemplated in Section 22 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including associated infrastructure, structures and earthworks, directly related to the extraction of a mineral resource, including activities for which and exemption has been issued in terms of section 106 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002). 	The proposed development requires amendment of the mining right.

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
EIA Regulations, 2014 (Government Notices 982) Chapter 6: Regulation 39 to 44: Public Participation; Chapter 4: Application for Environmental Authorisation: Part 3 Scoping and Environmental Impact Report (S&EIR) Appendix 2: Scoping Report Appendix 3: Environmental Impact Assessment Report Appendix 4: Environmental Management Programme Appendix 5: Closure Plan Appendix 6: Specialist Reports Appendix 7: Environmental Audit Report	The EIA Regulations, 2014 prescribes inter alia: the manner in which public participation needs to be conducted as well as the requirements of a scoping and environmental impact assessment process and the content of a scoping report, environmental impact assessment report and environmental management programme. The content of specialist reports, closure plans and environmental audit reports are also provided.
Mineral and Petroleum Resources Development Act, 2002 (Act. 28 of 2002) [as amended]: Section 16 Section 22	In terms of Section 22 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) a mining right must be applied for with the Department of Mineral Resources and a Mine Works Programme must be submitted as part of the application.
National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) [as amended] <ul style="list-style-type: none"> • Section 16 General duty in respect of waste management; <ul style="list-style-type: none"> • Section 17; Reduction, re-use, recycling and recovery of waste; <ul style="list-style-type: none"> • Section 18; and Extended producer responsibility; and <ul style="list-style-type: none"> • Section 21 General requirements for storage of hazardous and general waste.	The development activities will produce general and hazardous waste which need to be managed and disposed of according to best practices such as recycling, safe storage, etc.
List of Waste Management Activities that have, or are likely to have a detrimental effect on the environment as promulgated in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) [as amended] Government Notice 921 of 2013. Category B: “Residue stockpiles or residue deposits” Activity (11): The establishment or reclamation of a residue stockpile or residue deposit, resulting from activities which requires a mining right, exploration right or production right, in terms of the MPRDA. The proposed construction, operational and closure activities of the proposed development triggers the listed	A Scoping and EIA process is required and due to the activity being within a mining area, the competent authority is the Department of Mineral Resources. The WRD is an existing dump on the adjacent Vlakfontein Mine and the berms to be constructed with waste rock is listed and triggers this listed activity.

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
activities listed in Table 2, that are listed for which a scoping and EIA process have to be conducted: Category	
Waste Classification and Management Regulations and Norms and Standards for the assessment of for landfill disposal and for disposal of waste to landfill, 2013 (Government Notice 634 – 635 of 2013) promulgated in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) [as amended]; and Regulations regarding the planning and management of residue stockpiles and residue deposits from a prospecting, mining, exploration or production operation (GN R. 632 of 2015)	The construction and operational activities associated with the proposed activities shall be in accordance with the regulations and Norms and Standards. The waste rock need to be classified to determine the type of waste in order to establish which type of lining the required, if any. The waste rock dumps need to be planned and managed in terms of GN R.632 of 2015.
National Water Act, 1998 (Act No. 36 of 1998) [as amended] <ul style="list-style-type: none"> • Section 3 Regulation of flow and control of all water <ul style="list-style-type: none"> • Section 19 Prevention of pollution to watercourses <ul style="list-style-type: none"> • Section 21 The water use activities associated with the proposed development requires compliance with the requirements of the NWA as listed under GN No. 19182. An application for an integrated water use license is lodged in terms of Section 21 of the National Water Act, 1998 (Act 36 of 1998) [as amended] to undertake the following activity: Section 21: (a) Taking water from a water resource Section 21: (c) Impeding or Diverting the Flow of Water in a Watercourse Section 21: (g) disposing of waste in a manner which may detrimentally impact on a water resource; Section 21: (i) Altering the bed, banks, course or characteristics of a water course Section 21: (j) removing, discharging or disposing of water found underground for the continuation of mining or for the safety of people.	Storm water need to be managed properly in order to achieve prevention of pollution and hazards. The mine will need to dewater the opencast areas, which will be stored in the pollution control dams and used for dust suppression. (Section 21 (a) and (j)). The mining will occur within 500 m of a wetland (Section 21 (c) and (i)). The deposition of dirty storm water to the pollution control dam constitutes the disposal of waste water that may impact on ground water and surface water resources. (Section 21 (g)).
GN 704 4 June 1999 National Water Act, 1998 (Act No. 36 of 1998) [as amended] Regulations on use of water for mining and related activities aimed at the protection of water resources.	The deposition of dirty water to the pollution control dam constitutes the disposal of waste water that may impact on ground water and surface water resources.
Water Quality Management Series: OPERATIONAL GUIDELINE	The deposition of dirty water to the pollution control dam constitutes the disposal of waste water that may impact on ground water and surface water resources.

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
No. M6.1 Guideline Document for the Implementation of Regulations on Use of Water for Mining and Related Activities Aimed at the Protection of Water Resources, 2 nd Edition.	
<p>Mine Health and Safety Act, 1996 (Act No. 29 of 1996) [as amended] and associated regulations</p> <ul style="list-style-type: none"> • Chapter 2, Sections 2 – 4 Responsibilities of owner <ul style="list-style-type: none"> • Chapter 2, Sections 5 – 13 Responsibilities of manager; <ul style="list-style-type: none"> • Chapter 2, Sections 14 – 18; Documentation requirements; <ul style="list-style-type: none"> • Chapter 2, Section 19 – 20 and 22 to 24 <i>Employee's rights and duties; and</i> <ul style="list-style-type: none"> • Chapter 2, Section 21 <i>Manufacturer's and supplier's duty for health and safety.</i>	The development activities will create an environment that is potentially not safe and healthy for workers on and visitors to the site, without mitigation measures. The act provides for measures to prevent threats to the health and safety of humans in the development area.
Occupational Health and Safety Standards	Noise generated during the installation of machines, operational and decommissioning phases may not exceed noise level of 85dB.
<p>National Heritage Resources Act, 1999 (Act No. 25 of 1999)</p> <ul style="list-style-type: none"> • Section 44 (1); Preservation and protection of heritage resources; <ul style="list-style-type: none"> • Section 3 Types and ranges of heritage resources (i) (i); Objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens.	Protection of indigenous heritage resources on the property. No archaeological (Stone Age and Iron Age) and historical settlements, structures, features, assemblages or artefacts within the demarcated study area were observed by the specialist during the site visit in December 2016. However, Archaeological deposits usually occur below ground level. Should archaeological artefacts or skeletal material be revealed in the area during development activities, such activities should be halted, and a university or museum notified in order for an investigation and evaluation of the find(s) to take place (cf. NHRA (Act No. 25 of 1999), Section 36 (6)).
<p>National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) [as amended]</p> <ul style="list-style-type: none"> • Section 32 Control of dust <ul style="list-style-type: none"> • Section 34 Control of noise	Impacts on surrounding landowners need to be managed through dust and noise mitigation measures. Coal mining activities requires that an air pollution prevention plan be developed and submitted in December 2017.

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
<p>National Dust Control Regulations, 2013 (Government Notice 827 of 2013)</p> <ul style="list-style-type: none"> • Section 3 <p>Dust fall standard</p> <ul style="list-style-type: none"> • Section 4 <p>Dust fall monitoring program</p> <ul style="list-style-type: none"> • Section 6 <p>Measures for control of dust</p> <ul style="list-style-type: none"> • Section 7 <p>Ambient air quality monitoring (PM10)</p> <ul style="list-style-type: none"> • Section 8 <p>Offences</p> <ul style="list-style-type: none"> • Section 9 <p>Penalties</p> <ul style="list-style-type: none"> • Section 53 (o) read with Section 32 of NEMAQA. 	<p>Dust fallout need to be monitored in accordance to the standards set out in the monitoring programme with the specified measures due to the Applicant being liable to offences and penalties associated with non-conformance to dust which may influence employees and surrounding landowners.</p>
<p>National Pollution Prevention Plan Regulations, 2017 (Government Notice 712 of 2017)</p> <p>The purpose of the regulations is to prescribe the requirements that pollution prevention plans of greenhouse gases declared as priority air pollutants need to comply with in terms of section 29(3) of NEMAQA.</p> <p>Green house gases generated from the production processes listed in Annexure A of the Regulations and their activities reported in accordance with the National Greenhouse Gas Emmission Reporting Regulations.</p>	<p>Coal mining is listed in Annexure A of the Regulations, requiring that an Air Pollution Prevention Plan be submitted. The plan is currently being drafted and will be submitted to the relevant Competent Authority for approval.</p>
<p>Veld and Forest Fire Act, 1998 (Act No. 101 of 1998) [as amended]</p> <ul style="list-style-type: none"> • Section 12 (1) <p>Duty of the landowner to prevent fire from spreading to neighbouring properties.</p>	<p>Cautionary steps in avoiding the spread of fires to and from neighbouring properties.</p>
<p>National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) [as amended] (NEMBA)</p> <ul style="list-style-type: none"> • Section 9 <p>Norms and standards</p> <ul style="list-style-type: none"> • Section 27 <p>Delegation of power and duties</p>	<p>Indigenous vegetation need to be protected and managed in accordance with management measures set out in the management plans developed for the mine and the Applicant need to ensure he is aware of and covers his liabilities.</p>

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
<ul style="list-style-type: none"> • Section 30 Financial accountability <ul style="list-style-type: none"> • Section 43 Biodiversity management plans.	
Alien and Invasive Species Regulations (Government Notice 598 of 2014) and Alien and Invasive Species List, 2016 in terms of NEMBA (Government Notice 864 of 2016) <ul style="list-style-type: none"> • Notice 2 Exempted Alien Species in terms of Section 66 (1) <ul style="list-style-type: none"> • Notice 3 National Lists of Invasive Species in terms of Section 70(1) – List 1, 3-9 & 11 <ul style="list-style-type: none"> • Notice 4 Prohibited Alien Species in terms of Section 67 (1) – List 1, 3-7, 9-10 & 12	It is the responsibility of the Applicant to ensure that all prohibited plant and animal species are eradicated as far as possible.
Conservation of Agricultural Resources Act (no. 43 of 1983) <ul style="list-style-type: none"> • Section 5 Prohibition of spreading of weeds <ul style="list-style-type: none"> • Section 12 Maintenance of soil conservation works and maintenance of certain states of affairs <ul style="list-style-type: none"> • Section 16 Regional Conservation Committees Regulation 7: (3) (a) Except on authority of a written permission by the executive officer, no land user shall- (a) drain or cultivate any vleij, marsh or water sponge or a portion thereof on his farm unit.	Listed invader/alien plants present on site which requires management measures to be implemented to strive to maintain the status quo environment through the guidelines provided by the Regional Conservation Committee. The applicant to apply to the executive officer of the Department of Agriculture, Forestry and Fisheries for permission to drain the wetland on the property.
Hazardous Substances Act, 1973 (Act 15 of 1973) [as amended] <ul style="list-style-type: none"> • Section 2 Declaration of grouped hazardous substances; <ul style="list-style-type: none"> • Section 4 Licensing; <ul style="list-style-type: none"> • Section 16 Liability of employer or principle <ul style="list-style-type: none"> • Section 9 (1) Storage and handling of hazardous chemical substances <ul style="list-style-type: none"> • Section 18 Offences	Hazardous Substances Act, 1973 (Act 15 of 1973) [as amended] <ul style="list-style-type: none"> • Section 2 Declaration of grouped hazardous substances; <ul style="list-style-type: none"> • Section 4 Licensing; <ul style="list-style-type: none"> • Section 16 Liability of employer or principle <ul style="list-style-type: none"> • Section 9 (1) Storage and handling of hazardous chemical substances <ul style="list-style-type: none"> • Section 18 Offences

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
Hazardous Chemical Substances Regulations, 1995 (Government Notice 1179 of 1995) <ul style="list-style-type: none"> • Section 4 Duties of persons who may be exposed to hazardous chemical substances <ul style="list-style-type: none"> • Section 9A (1) Penalties	<ul style="list-style-type: none"> • Hazardous Chemical Substances Regulations, 1995 (Government Notice 1179 of 1995) <ul style="list-style-type: none"> • Section 4 • Duties of persons who may be exposed to hazardous chemical substances <ul style="list-style-type: none"> • Section 9A (1) • Penalties
Gauteng Transport Infrastructure Act, 2001 (Act No. 8 of 2001) [as amended];	<ul style="list-style-type: none"> • The Gauteng Strategic Transportation Network namely, provincial Road(s): K152, PWV16 and K181 are affected and as such, when an application for a change of land use, is lodged with the relevant authority, the said application must be lodged with the Gauteng Department of Roads and Transport. • An application must be submitted to the Department for a way leave if any part of a proposed service falls within 95,0 m (measured from the centreline of any of the Department's existing or future road(s)/railway line or within a 500,0 m radius of any intersection on said road(s)/railway line. • Where mining operations are to be undertaken, Section 49 of the Gauteng Transport Infrastructure Act, 2001 (Act No 8 of 2001) shall apply (Copy of said Section of said Act is attached for your information and use). • These conditions are laid down in terms of delegated authority in terms of the provisions of the Gauteng Transport Infrastructure Act, Act No. 8 of 2001 and do not exempt the applicant/ owner/ successor-in-title from the provisions of any other law.
NEMA: Government Notice. 805 Companion Guideline on the Implantation of the Environmental Impact Assessment Regulations, 2010, October 2012.	The application for Environmental Authorisation is submitted in terms of the EIA Regulations.
NEMA: GN. 806 Environmental Management Framework Guideline, October 2012	The proposed activity is located within the Gauteng Province and the Ekurhuleni Metropolitan Municipality of which both have a promulgated Environmental Management Framework.
NEMA: GN. 807 Public Participation Guideline, October 2012	Consultation with Interested and Affected Parties and Communities.
National Development Plan 2030 (2012)	Land uses
National Framework for Sustainable Development (2008)	Land uses

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
National Strategy for Sustainable Development and Action Plan 2011 – 2014 (NSSD 1) (2011)	Land uses
Gauteng Spatial Development Framework (SDF)	Land uses
Gauteng Spatial Development Plan (SDP)	Land uses
Ekurhuleni Metropolitan Municipality (EMM) Growth and Development Strategy 2055	Land uses
EMM Integrated Development Plan (IDP) 2016 - 2017	Land uses
Ekurhuleni Metropolitan Spatial Development Framework (MSDF), 2015	Land uses
Ekurhuleni Metropolitan Regional Spatial Development Framework: Region E	Land uses
Department of Mineral Resources Guidelines for the compilation of a Scoping Report with due regard to consultation with communities and Interested and Affected Parties.	Consultation with Interested and Affected Parties and Communities.
Gauteng Province Environmental Management Framework, 2014	Land uses and environmental management
Ekurhuleni Environmental Management Framework, 2008	Land uses and environmental management
Mining and Biodiversity Guideline, 2013	Impacts on biodiversity need to be managed through mitigation measures.
SANS 10103:2008 The Measurement and Rating of Environmental Noise with Respect to Land Use, Health, and Annoyance and to Speech Communication.	Impacts on surrounding landowners need to be managed through noise mitigation measures.
SANS 1929: Ambient Air Quality – Limits for Common Pollutants	Impacts on surrounding landowners need to be managed through dust mitigation measures.
SANS 1137: Standard test method for the collection and measurement of dust fall (settleable particulate matter).	Impacts on surrounding landowners need to be managed through dust mitigation measures.
SANS 10234: 2008 Globally Harmonised Systems of classification and labelling of chemicals (GHS) Government Notice 634. August 2013: Waste Classification	All dangerous goods on site need to be managed according to these standards.
SANS 10228:2006 The Identification and Classification of Dangerous Goods for Transport	All dangerous goods to be transported to and from the site need to be managed according to these standards.
ASTM d 1739, 1970 or equivalent approved protocol for dust monitoring.	Impacts on surrounding landowners need to be managed through dust mitigation measures.
SANS 241-1:2004 Drinking Water Specification: Physical, Aesthetic, Operational and Chemical and microbial determinants.	Surface water need to be managed.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED
(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)	
Gauteng Conservation Plan: Version 3.3	Identifies Critical Biodiversity Areas, Ecological Support Areas, and irreplaceable, protected and important areas. The site is located within an Ecological Support Area.
NEMA: Government Notice. 805 Companion Guideline on the Implantation of the Environmental Impact Assessment Regulations, 2010, October 2012.	The application for Environmental Authorisation is submitted in terms of the EIA Regulations.
All other relevant national, provincial, district and local municipality legislation and guidelines that may be applicable to the application. Some of these are discussed in the next section.	-

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).

According to the Guideline on Need and Desirability in terms of the EIA Regulations, 2010 (GN. 891 of 2014), the consideration of “need and desirability” in EIA decision-making requires the consideration of the strategic context of the development proposal along with the broader societal needs and the public interest. Government decision makers, together with Environmental Assessment Practitioners (EAPs) and planners, are therefore accountable to the public and must serve their social, economic and ecological needs equitably. Development must not exceed ecological limits in order to secure ecological integrity, while the proposed actions of individuals must be measured against the short-term and long-term public interest in order to promote justifiable social and economic development (Section 24 of the Constitution) – i.e. ensuring the simultaneous achievement of the triple bottom-line. The guideline also states that taking the above into consideration, “the need for and desirability of a proposed activity must specifically and explicitly be addressed throughout the EIA process (screening, “scoping”, and assessment), when dealing with individual impacts and specifically in the overall impact summary by taking into account the answers to questions listed in the guideline. The table below lists the broad categories of questions listed in the guideline.

Need and desirability considerations

1. Section 24 of the Constitution: “...securing ecological sustainable development and use of natural resources....”
How will this development (and its separate elements/aspects) impact on the ecological integrity of the area? (Section 24 of the Constitution and Section 2(4)(a)(vi) of NEMA).
2. Section 24 of the Constitution: “promoting justifiable economic and social development”
What is the socio-economic context of the area based on certain considerations?

According to the Western Cape Department of Environmental Affairs and Development Planning’s (WC DEADP) Guideline on Need and Desirability: EIA Guideline and Information Document Series (2011), to describe the need for a development, it must be determined whether it is the right time for locating the type of land use and/or activity being proposed. To describe the desirability for a development, it must be determined, whether it is the right place for locating the type of land use and/or activity being proposed. Need and desirability can be equated to the concept of wise use of land which can be determined through the question of what is the most sustainable use of land. In light of the above, the need and desirability of an application must be addressed separately and in detail answering inter alia the following questions:

Table 4: Need and desirability considerations

A) NEED (TIMING)	
QUESTION A1: Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority?	The project is not completely aligned with the objectives of the municipal Spatial Development Framework (SDF) and Integrated Development Plan (IDP), however, it will not compromise the integrity of these respective forward planning documents, due to the relatively short term mining period of only 10 years.
YES X	NO
QUESTION A2: Should development, or if applicable, expansion of the town/area concerned in terms of this land use (associated with the activity being applied for) occur here at this point in time?	The proposed activities will enable Brikor Ltd to extend the life of mine (LOM) with a significant number of years and therefore the benefits for local communities and South Africa as a whole for e.g. employment provision and social upliftment will continue for longer.
YES X	NO
QUESTION A3: Does the community/area need the activity and	Unemployment within the Ekurhuleni Metropolitan Municipality is high, according to the IDP of Ekurhuleni. The Brikor Limited

the associated land use concerned (is it a societal priority)?		Grootfontein Mine, will have a positive impact on the socio-economic conditions of the local communities involved once operations commence. The mine will sustain several employment opportunities after the closure of the Ilangabi Vlakfontein Mine. The mine will also contribute towards the socio-economic development of the region as a whole through social-upliftment and job creation as primary agents.
YES X	NO	
QUESTION A4: Are the necessary services with the adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development?		All infrastructure for services and capacity is sufficient for the existing and proposed mining activities.
YES	NO X	
QUESTION A5: Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)?		No municipal infrastructure will be required for the study area.
YES	NO X	
QUESTION A6: Is this project part of a national programme to address an issue of national concern or importance?		
YES	NO X	
B) DESIRABILITY (PLACING)		
QUESTION B1: Is the development the best practicable environmental option for this land/site?		The majority of the study area have been transformed through agriculture. A part of the study area is covered by a wetland and its buffer zones as identified by the wetland specialist. Mining, if approved, will significantly alter this wetland. Brikor Limited is applying to the Department of Water and Sanitation for a Water Use Licence and exemption to mine the wetland and rehabilitate the wetland after mining/ concurrently during mining. Acid Mine Drainage is a possibility as identified by the geohydrologist, however, this impact can be prevented and / or mitigated through the implementation of mitigation measures.
YES X	NO	
QUESTION B2: Would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF as agreed to by the relevant authorities?		The project is not completed aligned with the objectives of the municipal Spatial Development Framework (SDF) and Integrated Development Plan (IDP) in terms of land use, however, it will not compromise the integrity of these respective forward planning documents. Unemployment is a major problem in South Africa as in Ekurhuleni Metropolitan Municipality, and the mine will be able to provide the sustaining of currently jobs for a significant period of time.
YES	NO X	
QUESTION B3: Would the approval of this application compromise the integrity of the existing environmental management priorities of the area (e.g. as defined in EMFs), and if so, can it be justified in terms of sustainability considerations?		The study area consists mostly of cultivated land and therefore very little to no natural vegetation exists on the study area. These impacts were assessed in detail during the Environmental Impact Assessment (EIA) phase of the application, (Refer to Tables 15 - 17 and Table 24 of this report and prevention and mitigation measures are recommended in the EMPR (refer to Part B this report).
YES	NO X	

QUESTION B4: Do location factors favour this land use (associated with the activity applied for) at this place, etc.)?	The study area where the Grootfontein Mine is proposed is located adjacent to the existing Vlakfontein Mine, which is owned by Ilangabi Investments, a subsidiary of Brikor Limited. The existing infrastructure is sufficient to beneficiate the coal to be mined from the proposed Grootfontein Mine. No new infrastructure is required for the proposed mine.	
YES X	NO	
QUESTION B5: Will the activity or the land use associated with the activity applied for, impact on sensitive natural and cultural areas (built and rural/natural environment)?	A cultural heritage impact assessment was conducted in 2017 by Francois Coetzee. No archaeological (Stone age and Iron age) or historical settlements, structures, features, assemblages or artefacts were identified by the specialist.	
YES	NO X	
QUESTION B6: Will the development impact on people's health and wellbeing (e.g. in terms of noise, odours, visual character and sense of place, etc.)?	Noise, dust and visual pollution will increase, and possibly water pollution, if impacts are not managed effectively, but with the proper mitigation and good practice environmental management measures, it will result in minimal impacts. Impacts were assessed in detail during the Environmental Impact Assessment (EIA) phase of the application, (Refer to Tables 24 to 26 and 31 of this report and prevention and mitigation measures are recommended in the EMPR (refer to Part B this report).	
YES X	NO	
QUESTION B7: Will the proposed land use result in unacceptable cumulative impacts?	As already mentioned, through the implementation of good practice environmental management measures as well as mitigation measures, all direct and cumulative impacts which may result from the proposed development will be addressed and ensure that the environment is affected to the minimum. The potential cumulative impacts were assessed in detail during the Environmental Impact Assessment (EIA) phase of the application. Refer to Tables 24 to 26 and 31 of this report. Prevention and mitigation measures are recommended in the EMPR (refer to Part B this report).	

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

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

i) Details of the development footprint alternatives considered

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

- (a) the property on which or location where it is proposed to undertake the activity;
- (b) the type of activity to be undertaken;
- (c) the design or layout of the activity;

- (d) the technology to be used in the activity;
- (e) the operational aspects of the activity; and
- (f) the option of not implementing the activity.

Considering the merits of a specific application in terms of the need and desirability considerations, it must be decided which alternatives represent the “most practicable environmental option”, which in terms of the definition in NEMA and the purpose of the EIA Regulations are that option that provides the most benefit and causes the least damage to the environment as a whole, at a cost acceptable to society, in the long-term as well as in the short-term.

According to the Western Cape Department of Environmental Affairs & Development Planning (WC DEADP) Guideline on alternatives: EIA Guideline and Information Document Series (2011) feasible and reasonable alternatives have to be identified for a development as required by the NEMA EIA Regulations and applicable to EIA. Each alternative is to be accompanied by a description and comparative assessment of the advantages and disadvantages that such development and activities will pose on the environment and socio-economy. Alternatives forms a vital part of the initial assessment process through the consideration of modifications in order to prevent and/or mitigate environmental impacts associated with a particular development. Alternatives are to be amended when the development’s scope of work is amended. It is vital that original as well as amended alternative identification, investigation and assessment together with the generation and consideration of modifications and changes to the development and activities are documented.

Although an array of alternatives could be investigated for each project, such alternatives will not necessarily be applicable to each project and/or project phase. However, there must always be strived to seek alternatives that maximises efficient and sustainable resource utilisation and minimise any negative impacts on the bio-physical and socio-economic environments.

Feasible alternatives

The following alternatives were investigated as feasible alternatives:

- The site on which the proposed facility is to be located and location of infrastructure on the site (site and layout alternatives);
- The mining method (technology alternatives)
- Recycling (technology alternatives); and
- Not implementing the mining activities (No – Go alternative).

Table 5 below contains the analysis of alternatives identified.

Table 5: Alternatives Analysis

TYPE OF ALTERNATIVE:	ALTERNATIVE EXPLANATION:
Location	Develop on an alternative property Develop on alternative sites on the same property/properties
Study Area:	
<p>The property on which the mining is proposed is located immediately to the west of the existing Brikor Vlakfontein Quarry. The location of the proposed mining quarry was chosen as a result of the prospecting results, indicating the available reserves on the property as well as the feasibility studies indicating that it will be economically viable to mine there. As a result of the location close to the existing quarry and factory, transport costs and impacts will be kept to a minimum. The vegetation on the study area have been disturbed by agricultural activities with little to no natural vegetation remaining. However, there are sensitive wetlands occurring on the study area that will be affected by the proposed mining. The study area has been impacted on since prior to 1966 and the area is thus, greatly impacted. However, loss of the wetlands on the study area, could have a significant negative downstream effect. It is thus imperative that activities resulting in wetland loss should be mitigated and offset as outlined in the wetland mitigation offset manual (Bootsma & Bezuidenhout, 2017).</p>	
Area to the east of the existing Vlakfontein Quarry:	
<p>The property adjoining the existing quarry to the east, is regarded as sensitive due to the presence of a large floodplain wetland.</p>	
TYPE OF ALTERNATIVE:	ALTERNATIVE EXPLANATION:
Activity	Develop an alternative activity e.g. Incineration of waste vs. landfill disposal, abstraction of water vs. re-use/recycling of water.
<p>The re-use and recycling of water will be preferred above abstraction. However, some water will have to be abstracted from the pits, in order to continue with mining. This water will be used on the site.</p>	
TYPE OF ALTERNATIVE:	ALTERNATIVE EXPLANATION:
Design	Adapt architectural and/or engineering designs.
<p>No design alternatives have been identified or are assessed as part of this application.</p>	

TYPE OF ALTERNATIVE: Layout	ALTERNATIVE EXPLANATION: Adapt spatial configurations of an activity on any particular site e.g. Locate manure dams away from water resources.
Layout alternatives will be discussed once the specialist studies are completed during the EIA Phase.	
TYPE OF ALTERNATIVE: Technological	ALTERNATIVE EXPLANATION: Adapt methods or processes that can be implemented to achieve the same goal e.g. Introduction of bacteria rather than chemicals to waste water.
Mining method: The mining will be conducted over a wide face, which is progressively advanced with the appropriate benching, on the advancing face. The advantages of the method are that the mining advances at a slow rate and has a greater operating depth over a limited exposed area. The machinery is also suitable for working in adverse conditions. The disadvantages of this method are that additional machines are required for hauling the extracted product to the processing plant. Alternatives to this method will be discussed in detail during the EIA phase.	
TYPE OF ALTERNATIVE: Demand	ALTERNATIVE EXPLANATION: The demand for products and/or services can be met by other means e.g. The demand for paper can be met through deforestation or rather by efficient and viable recycling.
No alternatives to meet demand were identified or are assessed in this application.	
TYPE OF ALTERNATIVE: Input	ALTERNATIVE EXPLANATION: Implement different input materials and/or sources e.g. Utilisation of woodchips for fuelling boilers rather than electricity.
No input alternatives were identified or are assessed in this application.	
TYPE OF ALTERNATIVE: Routing	ALTERNATIVE EXPLANATION: Implement alternative routes for linear developments such as power line servitudes, transportation and pipeline routes e.g. Elongate and divert a railway line to exclude a sensitive environment.
No routing alternatives were identified or assessed in this application. The access and haul roads will be relocated and upgraded to the most efficient locality that will still meet the requirements of the proposed development, but will have the least impact on the environment and surrounding landowners.	
TYPE OF ALTERNATIVE: Transport	ALTERNATIVE EXPLANATION: Method of transportation of product or ore.
This alternative is not applicable to the proposed development.	

TYPE OF ALTERNATIVE: Scheduling and Timing	ALTERNATIVE EXPLANATION: Adapt the order and/or scheduling of a number of measures which plays a part in a program as it will influence the overall effectiveness of the end result.
This alternative is not applicable to the proposed development.	
TYPE OF ALTERNATIVE: Scale	ALTERNATIVE EXPLANATION: Adapt the scale of an activity ex. 15 vs. 35 housing units, 12m² vs. 0.5km². <u>P.S. Scale and magnitude is interrelated.</u>
At this stage, no alternatives in terms of scale have been identified or are assessed.	
TYPE OF ALTERNATIVE: Magnitude	ALTERNATIVE EXPLANATION: Adapt the magnitude which is directly related to the extent of an activity. <u>P.S. Scale and magnitude is interrelated. An activity may be very small scale but can pose an extensive magnitude ex. Destroying an extremely sensitive wetland on a very small scale could result in a magnitude of such as destroying the whole wetland and/or ecological system.</u>
At this stage, no alternatives in terms of magnitude have been identified or are assessed.	
TYPE OF ALTERNATIVE: No-Go	ALTERNATIVE EXPLANATION: The option of not undertaking and implementing the activity at all.
<p>According to Section 24 of the Constitution, a development must be ecologically sustainable and also support socio-economic development.</p> <p>The proposed development has the potential to have a negative impact on the ecological environment as well as the social environment of the area. These impacts, however, can potentially be prevented, minimised, mitigated and managed to acceptable levels. This will need to be confirmed during the EIA Phase.</p> <p>The project is aligned with the objectives of the municipal Spatial Development Framework (SDF) and Integrated Development Plan (IDP), as well as the Provincial Strategic Priority with reference to job creation, investment creation, rural and urban development, combating crime, skills development, combating the impact of HIV/AIDS and poverty alleviation. The Social and Labour Plan (SLP) drafted for the proposed project addresses all these priorities.</p>	

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.

A Public Participation Process is undertaken for the waste management activities. The process is undertaken to ensure compliance with regard to the requirements in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) [as amended] (MPRDA), the National Environmental Management Act, 1998 (Act No. 107 of 1998) [as amended] (NEMA), the National Environmental Management: Waste Act, 2008 (Act No 59 of 2008) [as amended] (NEMWA) and the National Water Act, 1998 (Act No. 36 of 1998) [as amended] (NWA) and the Environmental Impact Assessment Regulations (2014).

Tasks undertaken for the Public Participation Process (PPP)

This section of the report provides an overview of the tasks undertaken for the PPP to date. All PPP undertaken is in accordance with the requirements of the NEMA requirements and EIA Regulations (2014) [as amended]. It further provides an outline of the next steps in the PPP and makes recommendations for tasks to be undertaken during the environmental assessment phase of the environmental authorisation process.

The PPP tasks conducted for the proposed new plant development project to date includes:

IDENTIFICATION OF KEY INTERESTED AND AFFECTED PARTIES (AFFECTED AND ADJACENT LANDOWNERS) AND OTHER STAKEHOLDERS (ORGANS OF STATE AND OTHER PARTIES)

Public Participation is the involvement of all parties who are either potentially interested and or affected by the proposed development. The principle objective of

public participation is to inform and enrich decision-making. This is also its key role in this Scoping and Environmental Impact Assessment (EIA) process.

Interested and Affected parties (I&APs) representing the following sectors of society have been identified:

- National, provincial and local government;
- Agriculture, including local landowners (affected and adjacent);
- Community Based Organisations;
- Non-Governmental Organisations;
- Water bodies;
- Tourism;
- Industry and mining;
- Commerce; and
- Other stakeholders.

FORMAL NOTIFICATION OF THE APPLICATION TO INTERESTED AND AFFECTED PARTIES (INCLUDING ALL AFFECTED AND ADJACENT LANDOWNERS) AND OTHER STAKEHOLDERS

The project was announced as follows:

- Newspaper advertisement

Publication of media advertisement (English) in the Heidelberg/Nigel Heraut Newspaper on 10 May 2017. Refer to Appendix 6.1 for proof of newspaper notice placement.

- Site notice placement

In order to inform surrounding communities, affected and adjacent landowners of the proposed development, six site notices were erected on site and at visible locations close to the site on 10 May 2017. Refer to Appendix 6.2 for proof of site notice placement.

- Written notification

I&AP's and other key stakeholders, who included the above-mentioned sectors, were directly informed of the proposed development by e-mail on 10 May 2017. Registration and Comment sheets were also supplied to all parties. I&APs were given 30 days to comment and / or raise issues of concern regarding the proposed development. The commenting period expired on 10 June 2017. Refer to Appendix 6.3 for a copy of the proof of written notification.

CONSULTATION AND CORRESPONDENCE WITH I&AP'S AND STAKEHOLDERS

- Availability of the Draft Scoping Report

I&AP's and other key stakeholders, who included the above-mentioned sectors, were also invited to provide comments on the Draft Scoping Report. I&APs were given 30 days to comment and / or raise issues of concern regarding the proposed development and on the Scoping Report. The commenting period expired on 10 June 2017, however, this period has been extended to 23 June 2017, and comments received after the 23rd of June 2017 were also still accepted. Refer to Appendix 6.1 - 6.3 for copies of the proof of the written, site and newspaper notices containing the invitation to comment and the availability of the Draft Scoping Report. Please also refer to Appendix 6.4 for the proof of delivery of the Draft Scoping Reports.

- Invitation to public meeting

A public participation meeting was arranged to be held on the 25th of May 2017. However, due to the unstable mood within the community at the time, it was decided in consultation with the Applicant to rather have a meeting with community representatives, which was held on 26 May 2017 and then a Public Open Day at a later stage. The Public Open Day was held on 7 June 2017. The invitation to the public meeting was included in the notifications as described above. Refer to Appendix 6.1-5.3 for proof of public meeting invitation. I&APs and Organs of State and other Stakeholders were notified of the cancellation of the meeting via email and site notices. Please refer to Appendix 6.7 for the Minutes and attendance register of the meeting with community representatives and the ward councillor.

- Public Open Day

A Public Open Day was held at a venue in the town of Nigel on 7 June 2017. I&APs and other stakeholders were given the opportunity to talk to the Environmental Consultant and the Applicant to raise issues of concern and request information as well as register for the project. Please refer to Appendix 6.8 for proof of the public open day and the attendance register.

- Hardcopies of the Final Scoping Report were submitted to all organs of state and relevant authorities.

All I&AP registrations and comments that were received from stakeholders were formally recorded in the Comments and Responses Report. Appendix 6.5 contains a register of I&APs, a comments and responses report and Appendix 6.6 contains proof of comments and responses.

The NEMA Draft Environmental Impact Assessment (EIA) Report and Environmental Management Programme (EMPR) are herewith released for a period of 30 days from 15 November 2016 14 December 2016.

Hardcopies of the Draft EIA and EMPR are herewith submitted to all organs of state and relevant authorities. In addition copies are placed at the Brikor Plant 3 in Nigel, for I&APs to review the EIA/EMPR. The EIA/EMPR are also available on the ENVASS website for download.

NEXT PHASES OF THE PUBLIC PARTICIPATION PROCESS

- Hardcopies of the Final EIAR and EMPr will be submitted to all organs of state and relevant authorities.

All stakeholders and registered I&APs will be informed of the decision on the application by the Competent Authority.

iii) Summary of issues raised by I&Aps

(Complete the table summarising comments and issues raised, and reaction to those responses) Please refer to Appendix 6.4 for the full register of I&APs and comments and response report

Interested and Affected Parties List the names of persons consulted in this column and mark with an X where those who must be consulted were in fact consulted.	Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Consultation Status (consensus dispute, not finalised, etc.)	
<u>AFFECTED PARTIES</u>					
Landowner/s					
Ekurhuleni Metropolitan Municipality (Nigel) Contact Person: Agrippa Semata	X		The Applicant is in negotiation with the landowners.	The Applicant is in negotiation with the landowners.	Not finalised
Ekurhuleni Metropolitan Municipality (Springs) Mr H S Nkosi (Head of Department) Enquiries: Cecilia Rakgoale	X		The Applicant is in negotiation with the landowners.	The Applicant is in negotiation with the landowners.	Not finalised
Lawful occupier/s of the land					
Andrew Vermaak (farmer)	X		No comments received.	No comments received.	
Linden de Lange (farmer)	X	15 June 2017	The I&AP objects to the granting of the Mining right to Brikor LTD for the following reasons: On page 60 of the scoping report the EAP identifies major direct, indirect and cumulative impacts; <ul style="list-style-type: none"> - The development is not sustainable and impacts i.e. wetlands and agricultural land, cannot be rehabilitated. The development is greed and exploitation. The project fails to address alternatives. - No mention is made in the scoping report of the void that will be left when mining 	<ul style="list-style-type: none"> - The impacts will be identified and assessed by independent specialists, which will make recommendations as to the environmental feasibility of the project and also recommend mitigation measures to prevent, mitigate and manage impacts, as well as for the proper rehabilitation of the land, if the project is feasible from an environmental point of view, during the EIA phase. - Also note that the land where the mine is proposed is not completely used for agriculture, as there are areas that is not 	Not finalised

Interested and Affected Parties List the names of persons consulted in this column and mark with an X where those who must be consulted were in fact consulted.	Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Consultation Status (consensus dispute, not finalised, etc.)
		<p>comes to an end. It is patently clear that a significant crater will be left and it is our client's submission that this large area will in no time be filled with AMD which will gravitate to the RAMSAR site. If this proposed mine is allowed to operate then further AMD will be discharged into the Ramsar site (wetland) below the AMD Plant thus circumventing treatment and this will again prejudice the status of this the only Ramsar site in Gauteng.</p> <ul style="list-style-type: none"> - Concerned about Brikor's financial problems in the past and that they will not be able to rehabilitate the mine properly. - Climate change; - Lifecycle analysis in terms of waste. 	<p>feasible to farm. The presence of a wetland is expected and detailed information regarding the Present Ecological Status and the Ecological Importance and Sensitivity of the wetland, will be provided with the EIA report and the specialist study.</p> <ul style="list-style-type: none"> - The Competent Authority i.e. the Department of Mineral Resources (DMR) will make a decision on the application based on all information provided by the independent Environmental Assessment Practitioner and independent Specialists in the various fields of study, as listed in the draft scoping report. - The EIA report will include a section where alternatives will be discussed in more detail than during the scoping phase. - Acid Mine Drainage (AMD) is a potential impact that may emanate from the proposed activity, as was identified by the draft scoping report, mentioned in the section under Item 1 above. Therefore, the Applicant, on recommendation of the EAP, appointed an independent Hydrogeologist to conduct a hydrocensus and impact study on the groundwater of the area. The study will establish the baseline conditions of groundwater in the area in and around the study area and will also predict, through modelling, the potential impact of the proposed activity. - After receiving your comments and comments from other Interested and Affected Parties, the issue of AMD was further discussed with the Applicant. The 	

Interested and Affected Parties List the names of persons consulted in this column and mark with an X where those who must be consulted were in fact consulted.	Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Consultation Status (consensus dispute, not finalised, etc.)
			<p>Applicant agreed to extend the impact study to include more detailed studies, specifically focused on AMD impacts of the existing Ilangabi Vlakfontein Mine, if any, and the potential impact of AMD resulting from the proposed activity. After this study is completed, a more accurate prediction of potential AMD resulting from the proposed activity will be made and preventative measures can be provided by the specialist. The specialist study will be made available to all registered I&APs during the EIA Phase of the application</p> <ul style="list-style-type: none"> - Currently only preliminary information on AMD is available. The final AMD study will be provided to all I&AP's for comment; - The applicant of a mining right application, must ensure that a financial provision as determined by GNR 1147, for rehabilitation and closure is available. - Climate change will be included in the Final Scoping Report to be submitted to the Competent Authority (DMR) as a potential impact and be assessed during the EIA phase. The life cycle of the product will be discussed in the EIA Report and the potential impacts identified and assessed. 	
Landowners or lawful occupiers on adjacent properties				
Andrew Vermaak (farmer)	X	No comments received.	No comments received.	
Linden de Lange (farmer)	X	15 June 2017	Please refer to comments above	Not finalised
National Government of the Republic of South Africa	X	No comments received.	No comments received.	

Interested and Affected Parties List the names of persons consulted in this column and mark with an X where those who must be consulted were in fact consulted.	Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Consultation Status (consensus dispute, not finalised, etc.)
Department of Defence Dunnottar Military Base				
Adjacent Land Owner Scarlet Sun 33 (Pty) Ltd Garnett Parkin (Brikor)	X	No comments received.	No comments received.	
Ekurhuleni Metropolitan Municipality (Nigel) Contact Person: Agrippa Semata	X	No comments received.	No comments received.	
Marievale Bird Sanctuary Provincial Nature Reserve Contact Person: Rhulani Maluleke	X	No comments received.	No comments received.	
Municipal councillor				
Ward councillor Ward 88 Mr Wollaston Labuschagne	X	28 June 2017 1. Concerned about possible wetland area adjacent to the site where the development is proposed. 2. Concerned that rehabilitation will not take place. 3. Concerned that future generations may well have their livelihood opportunities, and their quality of life, reduced by polluted water, degraded soil and land. Low level agricultural jobs may be lost by community members who are unable to get one of the new jobs created by the Grootfontein Mining Project as this require a high level of skill. Livelihoods lost are thus seldom directly replaced through mine employment. This problem	1. The presence of a wetland will be confirmed by a specialist during the EIA phase. 2. The applicant of a mining right application, must ensure that a financial provision as determined by GNR 1147 for rehabilitation and closure is available. 3. & 4. The Need and Desirability of the proposed activity will be assessed and discussed in detail during the EIA phase and within the EIA report. Please note that as part of the Mining Right Application, the Applicant is also required to submit a Social and Labour Plan, which must be approved by the Competent Authority, before a mining right can be issued. The Social and Labour Plan include measures to mitigate any	Not finalised.

Interested and Affected Parties List the names of persons consulted in this column and mark with an X where those who must be consulted were in fact consulted.	Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Consultation Status (consensus dispute, not finalised, etc.)
		<p>becomes particularly critical where there can be no post-mining land-use.</p> <ol style="list-style-type: none"> 4. The Grootfontein Coal Mining Project falls within the East Rand gold fields and since, as a consequence of the uraniferous nature of the gold ore, Witwatersrand tailings and other mining residues often contain significantly elevated concentrations of uranium and its daughter radionuclides, with the decay series of U238 being dominant, a radiological assessment should be conducted before a statement can be made that the mine will benefit the community. 5. Concerned about potential negative impacts that were identified and described in the scoping report. 6. The Project area is located within the threatened ecosystems: Blesbokspruit Highveld Grassland. 7. The entire Upper Vaal is underlain by coal. There are alternative areas, which are not classified as biodiversity priority areas, where coal can be extracted. 8. Brikor cannot be entrusted with another mining license whilst it endeavours to recover from previous financial constraints. 9. Brikor have NEVER engaged with the community concerning their negative impact on the town's infrastructure nor have they "adopted" any local NGO's or even sponsored sports clubs etc. 	<p>socio-economic impacts that may result from the proposed activity. The Draft Social and Labour Plan will also be made available for comment during the EIA phase of the Environmental Authorisation process. All potential environmental / pollution impacts will be further assessed during the EIA phase, by the independent Environmental Assessment Practitioner (EAP) and by independent specialists conducting various specialist studies and will be made available to registered Interested and Affected Parties (I&AP's), during the EIA phase.</p> <ol style="list-style-type: none"> 5. Your comment is noted. The potential impacts that have been identified by the Environmental Assessment Practitioner in consultation with various stakeholders and Interested and Affected Parties during the scoping phase, will be investigated during the Environmental Impact Assessment (EIA) phase. The potential impacts that may be caused by the proposed activity will be assessed by independent specialists during the EIA phase. The specialists will make recommendations as to the environmental feasibility of the project and also recommend mitigation measures to prevent, mitigate and manage impacts on animals and vegetation, as well as for the proper rehabilitation of the land, if the project is feasible from an environmental point of view. <p>Mitigation measures to prevent, minimise and manage impacts will be included in the Environmental Management Programme</p>	

Interested and Affected Parties List the names of persons consulted in this column and mark with an X where those who must be consulted were in fact consulted.	Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Consultation Status (consensus dispute, not finalised, etc.)
		10. Concerned that Brikor's directors were not at the Public Open Day on 7 June 2017.	<p>(EMPr). Should the Mining Right be issued by the Competent Authority (CA) i.e. the Department of Mineral Resources (DMR), the EMPr will be a legal document that must be implemented by the Applicant. You will have the opportunity to comment on the EIA report and EMPr during the EIA Phase. Copies of the final approved EMPr will be forwarded to Interested and Affected Parties and Stakeholders that may request it, with contact details of the relevant enforcement authority. Should the applicant not comply with the EMPr, the Interested and Affected Party should contact the relevant authority to complain.</p> <p>6. This will be verified by the Ecological Impact Study to be conducted by an independent specialist and any impacts will be discussed in the report, which will be made available to all registered I&AP's during the EIA phase.</p> <p>7. Your comment is noted. The EIA report will include a section where alternatives including site alternatives, if any, will be discussed in more detail than during the scoping phase.</p> <p>8. Brikor has recovered from a period of provisional liquidation and will be re-listed on the Johannesburg Stock Exchange in the near future. The financial recovery of Brikor will impact positively on the local economy in terms of trade and employment.</p> <p>9. Brikor is under obligation to engage with all interested and affected parties (I&AP's) through the public participation process, as required in terms of the approved mining</p>	

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			<p>rights. Brikor conducts regular community forum meetings and has an approved Social and Labour Plan, contributing to Local Economic projects and local skills development. Copies of the Minutes are available on request. EAP's response: This application is for the proposed mining activities planned by Brikor Limited and this public participation process is part of the application. Brikor appointed ENVASS to conduct the independent Environmental Authorisation process and part of this process is conducting Public Participation. As you are aware, Brikor have engaged and are still engaging with the community through this public participation process. A meeting was held with yourself and other representatives of the community on 26 May 2017, where you were also present, and a Public Open Day was held on 07 June 2017 where representatives of the Applicant was available for consultation with the community and other stakeholders from 08:00 am until 19:00.</p> <p>10. This comment is noted. Representatives of the Applicant was present on the day, from 08:00 am until 19:00.</p>	
Municipality				
Ekurhuleni Metropolitan Municipality (Nigel) Contact Person: Agrippa Semata	X	No comments received.	No comments received.	
		No comments received.	No comments received.	Not finalised

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Ekurhuleni Metropolitan Municipality (Springs) Mr H S Nkosi (Head of Department) Enquiries: Cecilia Rakgoale				
Ekurhuleni Metropolitan Municipality Environmental Department Mr Hezekiel Nkosi Stewart Green (Divisional Head for Legal Compliance)	X	No comments received.	No comments received.	
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWS etc.)				
Department of Mineral Resources Environmental: Christinah Ramoelo Jimmy Sekgale	X	A pre-application meeting was held with the department.	A pre-application meeting was held with the department.	Not finalised
Gauteng Department of Agriculture and Rural Development (GDARD)	X	21 June 2017 The following comments were received on the Draft Scoping Report: 1. The Scoping Report must contain all information set out in Appendix 2 of Government Notice 982 of the Environmental Impact Assessment Regulations, 2014. 2. Public Participation Process: The summary of issues and comments raised by interested and Affected Parties thereof, must be assessed, responded to and incorporated in the final SR.	The EAP acknowledged the comments of the Department and indicated that a final scoping report will be submitted to the Department.	Not finalised.

Interested and Affected Parties List the names of persons consulted in this column and mark with an X where those who must be consulted were in fact consulted.	Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Consultation Status (consensus dispute, not finalised, etc.)
		3. All recommendations and mitigation measures by relevant corporate must be incorporated in the final SR.		
The Department of Agriculture, Forestry and Fisheries (DAFF)	X 9 June 2017 28 June 2017 12 July 2017	<p>The Forestry and Natural Resources Management Department of DAFF indicated that there are no tree species protected under the National Forests Act, 1998 (Act No 84. Of 1998) that will be affected by the proposed development. The Department therefore have no specific comments.</p> <p>On page 23 of the Draft Scoping Report, it is indicated that there is a possibility that there is a wetland occurring on the proposed mining site, therefore according to CARA Regulation 7: (3) (a) Except on authority of a written permission by the executive officer, no land user shall- - (a) drain or cultivate any vlei, march or water sponge or a portion thereof on his farm unit;</p> <p>The following comments were received on the Final Scoping Report: Comments on Final Scoping Report:</p> <p>4. All the appendices required in application form for waste management licence and EIA Regulations, must be attached in the Draft EIA R.</p> <p>5. The following specialist studies must be conducted:</p> <ul style="list-style-type: none"> - Geohydrological study; - Wetland study; - Vegetation study; - Dolomite study; - Air quality impact assessment; 	<p>The comments was acknowledged and will be incorporated in the final scoping report.</p> <p>The comments was acknowledged and the issues will be incorporated into the final scoping report and addressed during the EIA / EMPr phase of the application.</p>	Not finalised.

Interested and Affected Parties List the names of persons consulted in this column and mark with an X where those who must be consulted were in fact consulted.	Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Consultation Status (consensus dispute, not finalised, etc.)
		<ul style="list-style-type: none"> - Conceptual and Final Design Report and Designs; - Aquatic Impact Assessment; - Ecological and Biodiversity Scan; - Soil and Land Capability Study; - Waste Classification; - Archaeological Impact Assessment; and Palaeontological Study; <p>The studies must investigate the environmental impacts that the activity will cause.</p> <p>6. A Traffic Impact Assessment must be conducted and impacts on existing road network and mitigation measures to be discussed. The traffic infrastructure requirements must be approved by the relevant Local Authority and Roads Agency.</p> <p>Environmental Management Programme:</p> <ul style="list-style-type: none"> 7. The Draft EMPr to comply with EIA Regulations, 2014; 8. A Waste Management Plan must be included in the draft EMPr; 9. An emergency plan that deals with potential hazardous circumstances which might occur during the project life cycle must be included in the EMPr. 10. Dust suppression measures to be included; 11. Noise mitigation measures, and spill procedures, to be included; 12. Storm Water Management Plan to be developed and contain mitigation measures. 		

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		Public Participation: 13. A summary of issues and comments raised by I&APs and responses sent, must be included in the Draft EIAR; General: All recommendations and mitigation measures by relevant corporate must be implemented and adhered to.		
Department of Environmental Affairs Lucia Mathutu MOTAUNG Assistant Director, CEPA Government Focal Point	X	No comments received.	No comments received.	
Department of Environmental Affairs Tshildzi Edward NETSHITHOTHOLE CONTROL Biodiversity Officer, Directorate of International Advisory Services National Focal Point South Africa	X	No comments received.	No comments received.	
Department of Environmental Affairs Nosipho NGCABA Director General, Head of Administrative Authority South Africa	X	No comments received.	No comments received.	
Gauteng Home Affairs	X	No comments received.	No comments received.	
Gauteng Department of Community Safety	X	No comments received.	No comments received.	

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Department of Social Development Nigel	X		No comments received.	No comments received.	
Gauteng Department of Economic Development	X		No comments received.	No comments received.	
Gauteng Department of Sports, Arts Culture and Recreation	X		No comments received.	No comments received.	
Gauteng Department of Health	X		No comments received.	No comments received.	
Gauteng Department of Human Settlements	X		No comments received.	No comments received.	
Gauteng Department of Infrastructure Development	X		No comments received.	No comments received.	
Gauteng Department of Roads and Transport	X	25 May 2017	<ol style="list-style-type: none"> 1. "...note must be taken that the Gauteng Strategic Transportation Network namely, provincial Road(s): K152, PWV16 and K181 are affected and as such, in terms of the Gauteng Transport Infrastructure Act, 2001 (Act No 8 of 2001), when an application for a township establishment, change of land use (rezoning, subdivision, consent use etc.) is lodged with the relevant authority, the said application must be lodged with this Department for evaluation..." 2. "...Note must be also taken that an application must be submitted to this Department for a way leave if any part of a proposed service falls within 95,0 m (measured from the centreline of any of the Department's existing or future road(s)/railway line or within a 500,0 m 	<ol style="list-style-type: none"> 1. This comment is noted and will be brought to the attention of the Applicant. 2. This comment is noted and will be brought to the attention of the Applicant. 3. This comment is noted and the comment and the relevant Section of the Act, will be forwarded to the Applicant. 4. This comment is noted and will be brought to the attention of the Applicant. 	Finalised.

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		<p>radius of any intersection on said road(s)/railway line..."</p> <p>3. "Where mining operations are to be undertaken, Section 49 of the Gauteng Transport Infrastructure Act, 2001 (Act No 8 of 2001) shall apply (Copy of said Section of said Act is attached for your information and use)..."</p> <p>4. "...These conditions are laid down in terms of delegated authority in terms of the provisions of the Gauteng Transport Infrastructure Act, Act No. 8 of 2001 and do not exempt the applicant/ owner/ successor-in-title from the provisions of any other law..."</p>		
South African Heritage Resources Agency (SAHRA)	X 12 July 2017	<p>1. The SA palaeontological Sensitivity Map indicates that a significant part of the study area has Very High fossil sensitivity. No palaeontological assessment has been attached to the case. It is required to do a palaeontological field assessment and protocol for finds, which must be submitted to SAHRA for comment, prior to any development activities.</p> <p>2. In terms of archaeology, SAHRA has no objections to the proposed development, provided that the recommendations in the specialist report and this comment are adhered to, on conditions listed in the interim comment.</p>	<p>1. The requirement will be incorporated into the scoping report and a specialist opinion will be requested with regards to the field assessment and the viability thereof.</p> <p>2. This comment is noted and the condition will be included in the EIA report and EMPr.</p>	Not finalised.
South African National Roads Agency Limited (SANRAL)	X	No comments received.	No comments received.	

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Provincial Heritage Resources Authority Gauteng (PHRAG)	X		No comments received.	No comments received.	
Gauteng Department of Education School District Offices Ekurhuleni South District Director: Jerry Bhagaloo, Ekurhuleni South PA: Busisiwe Mtshali	X		No comments received.	No comments received.	
Communities					
Marievale Committee Chris Koitsioe Cell: 073 562 5217	X	26 May 2017	Please refer to minutes attached in Appendix 6.7 Main issues: Benefits to community; Dust impacts; Safety on roads; Job creation; Community projects.	Please refer to minutes attached in Appendix 6.7. Will be addressed in the EIA / EMPr and the Social and Labour Plan.	Not finalised.
Dept. Land Affairs					
Gauteng Department of Rural Development and Land Affairs	X		No comments received.	No comments received.	
Traditional Leaders					
Gauteng Cooperative Governance and Traditional Affairs	X		No comments received.	No comments received.	
Dept. Environmental Affairs					

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Lucia Mathutu MOTAUNG Assistant Director, Department of Environmental Affairs CEPA Government Focal Point SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE	X		No comments received.	No comments received.	
Other Competent Authorities affected					
Department of Water and Sanitation (DWS)	X	23 May 2017	A site visit was conducted with the Department on 23 May 2017. A draft scoping report was delivered to the Department. No comments have been received.	-	Not finalised
Ekurhuleni Metropolitan Municipality Environmental Health Nigel / Duduza Branch Mr Frederik Pieterse Mr Riaan Kruger / Ms Ina van Gerve Ms Chanelle Southon	X	7 June 2017	<ol style="list-style-type: none"> 1. You are concerned about the mine causing impacts on soil. 2. You are concerned about the mine causing impacts on surface and ground water. 3. You are concerned about air quality. 4. You are concerned about noise, vibration and lighting impacts. 5. You are concerned about waste management. 6. "...When life cycle of mine expired, will the area be rehabilitated to its original state..." 	The potential impacts that may be caused by the proposed activity, will be assessed by independent specialists during the Environmental Impact Assessment (EIA) phase. The specialists will make recommendations as to the environmental feasibility of the project and also recommend mitigation measures to prevent, mitigate and manage impacts on soil, as well as for the proper rehabilitation of the land, if the project is feasible from an environmental point of view. These mitigation measures will be included in the Environmental Management Programme (EMPr).	Not finalised.
OTHER AFFECTED PARTIES					
Wildlife and Environment Society of South Africa (WESSA)		7 June 2017	The I&AP indicated that your concern lies with environmental sustainability in terms of soil, surface and groundwater and ecology including	The potential impacts that may be caused by the proposed activity, will be assessed by independent specialists during the Environmental Impact	Not finalised.

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Northern Areas Region		animals and vegetation. "...The vicinity is the Blesbokspruit, a Ramsar Site already threatened with pollution by the mining industry..."	Assessment (EIA) phase. The specialists will make recommendations as to the environmental feasibility of the project and also recommend mitigation measures to prevent, mitigate and manage impacts on soil, as well as for the proper rehabilitation of the land, if the project is feasible from an environmental point of view. These mitigation measures will be included in the Environmental Management Programme (EMPr).	
Ramsar South Africa		No comments received.	No comments received.	
Birdlife SA Important Bird and Biodiversity Areas Programme: Daniel Marnewick		No comments received.	No comments received.	
Happiness Primary School P.L.N. Gama		No comments received.	No comments received.	
South African Police Services (SAPS) Station: Dunnottar, Nigel		No comments received.	No comments received.	
<u>INTERESTED PARTIES</u>				
Exxaro Base Metals Projects	3 July 2017	<ol style="list-style-type: none"> 1. Various "vleis", pans and wetlands will be directly, or indirectly affected by the mining development. 2. A cooperative management committee must be established between the mine and representatives from the various I&APs. 3. Continuous rehabilitation must be a given. In other words, rehabilitation 	<ol style="list-style-type: none"> 1. The potential impacts that may be caused by the proposed activity on the wetlands and groundwater will be assessed by independent specialists during the Environmental Impact Assessment (EIA) phase. The specialists, will make recommendations as to the environmental feasibility of the project and also recommend mitigation and monitoring measures to prevent, mitigate and manage 	Not finalised.

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		<p>should start in year two, to rehabilitate year one's mining activities.</p> <ol style="list-style-type: none"> 4. Topsoil and overburden must be stored separately, and never on existing topsoil. 5. The mine must attend the quarterly meetings of: Gauteng Wetlands Forum; Blesbokspruit Catchment Forum. The improvement and conservation of the ecological integrity and environmental quality of the adjacent wetlands must be the priority social activity of the mine. 	<p>impacts on animals and vegetation, as well as for the proper rehabilitation of the land, if the project is feasible from an environmental point of view. These measures will also be included in the Environmental Management Programmes (EMPr).</p> <ol style="list-style-type: none"> 2. Your recommendation will be discussed with the Applicant and further assessed during the EIA phase of the application and included in the reports to be submitted to the Competent Authority for decision making. 3. Rehabilitation measures will be included in the EMPr, as well as the Annual Rehabilitation Plan and Final Rehabilitation, Decommissioning and Closure Plan to be submitted to the Competent Authority for the project. 4. This mitigation measure will be included in the EMPr to be submitted for approval to the Competent Authority i.e. the Department of Mineral Resources (DMR). 5. Your comment will be discussed with the Applicant and assessed and considered during the EIA phase of the application. 	
Private J Allison	7 June 2017	<ol style="list-style-type: none"> 1. Impacts on ecology including animals and vegetation. 2. Impacts on air quality. 	<ol style="list-style-type: none"> 1. The potential impacts that may be caused by the proposed activity, will be assessed by independent specialists during the Environmental Impact Assessment (EIA) phase. The specialists will make recommendations as to the environmental feasibility of the project and also recommend mitigation measures to prevent, mitigate and manage impacts on animals and vegetation, as well as for the proper rehabilitation of the land, if the project is 	Not finalised.

Interested and Affected Parties List the names of persons consulted in this column and mark with an X where those who must be consulted were in fact consulted.	Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Consultation Status (consensus dispute, not finalised, etc.)
			<p>feasible from an environmental point of view. The mitigation measures will be included in the Environmental Management Programme (EMPr).</p> <p>2. Dust impacts will be investigated during the EIA phase of the application. Mitigation measures to maintain the roads and prevent and mitigate dust pollution, will be included in the EMPr. The current dust monitoring programme of the Brikor Vlakfontein Mine, should also be extended to include the new mining area, if approved. More detailed information regarding monitoring will be included in the EMPr.</p>	
Private Mr Barend Jacobus (Bennie) Burger	7 June 2017	<ol style="list-style-type: none"> 1. Impacts on air quality. 2. Impacts on ecology including animals and vegetation. 3. Impacts on surface and ground water. 4. Impacts on Health due to burning of low grade coal. 5. You are concerned about the mine causing impact on property values. 6. Waste management. 	<ol style="list-style-type: none"> 1. Dust impacts will be investigated during the Environmental Impact Assessment (EIA) phase of the application. Mitigation measures to maintain the roads and prevent and mitigate dust pollution, will be included in the Environmental Management Programme (EMPr). The current dust monitoring programme of the Brikor Vlakfontein Mine, should also be extended to include the new mining area, if approved. More detailed information regarding monitoring will be included in the EMPr. 2. The potential impacts that may be caused by the proposed activity, will be assessed by independent specialists during the EIA phase. The specialists, will make recommendations as to the environmental feasibility of the project and also recommend mitigation measures to prevent, mitigate and manage impacts on animals and vegetation, surface and ground water 	Not finalised.

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			<p>and air quality, as well as for the proper rehabilitation of the land, if the project is feasible from an environmental point of view. These mitigation measures will be included in the EMPr.</p> <p>3. The potential impacts that may be caused by the proposed activity, including air quality impacts, will be assessed by independent specialists during the EIA phase. The specialists, will make recommendations as to the environmental feasibility of the project and also recommend mitigation measures to prevent, mitigate and manage impacts. Please note that the low grade coal is not necessarily burnt, but rather blended with other materials to increase the quality of the coal and thereafter sold. Mitigation measures will be included in the EMPr.</p> <p>4. Potential impact on property values is not necessarily an environmental impact, but will be included in the final scoping report and assessed during the EIA phase.</p> <p>5. This potential impact will be included in the final scoping report and assessed during the EIA phase. Mitigation measures to manage waste, will be included in the EMPr.</p>	
Private Mr Gideon Niemann Ms Martie Niemann	7 June 2017	<ol style="list-style-type: none"> 1. Impacts on air quality. 2. Impacts on ecology including animals and vegetation. 3. Impacts on surface and ground water. 	<ol style="list-style-type: none"> 1. Dust impacts can be investigated during the EIA phase. Mitigation measures to be maintain the roads and prevent and mitigate dust pollution, will be included in the EMPr. The current dust monitoring programme of the Brikor Vlakfontein Mine, should also be extended to include the new mining area, if approved. More detailed information 	Not finalised.

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			<p>regarding monitoring will be included in the EMPr.</p> <p>2. The potential impacts that may be caused by the proposed activity, will be assessed by independent specialists during the EIA phase. The specialists, will make recommendations as to the environmental feasibility of the project and also recommend mitigation measures to prevent, mitigate and manage impacts on animals and vegetation, surface and ground water and air quality, as well as for the proper rehabilitation of the land, if the project is feasible from an environmental point of view. These mitigation measures will be included in the EMPr.</p>	
Rekord Newspaper Ms Magda Maritz	7 June 2017	<ol style="list-style-type: none"> 1. Dust emitted from the coal mine, which may aggravate health conditions such as asthma. 2. Impacts on surface and ground water, including wetlands. 	<ol style="list-style-type: none"> 1. Dust impacts will be investigated during the Environmental Impact Assessment (EIA) phase. Mitigation measures to maintain the roads and prevent and mitigate dust pollution, will be included in the Environmental Management Programme (EMPr). The current dust monitoring programme of the Brikor Vlakfontein Mine, should also be extended to include the new mining area, if approved. More detailed information regarding monitoring will be included in the EMPr. 2. The potential impacts that may be caused by the proposed activity, will be assessed by independent specialists during the EIA phase. The specialists, will make recommendations as to the environmental feasibility of the project and also recommend mitigation measures to prevent, 	Not finalised.

Interested and Affected Parties List the names of persons consulted in this column and mark with an X where those who must be consulted were in fact consulted.	Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Consultation Status (consensus dispute, not finalised, etc.)
			mitigate and manage impacts on surface and ground water, including wetlands, as well as for the proper rehabilitation of the land, if the project is feasible from an environmental point of view. These mitigation measures will be included in the EMPr.	
Private Ms Elreda Pedlar	7 June 2017	Heavy presence of dust and damage caused to the roads by mining trucks.	The impact of heavy mining vehicles on the roads and dust impacts will be investigated during the Environmental Impact Assessment (EIA) phase. Mitigation measures to maintain the roads and prevent and mitigate dust pollution, will be included in the Environmental Management Programme (EMPr). Should the Mining Right be issued by the Competent Authority (CA) i.e. the Department of Mineral Resources (DMR), the EMPr will be a legal document that must be implemented by the Applicant. You will have the opportunity to comment on the EIA report and EMPr during the EIA Phase. Copies of the final approved EMPr will be forwarded to Interested and Affected Parties and Stakeholders that may request it, with contact details of the relevant enforcement authority. Should the applicant not comply with the EMPr, the Interested and Affected Party should contact the relevant authority to complain. The current dust monitoring programme of the Brikor Vlakfontein Mine, should also be extended to include the new mining area, if approved. More detailed information regarding monitoring will be included in the EMPr.	Not finalised.
Gold Field Trading Mr Tani Klue	7 June 2017	<ol style="list-style-type: none"> 1. Heavy presence of dust and damage caused to the roads by mining trucks. 2. Impacts on ecology including animals and vegetation. 	<ol style="list-style-type: none"> 1. The impact of heavy mining vehicles on the roads and dust impacts will be investigated during the Environmental Impact Assessment (EIA) phase. Mitigation measures to maintain the roads and prevent 	Not finalised.

Interested and Affected Parties List the names of persons consulted in this column and mark with an X where those who must be consulted were in fact consulted.	Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Consultation Status (consensus dispute, not finalised, etc.)
			<p>and mitigate dust pollution, will be included in the Environmental Management Programme (EMPr). The current dust monitoring programme of the Brikor Vlakfontein Mine, should also be extended to include the new mining area, if approved. More detailed information regarding monitoring will be included in the EMPr.</p> <p>2. The potential impacts that may be caused by the proposed activity, will be assessed by independent specialists during the EIA phase. The specialists will make recommendations as to the environmental feasibility of the project and also recommend mitigation measures to prevent, mitigate and manage impacts on animals and vegetation, as well as for the proper rehabilitation of the land, if the project is feasible from an environmental point of view. These mitigation measures will be included in the EMPr.</p>	
Private Ms Tracy Ceronio	7 June 2017	<ol style="list-style-type: none"> 1. Impacts on soil. 2. Impacts on surface and ground water; 3. Impacts on ecology including animals and vegetation; 4. Impacts on air quality. 	The potential impacts that may be caused by the proposed activity, will be assessed by independent specialists during the EIA phase. The specialists will make recommendations as to the environmental feasibility of the project and also recommend mitigation measures to prevent, mitigate and manage impacts on animals and vegetation, as well as for the proper rehabilitation of the land, if the project is feasible from an environmental point of view. These mitigation measures will be included in the EMPr.	Not finalised.
Private Ann Langeveld	7 June 2017	<ol style="list-style-type: none"> 1. Property values. 2. Air quality. 	<ol style="list-style-type: none"> 1. This potential impact is not necessarily an environmental impact, but will be included in the final scoping report and assessed during the EIA phase. 	Not finalised.

Interested and Affected Parties List the names of persons consulted in this column and mark with an X where those who must be consulted were in fact consulted.	Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Consultation Status (consensus dispute, not finalised, etc.)
			2. Dust impacts will be investigated during the Environmental Impact Assessment (EIA) phase of the application. Mitigation measures to maintain the roads and prevent and mitigate dust pollution, will be included in the Environmental Management Programme (EMPr). The current dust monitoring programme of the Brikor Vlakfontein Mine, should also be extended to include the new mining area, if approved. More detailed information regarding monitoring will be included in the EMPr.	

iv) The Environmental attributes associated with the development footprint alternatives

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

(1) Baseline Environment

The study area is located on the Remainder of the Farm Vogelstruisbult 127 IR and a portion of Portion 85 of the Farm Grootfontein 165 IR, situated approximately 5 km north-west of the town of Nigel. The study area falls within the Ekurhuleni Metropolitan Municipality in the Gauteng Province.

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

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

Gradient and landscape context

The topography of the study area is characterised by relatively flat terrain with an eastern downwards slope of approximately 1:100 m towards the Blesbokspruit. The study area is located between 1602 and 1580 metres above mean sea level (mamsl)

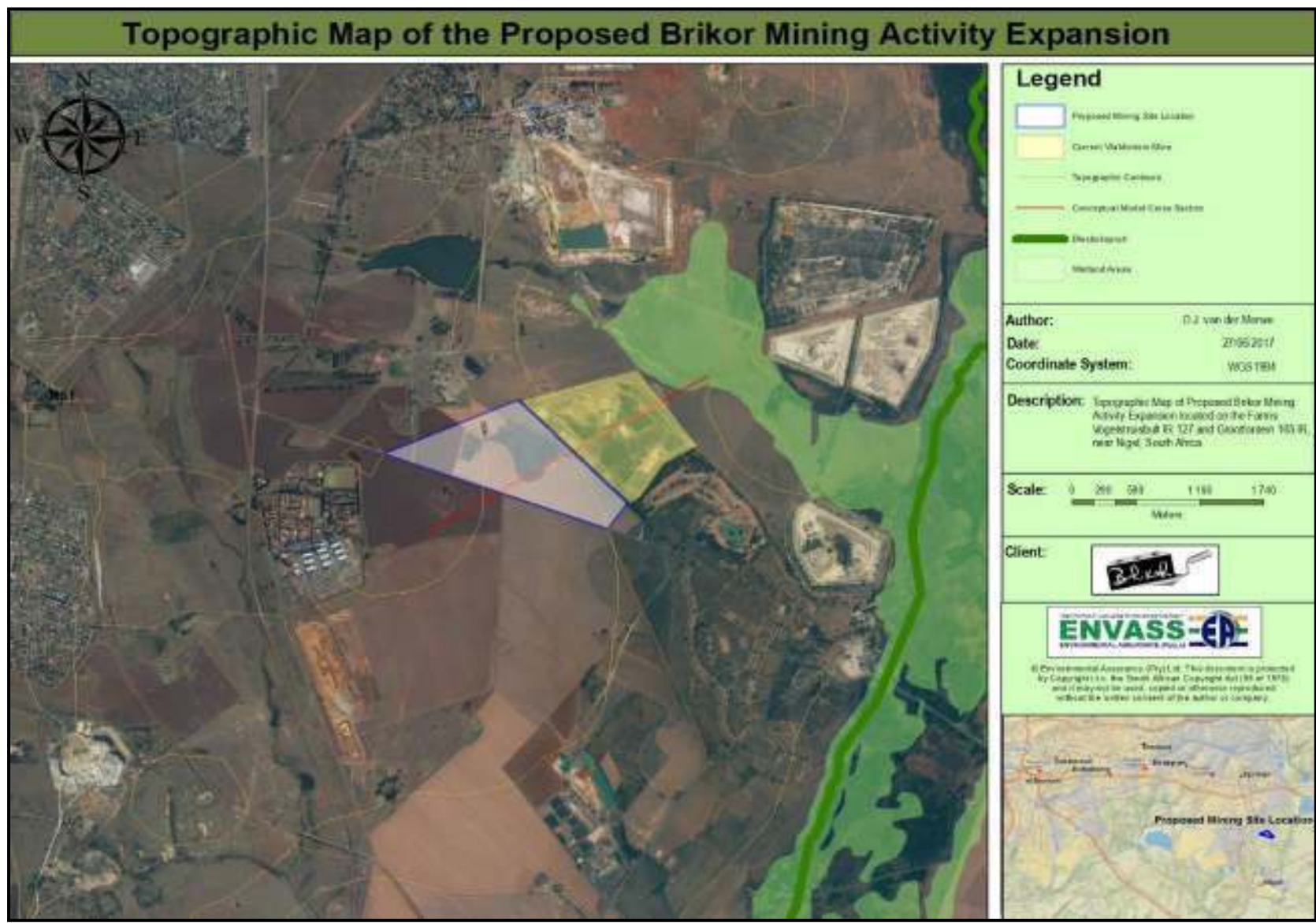


Figure 2: Topographic Map

Geology

Information in this section was derived from the HYDROGEOLOGICAL INVESTIGATION of the Proposed Coal Mining on the Farm Grootfontein 165 IR, District Nigel, Ekurhuleni Metropolitan Municipality, Gauteng, Report by Van der Merwe and Damhuis (2017) and the Palaeontological Study by Fourie (2017), as well as the Geological report by Brikor, 2016

According to Snygans (2010) and as indicated on the published 1:250 000 Geological Series 2628 East Rand, the stratigraphy of the area is typical of the coal bearing margins of the Karoo Supergroup sequence and positioned close to the northwestern margin of the Karoo Basin (Brikor, 2016), refer to Figure 3. The southern part of the Karoo basin is 3 000 m in thickness, with the northern part of the basin considerably thinner (Fourie, 2017). The succession consists of pre-Karoo rocks (dolomite and chert of the Chuniespoort Group of the Transvaal Sequence) overlain by the Dwyka Formation (Dwyka Tillite and shale), followed by the Ecca Group sediments (shale, sandstone and coal beds), of which the Vryheid Formation is the coal-bearing horizon, which forms part of the Middle Ecca (Kent 1980). This formation has the largest coal reserves in South Africa. The Vryheid Formation is primarily comprised of coal, soft sandy shale, white to yellowish cross bedded sandstone and grit and has a maximum total thickness of 500 m. The coarser-grained fluvial facies are predominantly the geological section of the Vryheid formation in which several coal seams occur. These facies are located at the top of each sequence (Scholtz, 2013).

The Vryheid Formation sediments may attain a thickness of 120 – 140m. A typical profile includes soil and clay, sandstone and siltstone, shale, 2 upper seam, shale, 2 seam, sandstone, no 1 seam, shale and dolomite at the bottom. Diabase or dolerite dykes are also present in the area. The typical colours for the Vryheid Formation are grey and yellow for the sediments and black for the coal seam. The thickness of the grey shale can vary and this is interlayered with the also variable yellow sandstone and coal seams. (Fourie, 2017).

According to the Water Resources Commission (WR, 2012) (Department of Water and Sanitation, et al., 2012) geological maps (refer to Figure 4), diagrammatic sections and borehole logs (Annexure D and E of the Geohydrological Study) and Snygans (2010), the site geology relates to that of the Karoo Supergroup (Ecca and Dwyka groups). Furthermore, the site

exploration borehole logs together with Snygans (2010) indicated that the site area is covered by deep Karoo sediments and alluvial clay with depths ranging from 20 to 40 m bgl.

North-west to south-east dolerite intrusions in the form of dykes are present over a wide area, but geophysical surveys conducted over the site did not reflect anomalies that may be correlated with dolerite dykes. Structural geological features such as dykes and faults can have a measurable influence on ground water flow and mass transport. Sandstone is deposited in times of flooding in the river channels and the mudstones were deposited on the floodplains in the shallow lakes (Snyman 1996). The Transvaal Supergroup formed an irregular topographical surface, onto which Karoo rocks were deposited, now represented as irregular shaped basins. The areas is covered with thick topsoil and subsoil and for that reason is generally devoid of outcrop.

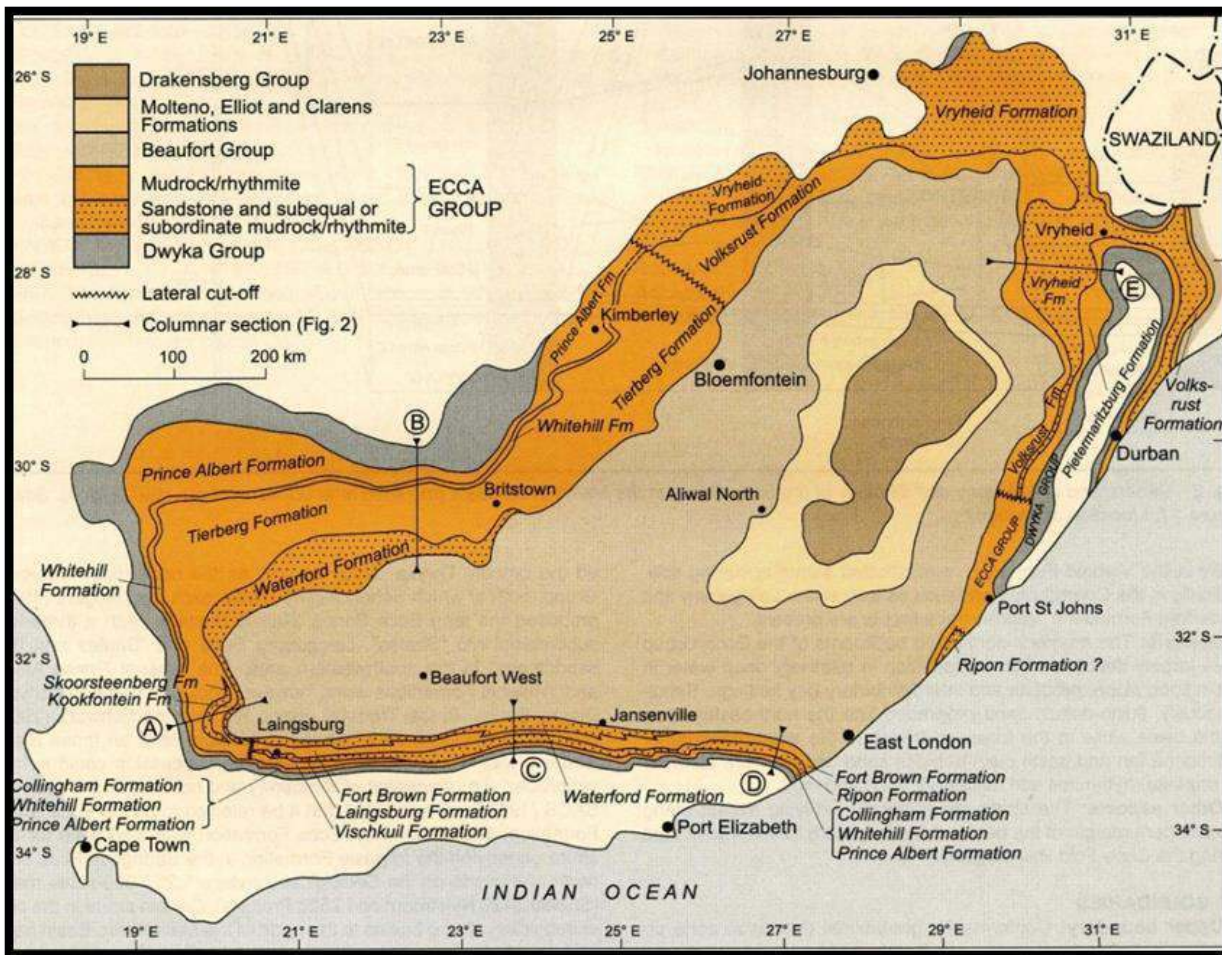


Figure 3: Geology of the Karoo Supergroup (Johnson 2009)

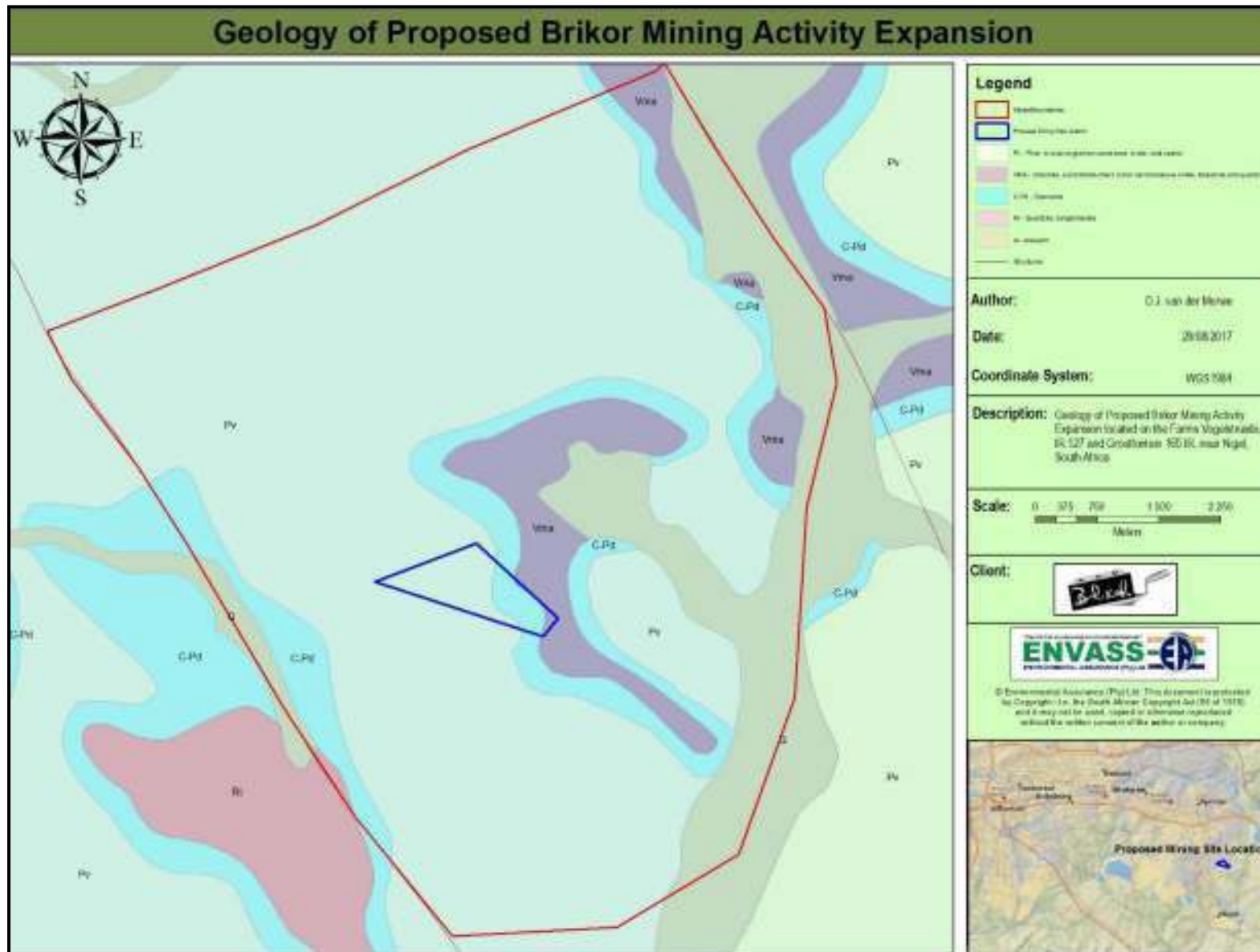


Figure 4: Geological layout of study area

Coal has always been the main energy source in industrial South Africa. Most of the coal-fired power stations are found in the Mpumalanga Province, south of the N4. Eskom is the main electricity generator in Africa. Thick layers of coal just below the surface are suited to opencast mining, and where the overlying sediments are too thick, shallow underground mining are preferred. In 2003, coal was South Africa's third most valuable mineral commodity and is also used by Sasol for fuel- and chemicals-from-coal (Norman and Whitfield 2006). Grodner and Cairncross (2003) proposed a 3-D model of the Witbank Coalfield to allow easy evaluation of the sedimentary rocks, both through space and time. Through this, one can interpret the environmental conditions present at the time of deposition of the sediments. This can improve mine planning and mining techniques.

The brick making raw materials found in the area occur in Ecca aged sediments, (i.e. Karoo System), which are locally, flat lying with minor flexing, in nature. Typically, Ecca sediments in this area consist of shales, with occasional inter-layered sandstones, siltstones and coal seams. The shales typically weather to clays, (i.e. close to surface), which can be used for making bricks whilst the sandstones are of little use as brick making raw materials. The sandstones generally, weather irregularly, resulting in the occurrence of large rocks and boulders. The Geological plan of this area shows the widespread occurrence of Ecca shales with scattered Witwatersrand inliers. Clearly the Ecca is a relatively thin "cover layer", overlying older, Witwatersrand members (Brikor, 2016).

The geological investigation of this site has taken the form of a series of drilling exercises. Initially, a widely-spaced, air-drilling program focused further activity in the norther section of the area. The second drilling exercise took place during 2014, and a sizeable deposit of coal was defined, lying immediately south of the current Vlakfontein mine. During 2015 and 2016, an assessment of the geological information has been made and based on a viable model a Mine Works Programme has been compiled, as part of the proposed mining application for the site. All of these investigations have been conducted to define the available clay and coal deposits and to determine the viability of mining (Brikor, 2017).

Soils and Land Capability

Information in this section was derived from the SOIL ASSESSMENT FOR THE PROPOSED MINING OF CLAY, SAND AND COAL ON A PORTION OF PORTION 85 OF THE FARM GROOTFONTEIN 165 IR AND A PORTION OF THE REMAINDER OF THE FARM VOGELSTRUISBULT 127, NIGEL, GAUTENG PROVINCE by Wilken (2017)

Land capability is defined by the most intensive long term sustainable use of land under rain-fed conditions.

Aerial photos (Google earth) were utilised by the soil specialist, to interpret aspects such as land use and land cover as well as historic land uses such as cultivation. From the aerial photos a free grid soil survey layout was determined based on the land use of the area. During the site investigation soil drilling was undertaken by means of a bucket type auger, the soil drills was done to a maximum depth of 600 mm or to the depth of refusal. At each observation point the South African Taxonomic Soil Classification System (Soil Classification Working Group, 2nd edition 1991) was used to describe and classify the soil. The classification system categorises soil types in an upper soil form level. During the site investigation a number of holes were drilled and of these six (6) samples were taken and sent for analysis.

Land capability was determined by a combination of soil, terrain and climate features. Land capability is defined by the most intensive long term sustainable use of land under rain-fed conditions. At the same time an indication is given about the permanent limitations associated with the different land use classes (Schoeman, et al., 2000); Smith, 2006 (as cited by Wilken, 2017)).

From the desktop assessment and the site investigation, the specialist observed that the project area is dominated by three main land use categories and the categories consist out of two main soil forms. The area consists of Grazing area (3.4ha), Dryland Agricultural area (67.0ha) and Wetland area (25.0ha). Within the three land use categories, two main soil forms occur (refer to Figure 5). The main soil form present for the grassland area and dryland agricultural areas are the Tukulu (Tu) soil form, and the wetland area is dominated by the Katspruit (Ka) soil form. The Tukulu (Tu) soil form consists of an Orthic A, Neocutanic B and an unspecified material with signs of wetness. Signs of wetness redoximorphic features were present in the soil profile of the Tukulu soil forms. The Katspruit soil form consists of an Orthic A and a G-horizon. Signs of permanent wetness redoximorphic features were present within

the G-horizon. The soils within the G-horizon showed signs of reduction of ferric oxides and mottling has formed in the profile. The formation of a hard plinthic B was observed. This can be an indication that some Dresden soil forms are potentially present within the wetland area.

The agricultural potential of the site varies due to the soils conditions. Some areas are covered by shallow water lodge soil that are of low potential (i.e. Katspruit). Soils with agricultural potential have to a large extent already been tilled and are currently being used for dryland agriculture. The potential of the areas under crop production varies from low to medium due to a range of soil conditions. The main land use is dryland agriculture.

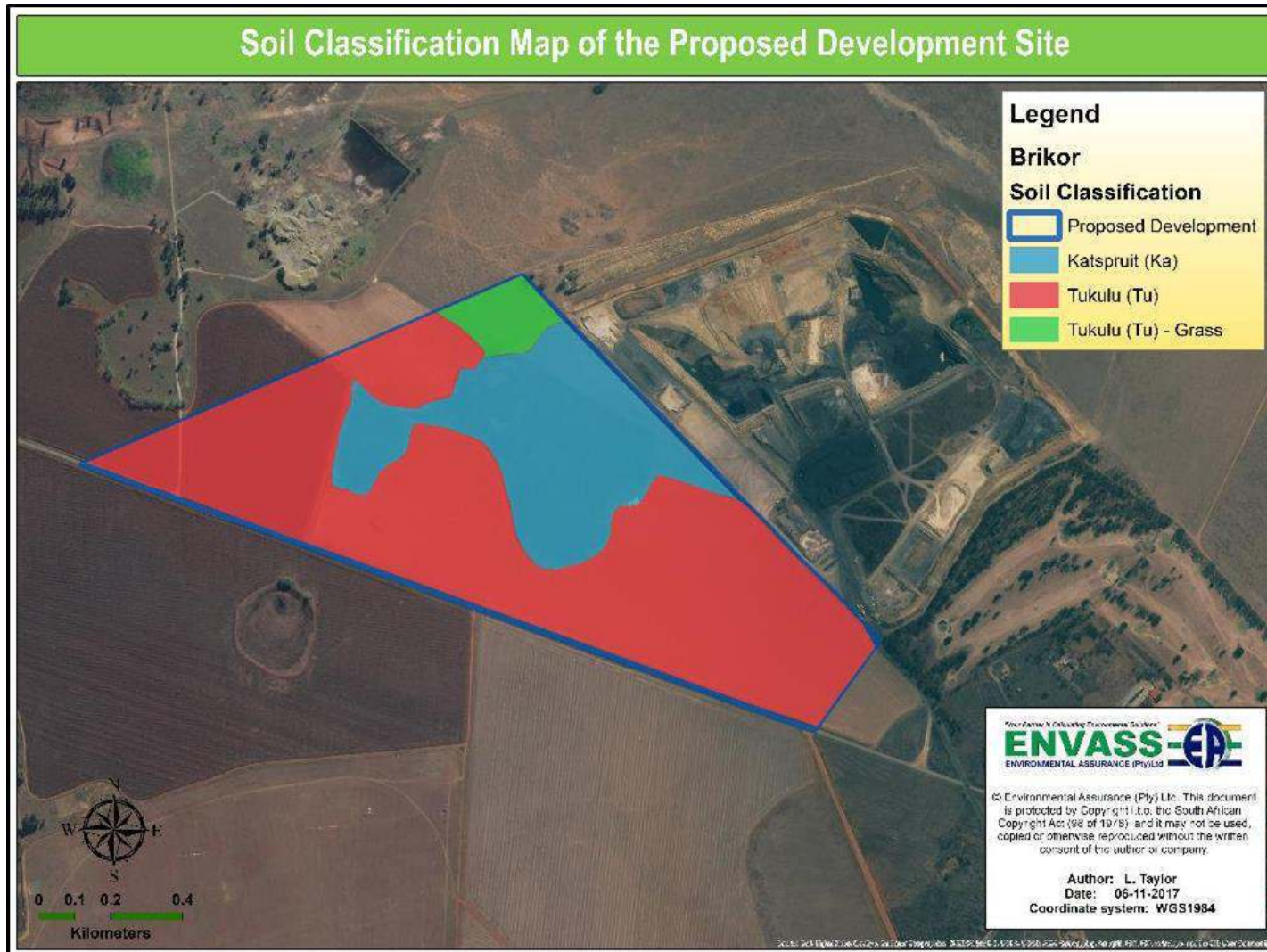


Figure 5: Soil Classification Map of the Study Area

Climate

According to the Groundwater Resource Directed Measures (GRDM, 2013), the C21E catchment has Mean Annual Precipitation (MAP) of 690.7 mm/a, and Mean Annual Evaporation (MAE) of 1625 mm/a, indicating a general water deficit for the catchment (van der Merwe & Damhuis, 2017).

The study area is located in a typical Highveld climate with hot summers and cold winters. Rain mostly occurs in the summer months with rainstorms of high intensity but of short duration. The winter months are normally dry and about 85% of the annual rainfall occurs in summer. The average annual rainfall in the summer rainfall season areas of South Africa are between 601 and 800 mm. The average evaporation volumes per annum are between 1 601 and 1 800 mm. Rainfall averages and temperature statistics was obtained from the Springs Weather Station: No. 04767364.

Table 6: Rainfall and Temperature Statistics for the Region

Month	Rainfall Average (mm)	Number of days	Temperature (°C) Maximum	Temperature (°C) Minimum
January	114.5	11.9	26.1	13.8
February	100.1	9.9	26.2	13.5
March	83.4	9.4	24.8	11.4
April	40.7	5.8	22.8	7.0
May	19.1	2.9	20.2	2.5
June	6.7	1.3	18.3	-2.3
July	7.4	1.1	17.1	-1.9
August	8.2	1.4	20.3	1.5
September	23.9	3.2	25.2	6.3
October	66.4	8	24.9	9.8
November	107.4	11.5	24.5	11.8
December	110.1	12.6	25.3	12.9

The annual average number of thunderstorms in the Northern areas of South Africa, varies from approximately 75 to 100. These storms are often violent with severe lightning and strong (but short-lived) gusty south-westerly winds and are sometimes accompanied by hail.

Information regarding the mean average wind direction for this particular area was obtained from the Springs weather station using wind data from over 9 years from 1993 to 2002. The prevailing wind direction is from the east and south-east during the first half of the year and from the north-west during the latter part of the year.

Surface Water

Information in this section was derived from the Wetland ecological assessment for the proposed Brikor Mine, Nigel, Gauteng Province BIM-WET-16_17 by Bootsma and Bezuidenhout (2017) and the Hydrological Assessment of the Proposed Grootfontein Mine Report by Fundisi (2017)

The study area is situated within the Quaternary Catchment C21E (refer to Figure 6). Within this catchment, the precipitation rate is lower than the evaporation rate with a Mean Annual Precipitation (MAP) to Potential Evapotranspiration (PET) of 0.32. Consequently, water courses in this area are sensitive to changes in regional hydrology, particularly where their catchment becomes transformed and the water available to sustain them becomes redirected. Quaternary Catchment C21E is located in the fifth Water Management Area (WMA), The Vaal Major WMA. The major rivers in the WMA include the Wilge-, Liebenbergsvlei- and Vaal Rivers. The wetlands occurring on the study area, drains north into an unchannelled valley bottom, which drains into the Blesbokspruit River (Bootsma & Bezuidenhout, 2017).

Surface water spatial layers such as the National Freshwater Ecosystems Priority Areas (NFEPA) Wetland Types for South Africa (SANBI, 2010) were consulted for the presence of wetlands and rivers. Several small to large wetlands were reflected on these layers on the study area and surroundings (refer to Figure 7) (Bootsma & Bezuidenhout, 2017).

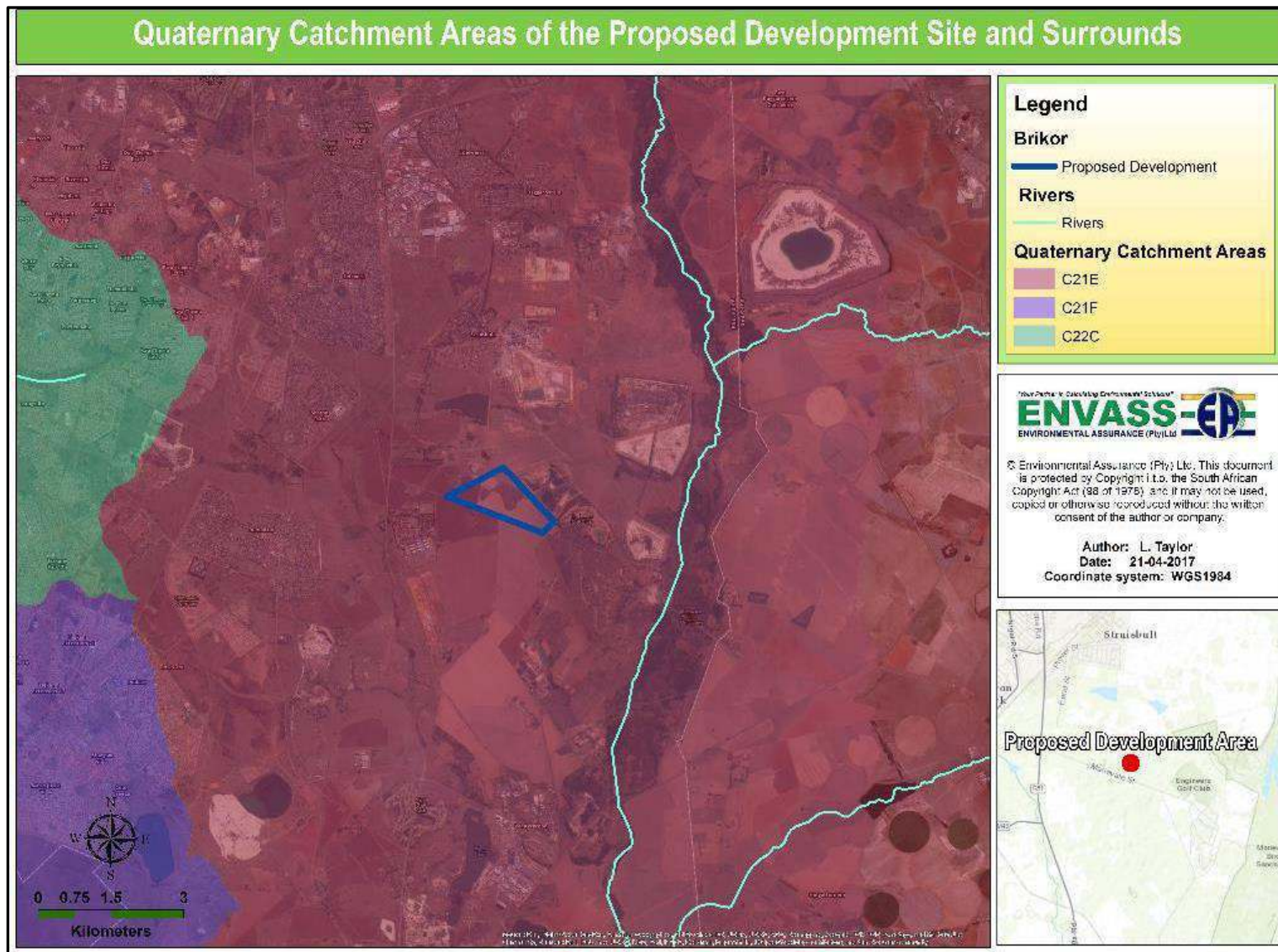


Figure 6: Quaternary Catchment Area of the Study Area

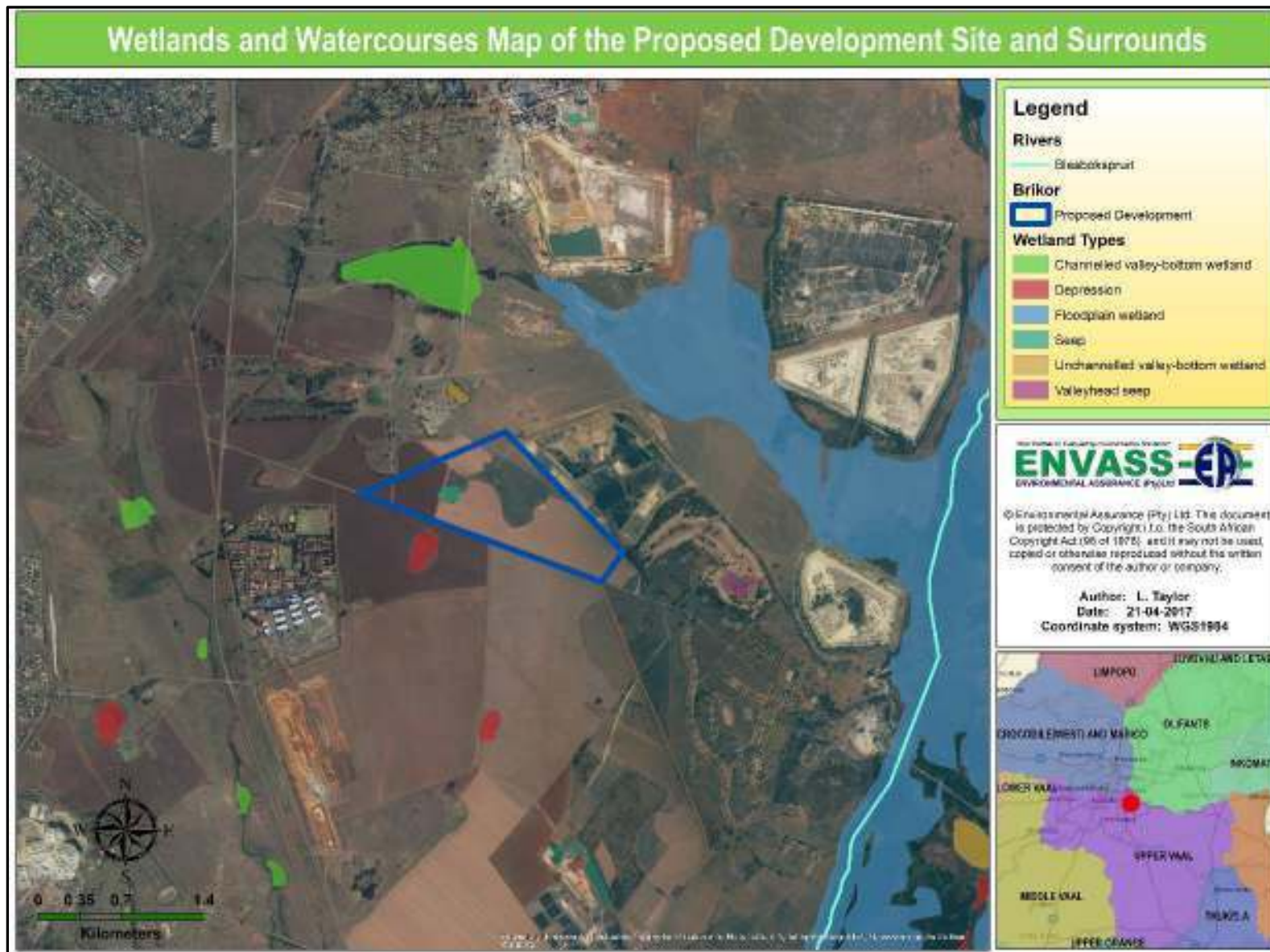


Figure 7: Regional Hydrology (SANBI, 2010)

The greater region in which the study area is located is drained by the Vogelstruisbult stream (to the north of the study area), a tributary of the Blesbokspruit River, which is located to the east of the study area and runs in south, past the town of Nigel to join the Suikerbosrant River, past the town of Heidelberg. An unnamed stream occurs approximately 1.5 km to the west of the study area, which drains into the Nigel Dam, before joining the Blesbokspruit River (Fundisi, 2017). One sub-catchment was delineated by the hydrologist (Fundisi, 2017) at the study area, which contributes flows to the Vogelstruisbult Stream (refer to **Table 7** and Figure 8 (Fundisis, 2017)).

Table 7: Characteristics of the delineated sub-catchment (Fundisi, 2017)

Catchment	Area	Hydraulic Length (L)	Distance to Centroid (Lc)	Slope
	km ²	Km	Km	(m/m)
Vogelstruisbult	25.52	6.07	3.10	0.0043

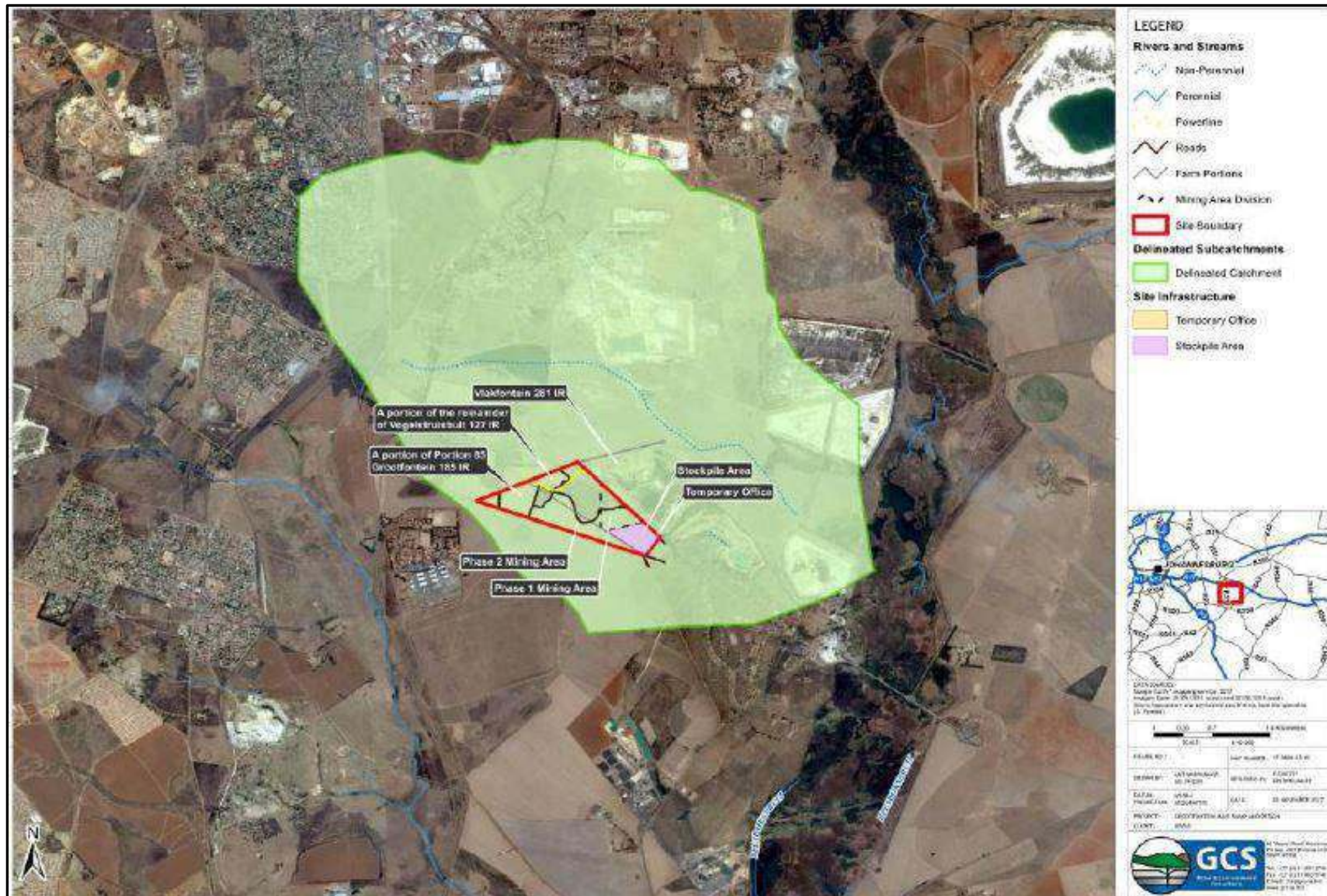


Figure 8: Delineated sub-catchment (Fundisi, 2017)

Flood lines

Flood lines were calculated by the hydrologist for the Vogelstruisbult Stream for flood events of the 1:50 year and 1:100 year return periods (refer to **Figure 9**). An exclusion zone represents an area where no development should take place. The edge of the exclusion zone is determined by either the 1:100 year flood line or the 100 m buffer from the edge of the watercourse, whichever is the greatest. The exclusion zone is demarcated in order to ensure protection of infrastructure from flood hazards as well as to protect the water resources in the area. Refer to Figure 10 for the exclusion zones. No infrastructure of the proposed mining activities will be threatened by flood inundation.



Figure 9: 1:50 year and 1:100 year flood lines of the Vogelstruisbult Stream

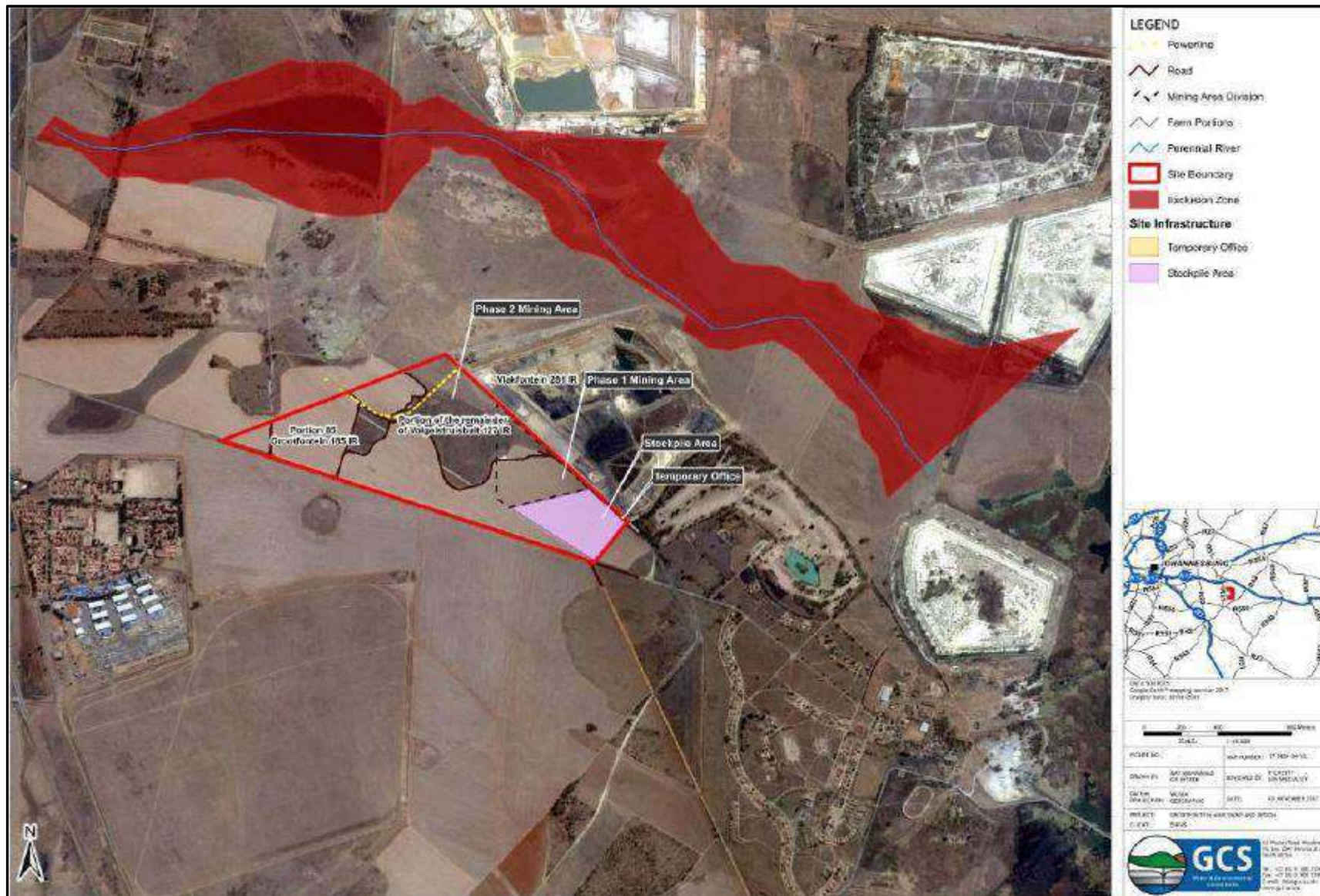


Figure 10: Exclusion zone of the Vogelstruisbult Stream (Fundisi, 2017)

Wetlands

A wetland which forms part of the Marievale Bird Sanctuary lies approximately 1 km east from the planned mining area. Surface water will drain into this area from where it will flow to the Blesbokspruit and wetland area, which is located approximately 3 km east of the site. This wetland together with other small wetlands co-exists with the Blesbokspruit as a “network” or chain of wetlands available at the landscape level to wildlife. Seasonal fluctuations in water level and depth are largely masked by artificial water inputs. The topography of the immediate catchment is gradual, so increases in flow have resulted in a lateral expansion of the wetland (i.e. on the whole, it is wider/broader rather than deeper). Dry season flow is dominated by point source discharges. The Blesbokspruit is an important river in the Gauteng province since it drains a large area before joining the Suikerbosrand River that ultimately flows into the Vaal River. The latter is a major system providing water for a variety of uses (e.g. domestic, agriculture, industry and recreation).

The Blesbokspruit is located approximately 3,5 km east of the proposed mining area. The significance and biodiversity of this Wetland can be explained in terms of the fact that the wetland is a declared RAMSAR site. This renders the Wetland of international importance. South Africa has 19 sites designated as Wetlands of International Importance, with a surface area of 543 978 hectares (ha). The importance of wetlands from an international perspective are clear when taking into consideration that wading birds from as far away as the Russian tundra wintering in the wetlands of southern Africa, while some southern-breeding birds fly to other parts of the world as part of their life cycles.

Two wetlands were identified by the wetland specialists on the study area. Several other wetlands within the 500m of the study area were also recorded (refer to Figure 11). The wetlands are classified as a seepage wetland and an exoreic depressional pan. The seepage and depressional wetlands have been impacted on significantly in the past. Both mining and agriculture occurred on the study area and surroundings from as early as 1963 and likely earlier, which had an impact on the soil and vegetation conditions on the study area. In 2012, the Vlaktefontein Mine was constructed adjacent to the study area, in which was likely to be the seepage wetland flow path to another adjacent wetland. Many pans are exoreic in the sense that they are hydrologically connected to adjacent wetlands through subsurface diffuse flow

paths (Kotze, 1999 as cited by Bootsma & Bezuidenhout, 2017). The depressional wetland on the study area is hydrologically connected to the adjacent seepage wetland. The seepage wetland was historically connected to the adjacent valley bottom wetland, although currently the wetland is likely to be hydrologically isolated, due to the presence of a mining area within the historical footprint of the mine. A berm was created adjacent to the mine and wetland, likely to keep water from entering the mining complex. Standing water was thus present in the seepage wetland (adjacent to the berm) and no standing water was recorded in the depressional wetland. The hydrology and geomorphology has thus been greatly impacted by these activities.

The Seepage wetland has been impacted on the most and scored an E, on the wetland health assessment scale. An “E” score indicates that a wetland is “**Largely Modified**” equating to: The change in ecosystem processes and loss of natural habitat and biota is great, but some remaining natural habitat features are still recognisable. Furthermore, the seepage wetland is likely to **slowly deteriorate** and the Condition is likely to deteriorate slightly over the next 5 years.

The Depressional wetland is more isolated and less prone to impacts, and scored a C on the wetland health assessment scale. A “C” score indicates that a wetland is “Moderately Modified”, equating to: A moderate change in ecosystem processes and loss of natural habitats has taken place, but the natural habitat remains predominantly intact. Furthermore, the depressional wetland Condition is likely to remain stable over the next 5 years. The Present Ecological State (PES) scores of the wetlands are indicated in Table 8.

Table 8: Summary of hydrology, geomorphology and vegetation health assessment for the Seepage and Depressional wetlands on the study area (Bootsma & Bezuidenhout, 2017)

Wetland Unit	Hydrology		Geomorphology		Vegetation		Overall Score	
	Impact Score	Change Score	Impact Score	Change Score	Impact Score	Change Score	Impact Score	Change Score
Seepage Wetland	7.4	-1	6.7	-1	3.4	0	6.1	-1
PES Category and Projected Trajectory	E	↓	E	↓	C	→	E	↓

Wetland Unit	Hydrology		Geomorphology		Vegetation		Overall Score	
	Impact Score	Change Score	Impact Score	Change Score	Impact Score	Change Score	Impact Score	Change Score
Depressional Pan	3.4	0	3.6	0	2.4	0	.2	0
PES Category and Projected Trajectory	C	→	C	→	C	→	C	→

The study area overall, was open, and the land generally grazed short. Although no significant faunal life was observed during the site visit, there is a possibility that they may occur on the study area, due to the close proximity to the Marievale Bird Sanctuary. The wetlands are located on farm land in between mining areas, and is thus unlikely to contribute to direct human benefits. The Ecological Importance and Sensitivity (EIS) score for the Seepage and depressional wetlands was calculated at 1.7, indicating that they fall within a category characterised by Moderate ecological importance and sensitivity (Table 9). Wetlands falling into this category are considered to be ecologically important and sensitive on a provincial or local scale. The biodiversity of these wetlands is not usually sensitive to flow and habitat modifications. They also play a small role in moderating the quantity and quality of water in major rivers (DWA, 1999 as cited by Bootsma & Bezuidenhout, 2017).

Table 9: WIS scores obtained for the wetlands occurring on the study area

Wetland Importance and Sensitivity	Importance	Confidence
Seepage wetland system		
Ecological importance and sensitivity	1.7	3.0
Hydro-functional importance	1.4	2.5
Direct human benefits	0.5	3.0
Depressional wetland		
Ecological importance and sensitivity	1.7	3.0
Hydro-functional importance	1.1	2.5
Direct human benefits	0.5	3.0

The wetlands occurring the study area were classified as a Seepage wetland and a Depressional wetland according the South African National Biodiversity Intitute (SANBI) classification system (SANBI, 2013). The Present Ecological State were calculated for each

wetland according to Macfarlane et al (2007). The Seepage wetland's PES were calculated at 6.1 rendering it Category E and the EIS was calculated using the Department of Water and Sanitation Method (DWA, 1999) at 1.7 equating it having moderate Ecological Importance and Sensitivity. The most prominent ecosystem services provided by the Seepage wetland was the following:

- Phosphate trapping – 2.8;
- Toxicant removal – 2.9; and
- Nitrate removal – 3, 3.

The PES score for the Depressional Wetland was calculated at 3.2, rendering it Category C and the EIS was also calculated at 1.7 equating it to having moderate EIS. The most prominent ecosystem services provided by the Depressional wetland are:

- Phosphate trapping – 2,7;
- Toxicant removal – 2,9; and
- Nitrate removal – 3, 0.

The recommended buffer zones for the two wetlands was calculated by using the Macfarlane method (Macfarlane et al 2015). During the Construction Phase a buffer zone of 47 m around the Seepage wetland and 52 m around the Depressional wetland is recommended. During the Operational Phase the buffers are recommended at 83 m and 99 m respectively (refer to Figure 11). The Recommended Ecological Category for the wetlands are D and C, respectively.

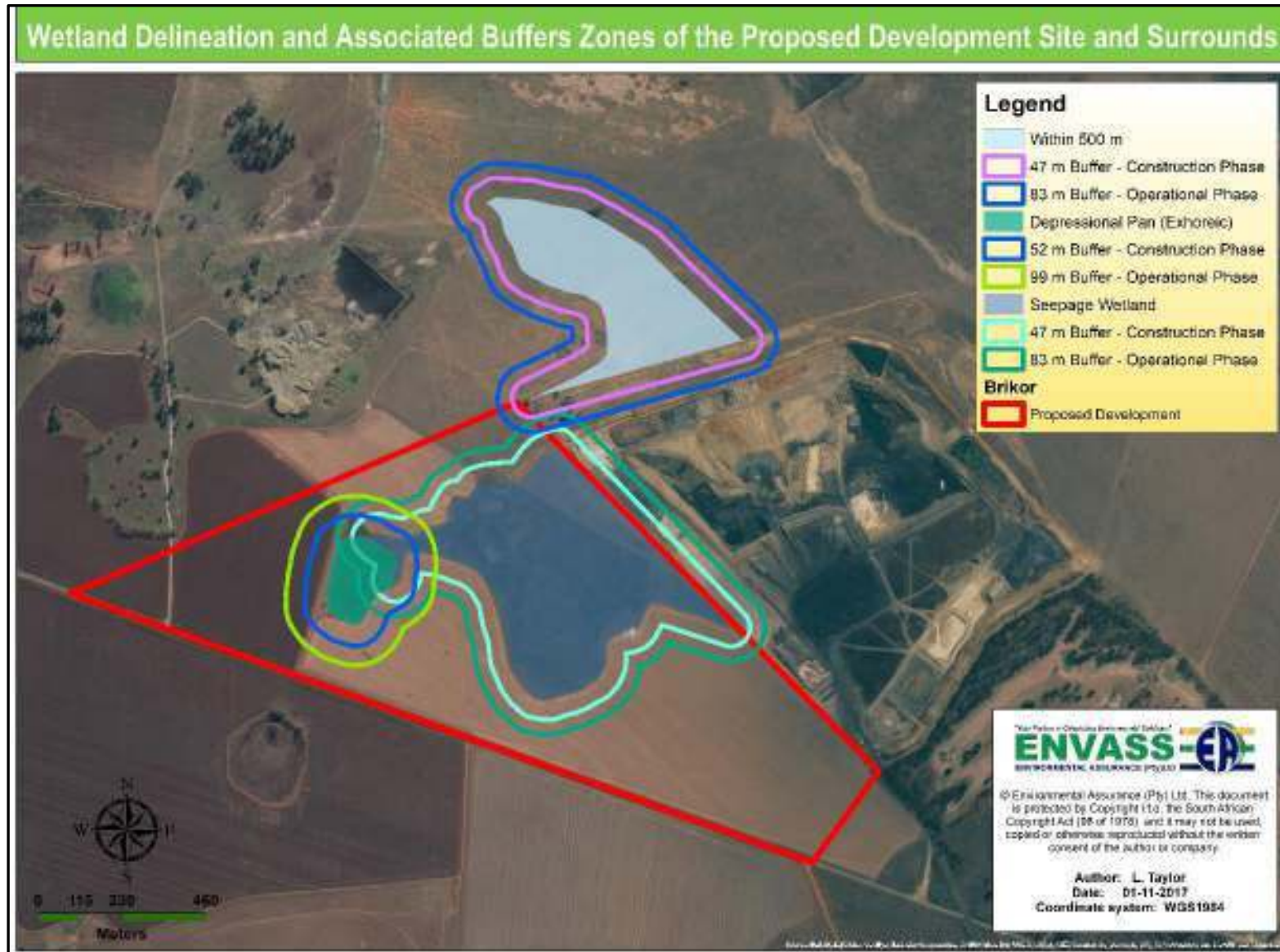


Figure 11: Wetlands on the study area and calculated buffer zones