



THE RECLAMATION OF THE MARIEVALE TAILINGS STORAGE FACILITIES IN EKURHULENI, GAUTENG PROVINCE

DRAFT SCOPING REPORT

21 October 2019



mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

DRAFT SCOPING REPORT

FOR LISTED ACTIVITIES ASSOCIATED WITH THE RECLAMATION AND REPROCESSING OF THE MARIEVALE TAILINGS STORAGE FACILITIES SITUATED ON PORTION 281 (RE) OF VOGELSTRUISBULT 127 IR, AND PORTION 127 (RE) OF VLAKFONTEIN 281 IR, IN EKURHULENI, GAUTENG PROVINCE.

APPLICATION FOR ENVIRONMENTAL AUTHORISATION (EA):

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 MAY BE TRIGGERED.

Name of Applicant: Ergo Mining (Pty) Limited

Tel No: +27 11 248 9000

Postal Address: PO Box 12442, Selcourt, Springs, 1567

Physical Address: 1 Sixty Jan Smuts Building, 2nd Floor – North Tower,
160 Jan Smuts Avenue, Rosebank, 2196.

Document prepared by: Kongiwe Environmental (Pty) Ltd

Document Date: 22 October 2019

Draft Scoping Report Information

PROJECT:	THE RECLAMATION OF THE MARIEVALE TSFs
Report Title:	The Reclamation of the Marievale Tailings Storage Facilities in Ekurhuleni, Gauteng Province
Client:	Ergo Mining (Pty) Ltd
Project No:	DRDG#005
Compilation Date:	22 October 2019
Status of Report:	Draft Scoping Report

VERIFICATION	CAPACITY	NAME	SIGNATURE	DATE
By Author	EAP	Siphesihle Dambuza		21 October 2019
Reviewed by:	Legal Director	Michael Hennessy		21 October 2019
Reviewed by:	Project Manager	Ashleigh Blackwell		21 October 2019
Reviewed by:	Technical Director (Pr.Sci.Nat)	Gerlinde Wilreker		21 October 2019
Authorised by	Chief Executive Officer	Bradly Thornton		21 October 2019

Copyright © 2019 Kongiwe Environmental (Pty) Ltd

All rights reserved. Absolutely no part of this report may be reproduced, distributed, or transmitted in any form or by any means, including photocopying, recording, or other electronic or mechanical methods, without the prior written consent of Kongiwe Environmental (Pty) Ltd. All content and methodologies remain intellectual property of Kongiwe Environmental (Pty) Ltd. Where applicable, the contents of this document are confidential and protected by legal privilege and must not be distributed to other parties without prior written permission. This report is to be used for the sole purpose intended and should not be used for any other purpose without prior written permission.

SECTION 1:

SCOPING REPORT OVERVIEW

Important Notice

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, 1998 (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 Regulation 16(3) (b) of the Environmental Impact Assessment Regulations 2017, 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 Regulation 17 (1) (c) the Competent Authority must check whether the application has considered any minimum requirements applicable or instructions or guidance provided by the Competent Authority to the submission of applications.

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

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

Objective of the Scoping Process

1) The objective of the scoping process is to, through a consultative process—

- (a) identify the relevant policies and legislation relevant to the activity;
- (b) motivate 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 and confirm the preferred activity and technology alternative through an impact and risk assessment and ranking process;
- (d) identify and confirm the preferred site, through a detailed site selection process, which includes an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment;
- (e) identify the key issues to be addressed in the assessment phase;
- (f) agree on the level of assessment to be undertaken, including the methodology to be applied, the expertise required as well as the extent of further consultation to be undertaken to determine the impacts and risks the activity will impose on the preferred site through the life of the activity, including the nature, significance, consequence, extent, duration and probability of the impacts to inform the location of the development footprint within the preferred site; and
- (g) identify suitable measures to avoid, manage, or mitigate identified impacts and to determine the extent of the residual risks that need to be managed and monitored.

Public Review Period for the Draft Scoping Report

The Draft Scoping Report (DSR) will be made available to stakeholders on the Kongiwe Environmental website and in public places for a 30-day comment period from **23 October 2019 to 21 November 2019**. Notification of the availability of the documentation for review was distributed on the 16 October 2019. The report was made available at the following locations:

Location	Physical Address	Contact person
Hard copies		
Dunnottar Public Library	47 Rhodes Avenue, Dunnottar	Mr Shelton Mmisi (011) 999 9118
Kwa-Thema Public Library	7019 Nkosi Street, Kwa-Themba, Springs	Ms Portia Mosetlhe (011) 999 8494
Electronic copies		
Kongiwe Environmental website	www.kongiwe.co.za/ public documents	Sibongile Bambisa / Vanessa Viljoen
For a CD copy please contact the stakeholder engagement team (Sibongile Bambisa/ Vanessa Viljoen), Tel: (012) 003 6627, Email: stakeholders@kongiwe.co.za		

Comments received from the public throughout this public review process will be addressed and included within the Final Scoping Report.

Executive Summary:

Kongiwe has been appointed, by Ergo Mining (Pty) Limited, as the Independent Environmental Service Provider and tasked with conducting the Scoping and Environmental Impact Assessment (S&EIA) process which is aimed at critically evaluating the potential environmental and social impacts of the proposed **Reclamation of Marievale Tailings Storage Facilities** (hereafter the Proposed Project).

The Application for Environmental Authorisation was submitted to the Department of Mineral Resources and Energy (DMRE) on **Tuesday, 15 October 2019**. The DSR will be made available for public review from **23 October 2019 to 21 November 2019**.

Project Introduction and Background

Ergo Mining (Pty) Limited (hereafter Ergo), a subsidiary of DRDGold, intends to reclaim and reprocess gold residues from the Marievale tailings storage facilities (TSFs) Nos. 7L5, 7L6 and 7L7. These TSFs are historical mineral deposits (slimes dams), situated 6 km north-east of Nigel and about 10 km south-east of Springs, in the Ekurhuleni Metropolitan Municipality (EMM), and were created prior to the promulgation of the Mineral and Petroleum Resources Development Act, 2002 (Act No 28 of 2002) (MPRDA) and are accordingly not regulated by the MPRDA.

Surface gold retreatment is a largely mechanised process with a risk profile that is significantly lower than that of conventional mining. The slimes dams will be reclaimed by hydraulic mining. During Hydraulic mining, the used process water mixes with the unconsolidated material of the slimes dams, resulting in what is known as a 'slurry'. This slurry will be conveyed to the Ergo Processing Plant (hereafter Ergo Plant) for reprocessing using a newly constructed pipeline. Final deposition of reprocessed slurry will be on the licenced Brakpan/Withok TSF.

Project Alternatives

The Proposed Project will investigate two pipeline routes to convey slurry from the TSFs to the Ergo Plant for reprocessing; and return process water to the project site for reclamation. The pipeline configuration would consist of two, 600 mm diameter, slurry pipelines and one, 600 mm diameter, process water pipeline.

The **first alternative** pipeline route is approximately 25 km long and is made up of a two parts. The first part would be a 7 km extension from the project site to the Daggafontein Plant; while the second part would be a 17 km extension from the Daggafontein Plant to the Ergo Plant.

The **second alternative** route would be a 19 km extension from the Proposed Project site, directly to the Ergo Plant.

The proposed reclamation site will be situated in Zone 3 of the Gauteng Provincial Environmental Management Framework (GPEMF) (2018); and even though some parts of the proposed pipelines may be laid in Zones 1 and 5, they may require authorisation in terms of the National Water Act (Act No. 36 of 1998) (NWA) for Section 21 water uses. An Integrated Water Use Licence Application (IWULA) will be prepared and submitted in accordance with the Water Use Licence Application and Appeals Regulations 2017 published in GNR 267 on 24 March 2017 and will be supported by a Technical Report and other necessary supplementary reports.

Environmental Impact Process

The Department of Environmental Affairs (DEA), in consultation with the DMRE identified the need for the alignment of Environmental Authorisations (EAs) and promulgated a single environmental system under the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA). This has resulted in simultaneous decisions in terms of NEMA, the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEM:WA) and other specific environmental management Acts.

As from 2 September 2014 the statutory dispensation regarding environmental management on mines changed with the implementation of the One Environmental System and the commencement of the National Environmental Management Laws Amendment Act (Act No. 25 of 2014) (NEMLAA). In line with the One Environmental System the Environmental Impact Assessment Regulations (EIA 2014 Regulations) were promulgated and came into force on 8 December 2014. The EIA 2014 Regulations have subsequently been amended on the 7th of April 2017. With reference to the aforementioned, this S&EIA, prepared in support of the EA application, will comply with the requirements of the EIA 2014 Regulations, as amended.

The Proposed Project therefore requires Environmental Authorisation (EA) in terms of the NEMA and the NEM:WA and will follow a S&EIA process in terms of the EIA 2014 Regulations, as amended. The aforesaid regulations enforce a strict timeframe and require a decision by the competent authority, the DMRE, within **300 days** from submission of the EA application.

The nature and extent of the Proposed Project, as well as the potential environmental impacts associated with the construction, operation, decommissioning and rehabilitation of a facility of this nature is assessed and presented in this DSR.

Legal Background and Requirements

This DSR has been compiled in terms of the provisions of Appendix 2 of the EIA Regulations 2014, as amended, and the Directive set out in the template prescribed by the DMRE. **Table 1-1** cross-references the various sections in this report with these requirements.

Table 1-1: Structure of the Scoping Report in line with the Appendix 2 of the EIA 2014 Regulations, as amended.

NO.	REGULATION REQUIREMENT	REPORT SECTION	PAGE NUMBER
(a)	Details of -		
(i)	The EAP who prepared the report and;	1.5	8
(ii)	The expertise of the EAP including a CV		
(b)	The location of the activity, including –		
(i)	The 21-digit Surveyor General code of each cadastral land parcel	2	10-16
(ii)	Where available, the physical address and farm name		
(iii)	Where the required information in terms of (i) and (ii) is not available, the coordinates of the boundary of the property or properties	N/A	N/A
(c)	A plan which locates the proposed activity or activities applied for 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	2.1	10
(ii)	On land where the property has not been defined, the coordinates within which the activity is to be undertaken		
(d)	A description of the scope of the proposed activity, including –	2	10-24
(i)	All listed and specified activities triggered	2.5	13-14
(ii)	A description of the activities to be undertaken, including associated structures and infrastructure	2.6	22-24
(e)	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	3	25-45
(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	4	46-49
(g)	Period of environmental authorisation	5	50
(h)	A full description of the process followed to reach the proposed preferred activity, site and location within the site, including -	6	51-58
(i)	Details of the alternatives considered	6.1	52-58
(ii)	Details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs	7	59-66
(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.	7 Appendix C	59-66 Appendix C

NO.	REGULATION REQUIREMENT	REPORT SECTION	PAGE NUMBER
(iv)	The environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects	8	67-88
(v)	The impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts – (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated	9	89-93
(vi)	The methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives	9.1	89-93
(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	9.2	94-96
(viii)	The possible mitigation measures that could be applied and level of residual risk	9.4	97
(ix)	The outcome of the selection matrix	9.5	97
(x)	If no alternatives, including alternative locations for the activity were investigated, the motivation for no considering such	9.6	98
(xi)	A concluding statement indicating the preferred alternatives, including preferred locations of the activity	9.7	98
(i)	A plan of study for undertaking the environmental impact assessment process to be undertaken, including -	10	99-124
(i)	A description of the alternatives to be considered and assessed within the preferred site	10.1	99
(ii)	A description of the aspects to be assessed as part of the environmental impact assessment process	10.2	99
(iii)	Aspects to be assessed by specialists	10.3	99-110
(iv)	A description of the proposed method of assessing the environmental aspects, including aspects to be assessed by specialists	10.4	111-123
(v)	A description of the proposed method assessing duration significance	10.4.1	111
(vi)	An indication of the stages at which the competent authority will be consulted	10.4.2	111
(vii)	Particulars of the public participation process that will be conducted during the environmental impact assessment process	10.4.3	112
(viii)	A description of the tasks that will be undertaken as part of the environmental impact assessment process	10.4.4	112
(ix)	Identify suitable measures to avoid, reverse, mitigate or manage	10.4.5	113

NO.	REGULATION REQUIREMENT	REPORT SECTION	PAGE NUMBER
	identified impacts and to determine the extent of the residual risks that need to be managed and monitored		
(j)	An undertaking under oath or affirmation by the EAP in relation to – (i) The correctness of the information provided in the report; (ii) The inclusion of comments and inputs from stakeholders and interested and affected parties; (iii) 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	11.1	125
(k)	An undertaking under oath or affirmation by the EAP in relation to the level of agreement between the EAP and interested and affected parties on the plan of study for undertaking the environmental impact assessment	11	125
(l)	Where applicable, any specific information required by the competent authority	N/A	N/A
(m)	Any other matter required in terms of section 24(4)(a) and (b) of the Act	N/A	N/A

Environmental Considerations

The Proposed Project will adopt the standards as set out in the DRDGold Environmental Policy. The Policy states that DRDGold is committed to the responsible management of the environment in which it operates, adopting and implementing environmental practice as outlined in the National Environmental Management Act, 1998. Recognising that the environment is held in trust for the people, the policy commits DRDGold to:

- ❖ Complying with relevant environmental legislation as a minimum, and adopting and applying the best practicable environmental option with respect to current activities as well as prospective projects;
- ❖ Evaluating, through a process of monitoring, auditing and reviewing by management, the success of the management and mitigation measures applied; and
- ❖ Ensuring that environmental risks and potential emergencies are identified and managed through effective controls and procedures as identified in the applicable Environmental Management Programmes.

Key Findings of the Scoping Report

The report provides a scoping-level identification of potential environmental impacts (physical, biological and social) associated with the Proposed Project, as well as a strategy for how these impacts will be investigated and assessed further in the EIA Phase. The baseline environmental information provided in this DSR was compiled as a high-level desktop investigation, and the project information is sourced from existing background information, relevant to the Proposed Project. The preliminary environmental impacts identified in **Table 1-2** will be further refined, calculated and assessed for all the feasible alternatives identified. Mitigation and management measures will also be suggested by the specialists for all impacts identified. The potential positive and negative impacts which may arise because of the Proposed Project have also been summarised in the **Table 1-2** overleaf.

Table 1-2: Potential identified impact because of the Proposed Project

ENVIRONMENTAL COMPONENT	COMPONENT TYPE	POTENTIAL IMPACT	SPECIALIST STUDY PLANNED FOR EIA
Physical Environment (non-living)	Hydrology (including wetlands, surface water and ground water)	<ul style="list-style-type: none"> ❖ Potential for further acid mine drainage (AMD), increased heavy metal concentrations and increased sulphate concentrations in the adjacent Blesbokspruit and local groundwater if runoff from operations is not adequately managed through efficient storm water management structures; ❖ Improved surface and ground water quality around the project area due to the removal of the TSFs; ❖ Changes in natural surface water flow parameters due to the removal of the TSFs; ❖ Potential impact on drainage lines from access runoff during the operational phase of the project; ❖ Improved visual aesthetics of the area after the removal of the TSFs. 	Surface Water Impact Assessment Groundwater Impact Assessment Wetland Impact Assessment
Biological Environment (living)	Ecology and Biodiversity (including fauna and flora)	<ul style="list-style-type: none"> ❖ Disturbance of sites and species of ecological importance; ❖ Loss of migration corridors, and access to nesting and refuge areas, watering points, food supplies for faunal species by removing the TSFs; ❖ Displacement of animal habitat by removing the TSFs; ❖ Removal of invasive species from the TSFs; ❖ Improvement of species diversity in the Blesbokspruit Wetland System by removing a pollution source in the form of the TSFs; 	Biodiversity Impact Assessment

ENVIRONMENTAL COMPONENT	COMPONENT TYPE	POTENTIAL IMPACT	SPECIALIST STUDY PLANNED FOR EIA
		<ul style="list-style-type: none"> ❖ Long-term improvement of ecosystem health and functioning of the project area following rehabilitation. 	
Cultural Environment	Heritage Resources	<ul style="list-style-type: none"> ❖ Should heritage resources be present in the area, the reclamation project could potentially impact these; ❖ Destruction of a heritage resource, if the TSFs are older than 60 years, by reclaiming the TSFs. 	Heritage Impact Assessment
Social and Economic Environment	Employment	<ul style="list-style-type: none"> ❖ Continued employment and job security; ❖ Continued investment in local economy; ❖ Removal of the dumps could eliminate the attraction of illegal/informal miners who seek gold. 	Social Impact Assessment
	Land-use	<ul style="list-style-type: none"> ❖ Land use will change to an active reclamation site; ❖ Restoration and unlocking of land for future land uses. The removal of TSFs could result in the extension of the Blesbokspruit Wetland System footprint; ❖ Better management and control of the area against illegal/informal mining. 	Social Impact Assessment
	Noise	<ul style="list-style-type: none"> ❖ Increase in ambient noise levels during the operational phase; ❖ Disturbances to faunal species during the operational phase. 	Noise Impact Assessment
	Air Quality	<ul style="list-style-type: none"> ❖ Possible increase in dust levels in some areas during operations; ❖ Overall removal of an air pollution source after the removal of the TSFs; ❖ Health impacts on livestock and people in proximity to the project site due to fine particulate emissions during operational phase. 	Air Quality Impact Assessment

Overall Conclusions

At this stage, the findings of this DSR indicate that the Proposed Project and its associated infrastructure would pose minimal and short-term negative environmental impacts if adequate and appropriate mitigation measures are implemented; and positive long-term environmental impacts when the project has been completed. Most importantly, the removal of these TSFs would assist with the alleviation of a major pollution source to the Blesbokspruit and Marievale Bird Sanctuary Nature Reserve (Ambani and Annegarn, 2015; McKay et al., 2018).

According to the Way Forward and the Plan of Study, contained in this report, impacts associated with the Proposed Project need to be considered further during the EIA Phase. It is important to take note of the current conditions of the Proposed Project area and the sensitive environment around it. The TSFs are a source of pollution and cause other direct and indirect nuisances to the surrounding environment. The Proposed Project is also in line with the Gauteng Mine Residue Area Strategy (2012), Ekurhuleni Metropolitan Spatial Development Framework (2011) and the Ekurhuleni Environmental Management Framework's (2014) objectives to remove the TSFs scattered on Gauteng landscape, especially in ecologically sensitive areas.

Way Forward

This DSR has been undertaken with the aim of identifying potential positive and negative impacts on the environment and gathering comments on concerns and queries from stakeholders. It documents the process followed, the findings and recommendations of the Scoping Phase study, and the proposed Plan of Study for the EIA Phase to follow. The overarching objectives of the EIA process will be to:

- ❖ Prepare integrated sensitivity maps for the study area based on the findings of specialist assessments as input into the project design process;
- ❖ Identify and assess the significance of potential impacts associated with the project activities; and
- ❖ Recommend mitigation and enhancement measures to ensure that the development is undertaken in such a way as to promote the positive impacts and to minimise the negative impacts.

The procedure for this study going forward is as follows:

- ❖ Submit the finalised Scoping Report to the competent authority for permission to undertake the EIA Phase of the project;
- ❖ Upon the decision to grant or refuse the final Scoping Report, all stakeholders will be notified of the conditions of the DMRE for proceeding with the EIA Phase of the project;
- ❖ In the case of approval of the final scoping, execute the Plan of Study for the Impact Assessment during the EIA Phase of the project;
- ❖ Incorporate and address comments and issues raised during the consultation period on the Scoping Report into the EIA, and make changes to the report where relevant;

- ❖ Make the EIA Report and Environmental Management Programme report (EMPr) available to the public, stakeholders and authorities;
- ❖ Finalise the EIA Report and submit the final EIA Report to the Competent Authority (CA); and
- ❖ Authority review period and decision-making for 107 calendar days.

Contents:

1	Introduction and Background	1
1.1	The History of Gold Mining in South Africa	1
1.2	The Origin of Mine Dumps in Johannesburg	5
1.3	Trends in The Current Gold Industry	5
1.4	Scoping and Environmental Impact Assessment.....	7
1.4.1	Applications Relevant to the S&EIA Process	7
1.4.2	Methodology applied to conducting the Scoping Process	7
1.4.3	S&EIA Timeframes	8
1.4.4	Public Participation Process.....	8
1.5	Details of the Environmental Consultant.....	10
1.5.1	Contact Person and Corresponding Address	10
2	Project Description	12
2.1	Description and Location of the Property	12
2.1.1	Description of the Properties affected by the Project	15
2.2	Description of the Current Land Uses Applicable	20
2.3	Known Mining Rights held in the Area	20
2.4	Description of the Activities to be Undertaken and the Infrastructure Plan	20
2.5	Listed and Specified Activities	22
2.6	Environmental Authorisation Application: Activities and Infrastructure	26
2.6.1	Infrastructure intended for the project.....	26
2.6.2	Method of Reclamation.....	26
2.6.3	Rehabilitation	28
2.6.4	The Period required for Environmental Authorisation:	28
2.6.5	Works Schedule	28
3	Policy and Legislative Context.....	29
4	The Need and Desirability of the Project.....	50
4.1	Environmental Pollution	50
4.2	Safety and Security	51
4.3	The Limitation of Spatial Development	51
4.4	The Gold Industry of South Africa	52
4.5	Conclusion: Need and Desirability.....	52
5	Period for which the environmental authorisation is required	54
6	Description of the Process Followed to Reach the Proposed Preferred Site.....	55
6.1	The Consideration of Alternatives	56
6.1.1	The property on which or location where it is proposed to undertake the activity	56
6.1.2	The type of activity to be undertaken	56

6.1.3	<i>The Design and Layout of the Activity</i>	57
6.1.4	<i>The Technology to be Used in the Activity</i>	58
6.1.5	<i>The Operational Aspects of the activity</i>	59
6.1.6	<i>The “No-Go” option</i>	60
7	Public Participation	63
7.1	Public Participation Process Objectives	63
7.2	Summary of issues raised by stakeholder’s	64
7.3	Identification of Stakeholders	64
7.4	Public Participation Materials	65
7.5	Stakeholder Consultations	66
7.6	Consultation Undertaken as Part of The Final Scoping Phase:	69
7.7	Consultation with Stakeholders during the EIA Phase	70
8	The Baseline Environment	71
8.1	Climate	71
8.2	Topography	72
8.3	Geology	73
8.4	Soils, Land Capability and Land Use	74
8.4.1	<i>Soils</i>	74
8.4.2	<i>Land Capability</i>	76
8.4.3	<i>Land Use</i>	76
8.5	Surface Water and Ground Water	78
8.5.1	<i>Surface Water</i>	78
8.5.2	<i>Ground Water</i>	79
8.6	Fauna and Flora	79
8.6.1	<i>Flora</i>	83
8.6.2	<i>Fauna</i>	83
8.7	Wetlands	85
8.8	Air Quality	87
8.9	Noise	87
8.10	Traffic	89
8.11	Visual	89
8.12	Heritage and Palaeontology	90
8.13	Socio-Economic	90
9	Potential Impacts Identified during the Scoping Phase	93
9.1	Methodology for determining the Significance of Environmental Impacts	93
9.1.1	<i>Part A: Defining Consequence in Terms of Magnitude, Duration and Spatial Scale</i>	96
9.1.2	<i>Part B: Determining Consequence Rating</i>	97
9.1.3	<i>Part C: Determining Significance Rating</i>	97
9.2	Possible Positive and Negative Impacts identified	98
9.3	Cumulative Impacts	101
9.4	Application of Possible Mitigation Measure	101

9.5	Outcome of the Site Selection Matrix. The Final Site Layout Plan	101
9.6	Motivation where no Alternative sites were considered	102
9.7	Statement motivating the Preferred Site.....	102
10	Plan of Study for the Environmental Impacts Assessment.....	103
10.1	Alternatives to be considered, including the “No-Go” Option.....	103
10.2	Aspects to be assessed as part of the Environmental Impact Process	103
10.3	Terms of Reference for Specialist Studies.....	103
10.4	Methodology proposed	115
10.4.1	<i>Assessment of the Duration of significance.....</i>	<i>115</i>
10.4.2	<i>Stages at which the Competent Authority will be consulted</i>	<i>115</i>
10.4.3	<i>Public Participation to be undertaken during the EIA Phase</i>	<i>116</i>
10.4.4	<i>Tasks to be undertaken during the Environmental Impact Phase.....</i>	<i>116</i>
10.4.5	<i>Mitigation, Management and Monitoring of Identified Impacts</i>	<i>117</i>
10.5	Other Information Requirements.....	128
10.5.1	<i>Impact on the Socio-economic Conditions of any Directly Affected Parties</i>	<i>128</i>
10.5.2	<i>Impact on any National Estate referred to in Section 3(2) of the National Heritage Resources Act</i>	<i>128</i>
11	Declaration of Independence.....	129
11.1	Undertaking Regarding Correctness of Information.....	129
1.6	Undertaking Regarding Level of Agreement	129
12	References	130

Appendices

Appendix A: EIA Project Team CV's

Appendix B: A3 Maps

- ❖ Locality Map
- ❖ Site Layout Plan
- ❖ Gauteng C-Plan
- ❖ Sensitivity Map

Appendix C: Public Participation Information

- ❖ **Appendix C1** – Stakeholder Database
- ❖ **Appendix C2** – Land Claims Letters
- ❖ **Appendix C3** – Background Information Document
- ❖ **Appendix C4** – Newspaper Advert
- ❖ **Appendix C5** – Site Notice Report and Map (*To be included in Final Scoping Report*)
- ❖ **Appendix C6** – Announcement Notification
- ❖ **Appendix C7** – Stakeholder Correspondence (*To be included in Final Scoping Report*)

Appendix D – Site Photographs

Appendix E – Environmental Screening Tool

Figures

Figure 1-1: Historic mining activities within the Johannesburg area.	3
Figure 1-2: Mine workers at Comet Gold Mine 1903 (left) and Simmer and Jack Mine Colliery 1939 (right) 4	4
Figure 1-3: Price of Gold per ounce 2000-2018 (Macrotrends, 2019)	6
Figure 1-4: Different phases of S&EIA	8
Figure 2-1: Locality map of the Proposed Project	14
Figure 2-2: Mobile tracked hydraulic monitor on a tailings facility in South Africa	27
Figure 2-3: Typical mining widths proposed for a gold reclamation project (Source: www.drdgold.com/investors-and-media/circulars/cpr-samrec-wrtrp-26022018.pdf).	27
Figure 4-1: GDARD’s TSFs decision making tree as illustrated in the Gauteng Mine Areas Strategy (Source: GDARD, 2012).	53
Figure 6-1: A typical flow sheet for the reprocessing of a slimes dam	58
Figure 6-2: Pipeline alternatives for the Proposed Project	62
Figure 8-1: Minimum, average and maximum monthly temperatures for the Project	71
Figure 8-2: The geology of the Witwatersrand Basin stripped of younger cover and showing the position of the seven major goldfields (Source: Tucker <i>et al.</i> , 2016).	73
Figure 8-3: Soil classification map of Proposed Project area	75
Figure 8-4: Land uses of the Proposed Project site and surrounding area	77
Figure 8-5: Sensitivity map of the Proposed Project	81
Figure 8-6: Marievale TSFs project area superimposed on the Gauteng C-plan.....	82
Figure 8-7: Vegetation type in and around the Proposed Project area	84
Figure 8-8: NFEPA wetlands around the Proposed Project Area	86
Figure 8-9: Acceptable Zone Sound Levels for noise in districts (from SANS 10103:2008)	89

Tables:

Table 1-1: Structure of the Scoping Report in line with the Appendix 2 of the EIA 2014 Regulations, as amended.	vii
Table 1-2: Potential identified impact because of the Proposed Project	xi
Table 1-1: Details of EAP	10
Table 1-2: Peer Review Pr.Sci.Nat	10
Table 2-1: Description of the Directly Affected Property.....	15
Table 2-2: Property Details.....	17
Table 2-3: 21-digit Surveyor General Code for each Farm Portion	17
Table 2-4: Project perspective and technical details.....	21
Table 2-5: Listed Activities Triggered by the Proposed Project.....	24
Table 3-1: Applicable National Legislation and Guidelines	30
Table 3-2: Applicable Provincial and Local Policies, Guidelines and By-Laws	43
Table 6-1: The advantages and disadvantages of reclaiming and reprocessing of the Marievale TSFs – Preferred.....	57
Table 6-2: The advantages and disadvantages of hydraulic mining.....	59
Table 6-3: The advantages and disadvantages of each operational alternative considered	60
Table 7-1: Activities undertaken and to be undertaken during the public participation process	63
Table 7-2: Public places where the Draft Scoping Report can be accessed	67
Table 7-3: PPP activities during the Draft Scoping Phase.....	68
Table 7-4: PPP activities to be undertaken during the Final Scoping Phase	69
Table 8-1: Palaeontological Sensitivity of the geological supergroups at the project site (Butler, 2018) ..	90
Table 8-2: Socio-economic baseline information: Gauteng at a glance.....	91
Table 9-1: Typical tables used to identify and classify the significance of identified impacts	93
Table 9-2: Potential Impacts Identified for the Project.....	94
Table 9-3: Consequence Rating Methodology	96
Table 9-4: : Consequence Rating Methodology	97
Table 9-5: Significance Rating Methodology.....	97
Table 9-6: Positive and negative impacts regarding project alternatives for the Project.....	98
Table 10-1: Terms of Reference for Specialist Studies.	104
Table 10-2: High Level Mitigation Measures for Potential Impacts Identified for the Marievale Project.	118

Abbreviations

ABBREVIATION/ SYMBOL	DESCRIPTION
AQIA	Air Quality Impact Assessment
BID	Background Information Document
BWS	Blesbokspruit Wetland System
CA	Competent Authority/Authorities
CBA	Critical Biodiversity Area
CRR	Comments and Response Report
DEA	Department of Environmental Affairs
DMRE	Department of Mineral Resources and Energy
DoH	Department of Health
DSR	Draft Scoping Report
DALRRD	Department of Agriculture, Land Reform and Rural Development
DEFF	Department of Environment, Forestry and Fisheries
DHSWS	Department of Human Settlements, Water and Sanitation
DPWI	Department of Public Works and Infrastructure
DSR	Draft Scoping Report
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EMF	Environmental Management Framework
EMM	Ekurhuleni Metropolitan Municipality
EMPr	Environmental Management Programme Report
FSR	Final Scoping Report
GDARD	Gauteng Department of Agriculture and Rural Development
GDRDLR	Gauteng Department of Rural development and Land Reform
Ha	Hectare
IDP	Integrated Development Plan
I-SWQG	In-Stream Water Quality Guidelines
IWULA	Integrated Water Use Licence Application
IWWMP	Integrated Water and Waste Management Plan
Km	Kilometre
M	Metre
MAP	Mean annual precipitation
MPRDA	Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)
NDP	National development Plan
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEM:AQA	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)

ABBREVIATION/ SYMBOL	DESCRIPTION
NEM:BA	National Environmental Management: Biodiversity Act, 2004 (Act No.10 of 2004)
NEM:WA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
NEMLAA	National Environmental Laws Amendment Act, 2014 (Act No. 25 of 2014)
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NNR	National Nuclear Regulator
NWA	National Water Act, 1998 (Act No. 36 of 1998)
PPP	Public participation process
RoD	Record of Decision
S&EIA	Scoping and Environmental Impact Assessment
SAHRA	South African Heritage Resources Agency
SDF	Spatial Development Framework
SIA	Social Impact Assessment
TSF	Tailings Storage Facility
WMA	Water Management Area
WML	Waste Management Licence

SECTION 2:

THE RECLAMATION OF THE MARIEVALE TAILINGS STORAGE FACILITIES

1 Introduction and Background

1.1 The History of Gold Mining in South Africa

The first official gold prospector of the Transvaal Republic was Mr Pieter Jacob Marias who discovered alluvial gold in 1853 in the Jukskei and Crocodile Rivers in the Western Transvaal. This gave rise to an influx of prospectors looking for gold. Following this, Australian prospector Henry Lewis discovered gold-bearing rock at Blaauwbank in the western parts of the Transvaal Republic in 1874 (now known as the North West Province) (Durand, 2012). Thereafter, Mr George Harrison discovered a gold-bearing conglomerate on the farm Langlaagte in 1886. This conglomerate turned out to be the richest and most extensive gold deposit in the world.

Durant (2012) further explains that in September 1886, nine farms were proclaimed as public diggings. These public digging sites formed the main focus of the initial gold development which would later become known as the Central Rand. The development of the Central Rand and the outlying goldfields along the Witwatersrand were instrumental in the formation of today's City of Johannesburg (Harrison and Zack, 2012). Figure 1-1: Historic mining activities within the Johannesburg area.

After the discovery of the Main Reef, by George Harrison in February 1886, the Gold Rush ensued in the Transvaal and several gold mining endeavours began in the Central Rand (Viljoen and Reimold, 2002). The Central Rand is contained within a distance of approximately 46 km, east to west, from the Roodepoort Fault in the west, and through Johannesburg, to Boksburg in the east. From west to east, the outcrop of auriferous conglomerates were located on the farms Witpoortje 245 in Krugersdorp; Roodepoort 237, Vogelstruisfontein 231, and Paardekraal 226, in Roodepoort; Laanlaagte 224, Turffontein 96, and Doornfontein 92 in Johannesburg; Elandsfontein 90 and Driefontein 87 in Germiston; Driefontein 85, Vogelfontein 84, and Leewpoort 113 in Boksburg (Pretorius, 1963).

In Ekurhuleni, then called the East Rand, the major gold mines still in operation in the 1960s included: Simmer and Jack Mines Ltd, located on the farms Doornfontein 92, Elandsfontein 90, Elandsfontein 107 and Elandsfontein 108; Rose Deep Ltd, located on the farms Elandsfontein 90 and Driefontein 87; and East Rand Proprietary Mines Ltd, located on the farms Driefontein 87, Driefontein 85, Vogelfontein 84, Klippoortje 110 and Leeuwpoort 113 (Pretorius, 1963). In addition to the major producers mentioned above, there were several small mines working along the outcrop, reopening and reclaiming old mines which had previously ceased production. See Figure 1-2 for an example of some of the gold mines in the East Rand area in the 1900s.

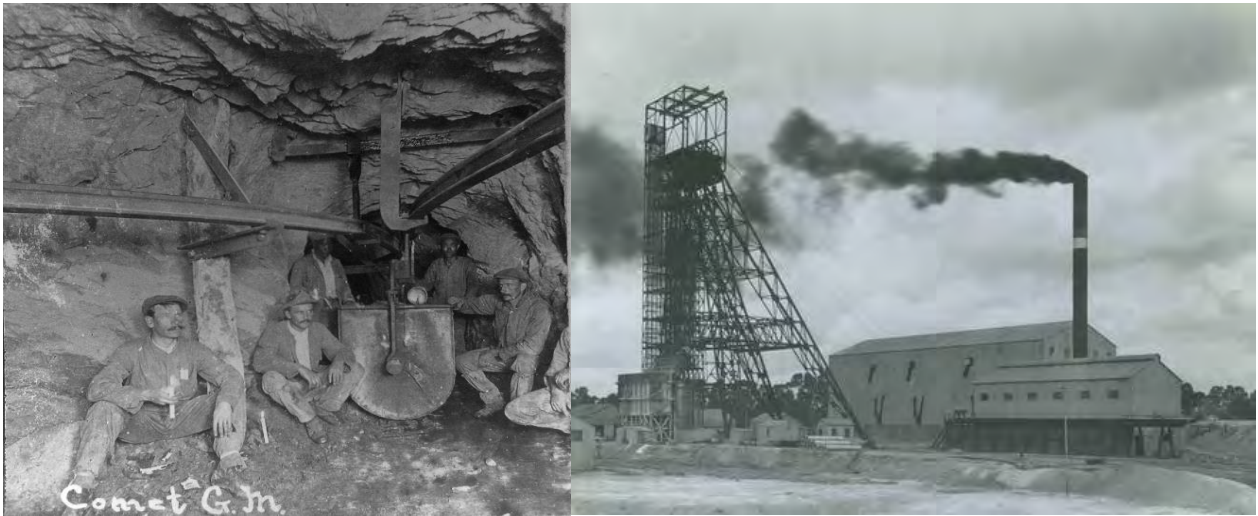


Figure 1-2: Mine workers at Comet Gold Mine 1903 (left) and Simmer and Jack Mine Colliery 1939 (right)

below gives an example of the historic mining environment of Johannesburg.



Figure 1-1: Historic mining activities within the Johannesburg area.

After the discovery of the Main Reef, by George Harrison in February 1886, the Gold Rush ensued in the Transvaal and several gold mining endeavours began in the Central Rand (Viljoen and Reimold, 2002). The Central Rand is contained within a distance of approximately 46 km, east to west, from the Roodepoort Fault in the west, and through Johannesburg, to Boksburg in the east. From west to east, the outcrop of auriferous conglomerates were located on the farms Witpoortje 245 in Krugersdorp; Roodepoort 237, Vogelstruisfontein 231, and Paardekraal 226, in Roodepoort; Laanlaagte 224, Turffontein 96, and Doornfontein 92 in Johannesburg; Elandsfontein 90 and Driefontein 87 in Germiston; Driefontein 85, Vogelfontein 84, and Leeuwpoort 113 in Boksburg (Pretorius, 1963).

In Ekurhuleni, then called the East Rand, the major gold mines still in operation in the 1960s included: Simmer and Jack Mines Ltd, located on the farms Doornfontein 92, Elandsfontein 90, Elandsfontein 107 and Elandsfontein 108; Rose Deep Ltd, located on the farms Elandsfontein 90 and Driefontein 87; and East Rand Proprietary Mines Ltd, located on the farms Driefontein 87, Driefontein 85, Vogelfontein 84, Klippoortje 110 and Leeuwpoort 113 (Pretorius, 1963). In addition to the major producers mentioned above, there were several small mines working along the outcrop, reopening and reclaiming old mines which had previously ceased production. See Figure 1-2 for an example of some of the gold mines in the East Rand area in the 1900s.

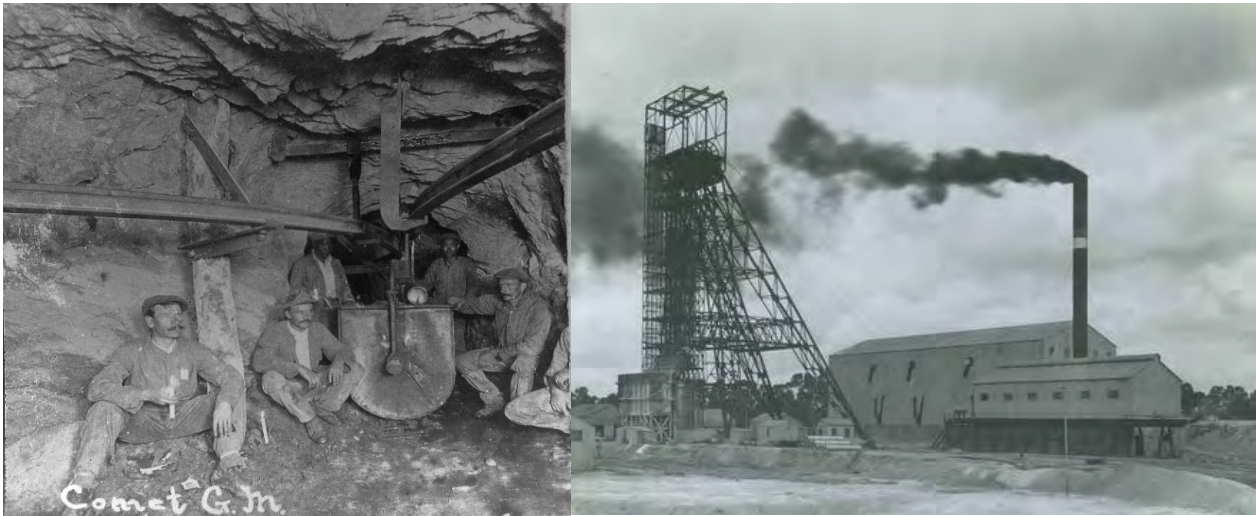


Figure 1-2: Mine workers at Comet Gold Mine 1903 (left) and Simmer and Jack Mine Colliery 1939 (right)

1.2 The Origin of Mine Dumps in Johannesburg

The Gauteng landscape is littered with mine dumps bearing testament to South Africa's rich mining heritage. The rising demand for minerals, and the need to exploit larger and lower-grade deposits to help satisfy demand, led to mining operations increasing in scale and size. During this time, mining and gold recovery were left unregulated. A number of mine dumps began to define the landscape, a result of mining operations where large volumes of ore were mined and brought to the surface where it was crushed and gold extracted.

In laymen's terms the phrase '*mine dump*' refers to an area where excess material, containing forms of mineral(s) that are either valuable or not, is left by the person who has won the minerals from the earth in accordance with his/her right or entitlement to mine. Prior to the enacting of legislative controls such as the Mines And Works Act, 1956 and its Regulations and later still the Minerals Act, 1991 and finally, the Mineral and Petroleum Resources Development Act, 2002 (No. 28 of 2002) ("the MPRDA"), which came into effect on 1 May 2004, mine dumps were placed in convenient positions adjacent to mining operations. This was often along fault lines, or within wetland areas. It is the legacy of these mine dumps within sensitive areas that has caused the environmental and health effects that are felt today.

As the mines in the Witwatersrand area began to close down during the 1970's, technological advances enabled the extraction of valuable gold resources and other minerals from the dumps. In 1978 the East Rand Gold and Uranium Company (Ergo) began to reclaim some of these dumps to gain access to the residues of gold, uranium and pyrite. Over the last two decades there have been further advances in mining and metallurgical technologies and an evolution in the country's environmental policy and legislation. This, as well as increasing gold prices has further incentivised the reclamation of TSFs. Today, Gauteng's physical landscape is once again in a state of transition due to the demand for the reclamation of historic mine dumps.

Through the process of reclamation, gold recovered from the historic mine dumps is made available for domestic and international markets. On the 7th of May 2019 DRDGold (DRD) recorded a 15% quarter-on-quarter rise in gold production to 1279 kg. This means that the continual reclamation of mine residue material (from historic mine dumps) will result in additional gold supply onto the gold market - which has been experiencing a downward trend over the last few years. The removal of these dumps also leads to the increased availability of useable land after the required rehabilitation has been conducted and clearance certificates are awarded. The aim of rehabilitation would be to return the land to a functional topography, clear of any pollution sources. Typically, end-use of the land would be aligned to the zoning of the area where the dumps were situated i.e. urban, industrial and agricultural.

1.3 Trends in The Current Gold Industry

Total world production of gold was estimated to be about 3.4 billion troy ounces, of which more than two-thirds have been mined in the past 50 years. The Witwatersrand reef was responsible for about 45% of the world's total gold production (USGS, 2001). Up until 2014, the Republic of South Africa remained one

of the world’s leading mining and mineral-processing countries and contributed to 9% of the worlds refined gold and 5% of the mined gold.

The country has however been undergoing a long-term decline in gold output, the share of South Africa’s world gold production decreased from 14% to about 5% and this decrease in gold mine production continued in South Africa in 2018 (USGS, 2019). Today, South Africa is no longer even the largest gold producer in Africa, having lost that position to Ghana.

The price of gold per ounce underwent a steady increase from 2001 until it reached the high point in August of 2011 (\$2058.60). Figure 1-3 below indicates how, from August 2011, the price of gold per ounce continually fluctuated in a decreasing trend until its current price of \$ 1275.21 per ounce on 20 May 2019. In recent months, for various geopolitical reasons, the gold price has far exceeded \$1300 per ounce, reaching \$1478 at the beginning of October 2019. This indicates that the gold price remains a volatile market with an ever-fluctuating commodity price.



Figure 1-3: Price of Gold per ounce 2000-2018 (Macrotrends, 2019)

1.4 Scoping and Environmental Impact Assessment

1.4.1 Applications Relevant to the S&EIA Process

Kongiwe has been appointed by **Ergo Mining (Pty) Limited** (hereafter Ergo) to undertake a Scoping and Environmental Impact Assessment (S&EIA) process which evaluates the environmental impacts associated with the Proposed Project as part of an Environmental Authorisation (EA). The S&EIA and specialist studies to be undertaken will support the applications for the required approvals. The following applications will be made to the DMRE for the Proposed Project:

1. **Application for EA** for listed activities triggered in Listing Notices GN R983, GN R984 and GN R985¹ published pursuant to the EIA Regulations 2014 (as amended), promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA); and
2. **Application for a waste management licence (WML)** authorising waste management activities listed in GN R921 of 29 November 2013 published in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (as amended) (NEM:WA).

In addition, the following applications will be made to the relevant Competent Authorities:

- ❖ **An Integrated Water Use Licence Application (IWULA)** in terms of the National Water Act, 1998 (Act No. 36 of 1998) (NWA) will be submitted to the Department of Water and Sanitation (DHSWS) for any potential impact to water resources by the Proposed Project.

The period of EA being applied for is **20 years for the reclamation period**.

The EIA findings, including specialist findings, are used by the applicant and authorities to obtain an objective view of the potential environmental, social and cultural impacts that could arise during the mining of the proposed area. Measures for the avoidance or mitigation of negative impacts will be proposed and positive impacts will be enhanced.

1.4.2 Methodology applied to conducting the Scoping Process

The outcome of the first phase of the S&EIA is the Scoping Report, which provides the terms of reference for undertaking the EIA Phase of the project. The figure below indicates the methodology that is applied in conducting the S&EIA process.

¹ These Listing Notices have been amended by GN R327, GN R325 and GN R324 of 7 April 2017

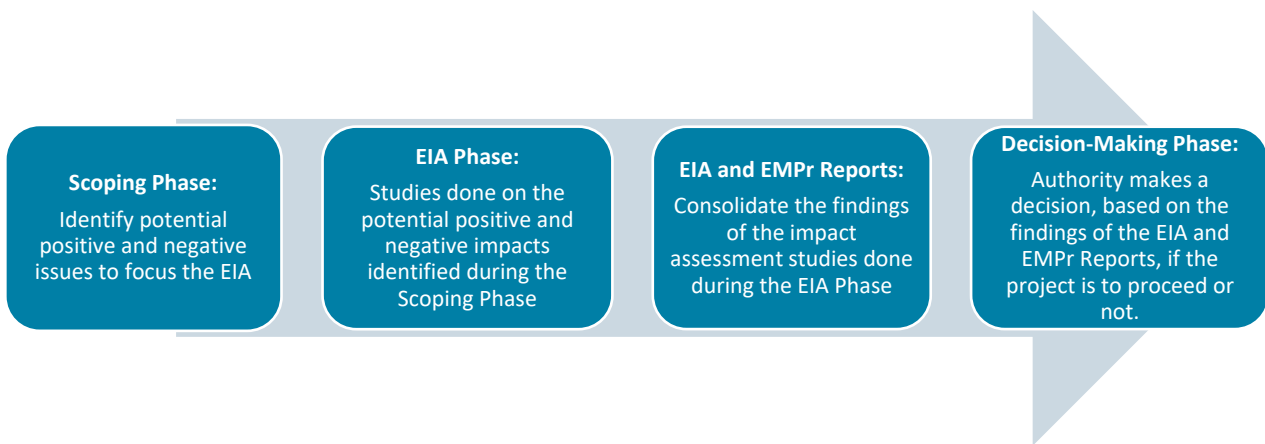


Figure 1-4: Different phases of S&EIA

1.4.3 S&EIA Timeframes

The Draft Scoping Report (DSR) will be submitted and made available for a **30-day** public review period. The comments received during this period will be captured in a Comments and Responses Report (CRR) that will be submitted with the Final Scoping Report.

Once the Final Scoping Report (FSR) has been submitted to the DMRE, the Department must either accept or reject the Scoping Report within **43 days**. Once confirmation of acceptance has been received from the DMRE, the EIA Phase commences and will run for a period of **106 days**, in which time stakeholders will be afforded a **30-day** period in which to review and comment on the S&EIR documentation.

Upon submission of the Environmental Impact Assessment / Environmental Management Programme (EIA/EMPr) document the Competent Authority will have **107 days** to reach a decision on the project (Record of Decision (RoD)). The RoD is otherwise referred to as the EA which authorises the activities to proceed. The decision to grant the EA may be appealed (within **20 days**) by any party, including the Applicant, following the process outlined in the National Appeal Regulations (GNR 993 of 8 December 2014) published in terms of the NEMA.

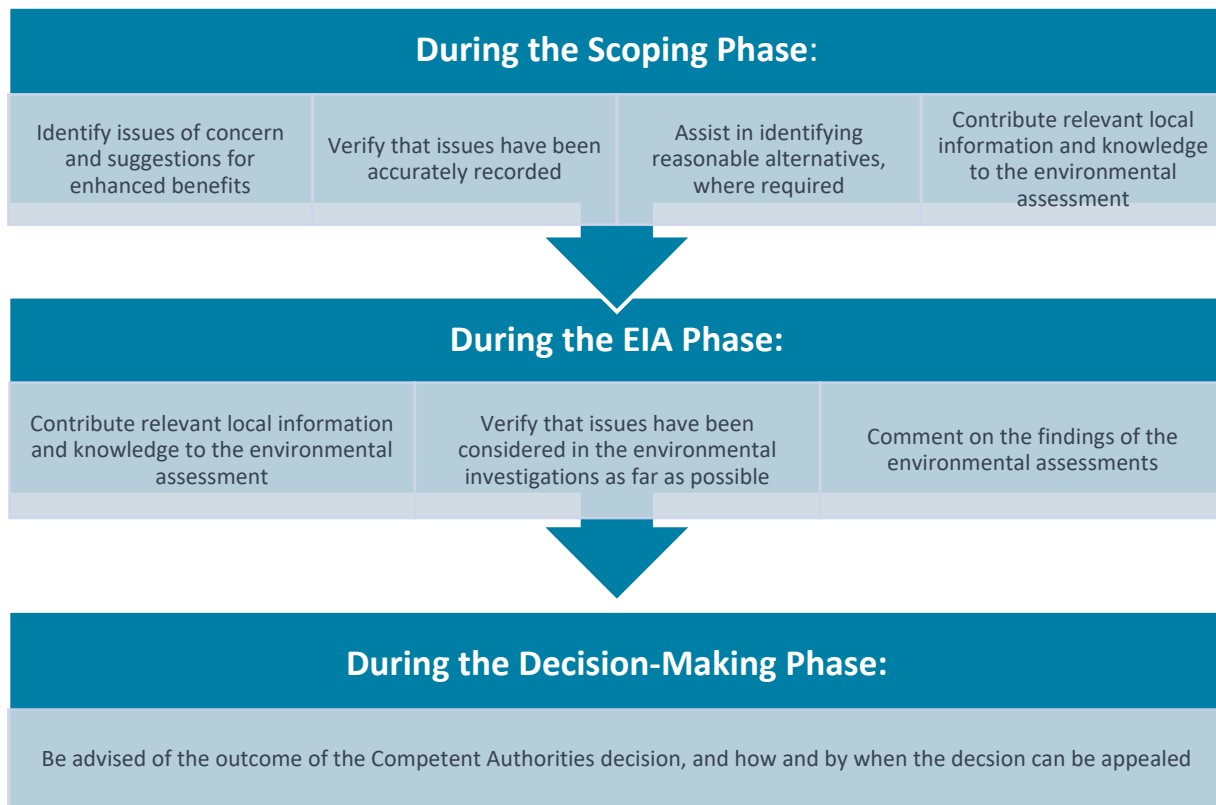
If significant changes to the EIA/EMPr are required, which were not consulted on during the initial public participation process, a notice may be submitted to the DMRE stating that the EIA/EMPr will be submitted within **156 days** from date of acceptance of the Scoping Report. During the aforesaid 156-day period, stakeholders will be afforded a further **30-day** period in which to review the amended EIA/EMPr documentation.

1.4.4 Public Participation Process

The Public Participation Process (PPP) has been designed to comply with the regulatory requirements set out in the EIA Regulations of 2014 (as amended). The PPP provides the opportunity for communication between agencies making decisions and the public. This communication can be an early warning system for public concerns, a means through which accurate and timely information can be disseminated, and can

contribute to sustainable decision-making (IAP2, 2006).

Kongiwe encourages stakeholders to provide input into the S&EIA. The sharing of information forms the basis of PPP, with an aim to encourage the public to have meaningful input into the decision-making process from the onset of the project. Stakeholders can become involved in the project in the following ways:



The Draft Scoping Report (DSR) will be made available for public comment from **23 October 2019 to 21 November 2019**. The project team will conduct an Open Day with stakeholders at **the Grootval Environmental Centre** on **Saturday, 09 November 2019 from 10H00 to 15H00**. During the open day, the DSR content will be presented and discussed. Comments received during the DSR comment period will be captured in the CRR and made available in the Final Scoping Report.

1.5 Details of the Environmental Consultant

Kongiwe is a contemporary, problem-solving consultancy specialising in solving real-world environmental challenges. We pride ourselves in using the latest technology available to realise pragmatic solutions for our clients. The company was created with the essential intent: *‘To solve environmental challenges for a world driven towards a sustainable future.’*

With offices in both Johannesburg and Pretoria, South Africa, our team of professional Environmental Scientists are highly trained in various environmental disciplines and have significant, hands-on experience in an array of projects across numerous industries. The company has extensive environmental and project management experience in multiple sectors, with significant experience in South Africa, as well as internationally. **Kongiwe** focuses on the integration of environmental studies and processes into larger engineering and mining projects. Moreover, **Kongiwe** provides clients with strategic environmental assessments and compliance advice, the identification of environmental management solutions and mitigation / risk minimising measures throughout the project lifecycle.

1.5.1 Contact Person and Corresponding Address

Details of the EAP:

Table 1-1: Details of EAP

Name of Practitioner	Siphesihle Dambuza, Kongiwe Environmental (Pty) Ltd
Tel No	+27 (10) 140 6508
Cell No	081 248 4890
e-mail address	sdambuza@kongiwe.co.za

Siphesihle Dambuza has a B.Sc. (Hons) Geography and Environmental Sciences degree from the University of Pretoria (UP) and is a registered Candidate Natural Scientist (Environmental Science) (*Cand.Sci.Nat* Registration No: 119264). Qualifications in Appendix A.

Siphesihle has been working as an Environmental Consultant predominantly in the mining industry. Multiskilled, he has had responsibilities in environmental impact reporting, air quality monitoring, environmental auditing, water use permitting and licensing, as well as public participation.

Expertise of the Peer Review (Pr.Sci.Nat):

Table 1-2: Peer Review Pr.Sci.Nat

Name of Practitioner	Gerlinde Wilreker, Kongiwe Environmental (Pty) Ltd
Tel No	+27 (10) 140 6508
Fax No	083 476 6438
e-mail address	gwilreker@kongiwe.co.za

Gerlinde Wilreker has an M.Sc. in Environmental Management from the previous Rand Afrikaans University (RAU), now the University of Johannesburg, and is a registered Professional Natural Scientist (Environmental Management) (Registration No:400261/09). Qualifications in Appendix A.

Gerlinde Wilreker has over 13 years' work experience as an Environmental Consultant, predominantly in the mining industry. Her practical experience in the mining and construction industry has given her a depth of knowledge regarding project processes from pre-feasibility phase through to implementation. She is adept at working in different contexts, and problem-solving with her team to meet client needs. She has particular expertise in relation to Environmental Authorisation Processes in terms of the South African legal regime.

2 Project Description

2.1 Description and Location of the Property

In terms of regional locality, the dumps are situated approximately 6 km north-east of Nigel and about 10 km south-east of Springs, in the Ekurhuleni Metropolitan Municipality (EMM). See

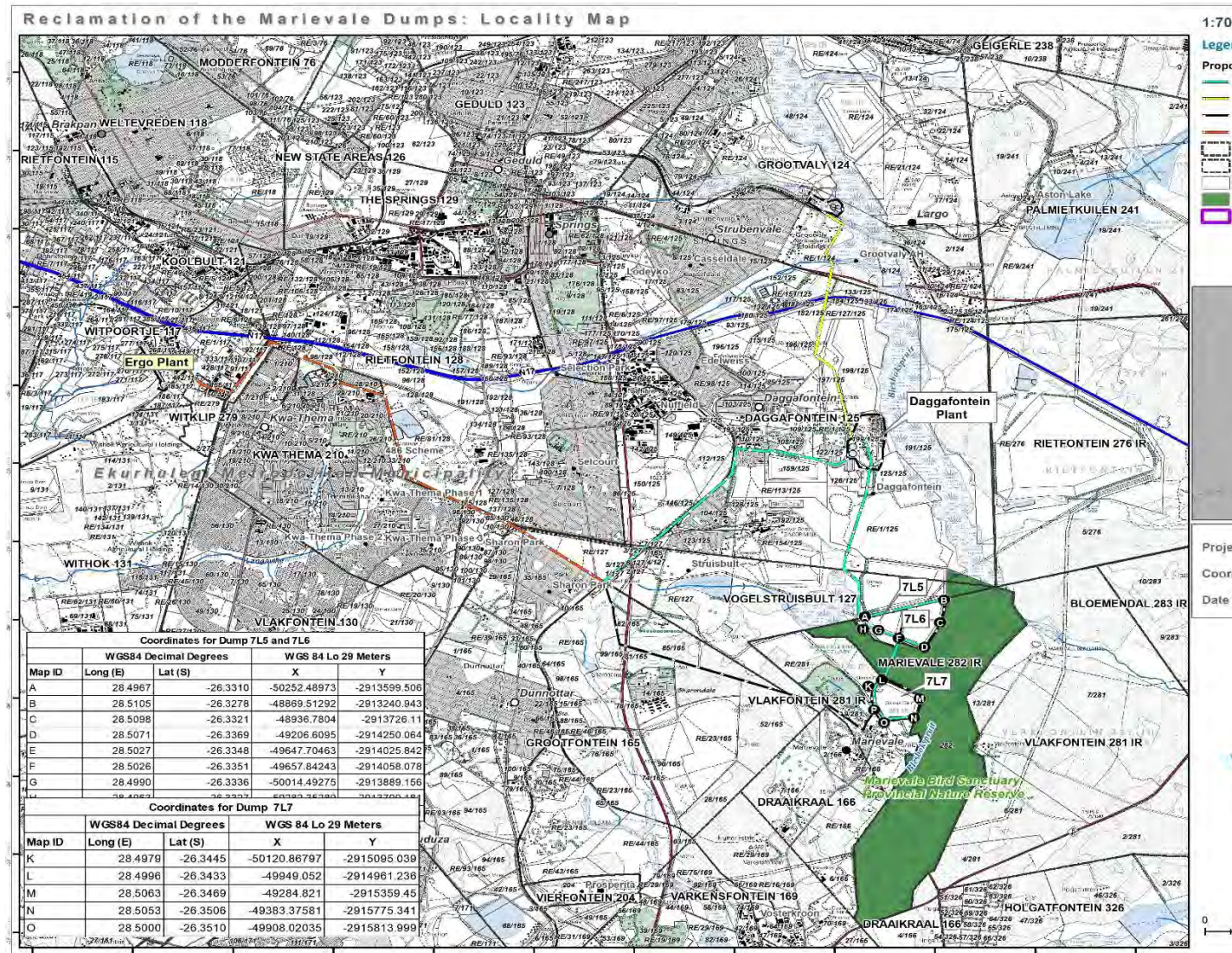


Figure 2-1 below. The three dumps are positioned as follows:

- ❖ Site 1: This site consists of dumps 7L5 and 7L6, which are both located on Portion 127 (RE) of the farm Vogelstruisbult 127 IR. The dumps fall within Ward 88, covering just over 80 Ha.
- ❖ Site 2: Dump 7L7 is located approximately 1 km south of Site 1, on Portion 281 (RE) of the farm Vlakfontein 281 IR. The site is also in Ward 88 and covers roughly 60 Ha.

The area is predominantly surrounded by other mine dumps, active mining operations, agricultural lands, scattered settlements, bare ground. The Ramsar Blesbokspruit Wetland System and protected Marievale

Bird Sanctuary Nature Reserve are situated just east of the dumps. Please see **Appendix D** for more images of the Proposed Project site.

The following infrastructure is encountered in the area:

- ❖ National and provincial roads (N17 and R51);
- ❖ Residential and commercial properties;
- ❖ The Engineers Golf Club;
- ❖ The abandoned Grootvlei and Vogelstruisbult Gold Mines;
- ❖ Vlakfontein Quarry Mine;
- ❖ Power lines;
- ❖ Railway lines;
- ❖ Water reticulation systems; and other
- ❖ Mine dumps.

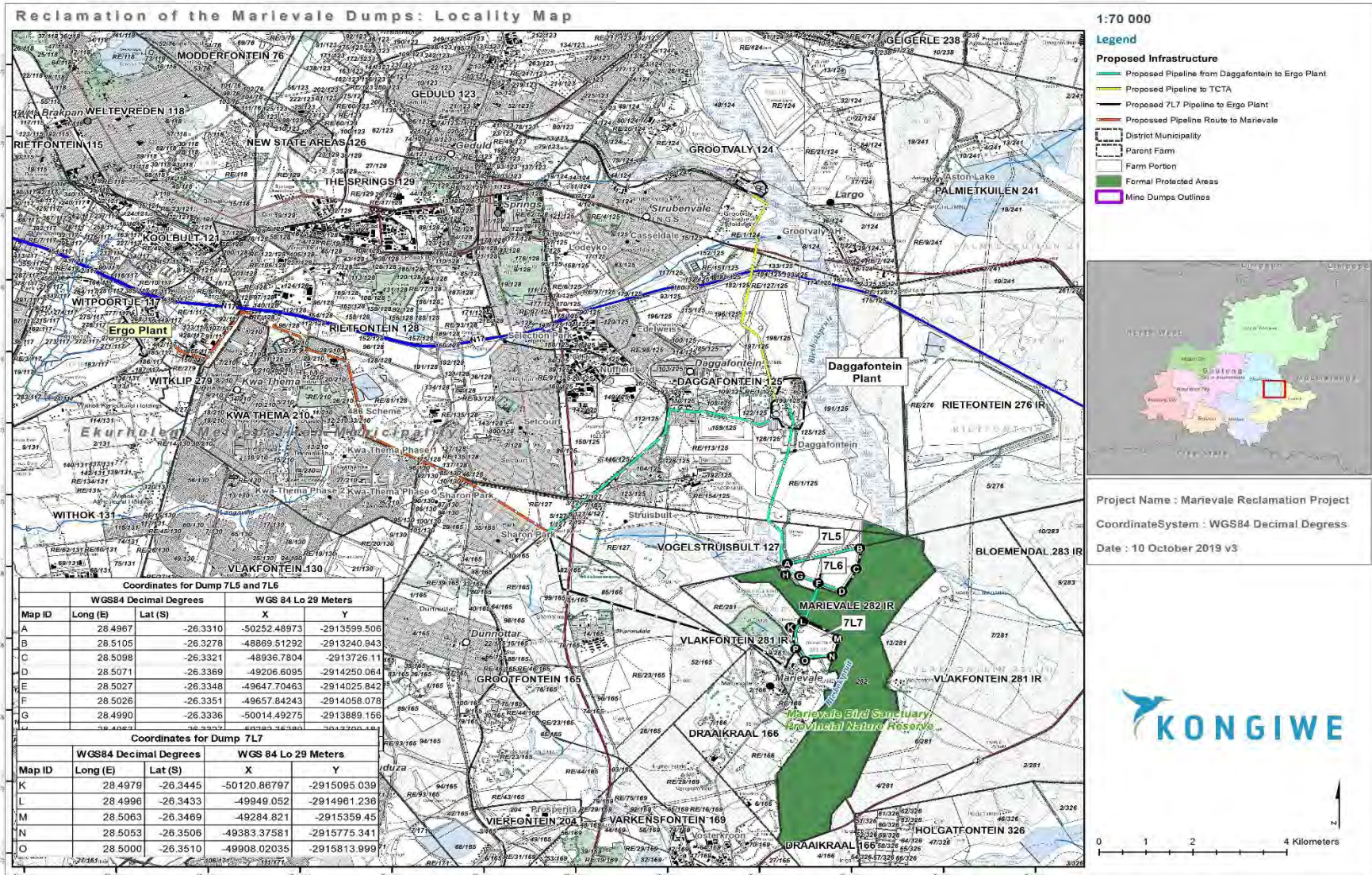


Figure 2-1: Locality map of the Proposed Project

2.1.1. Description of the Properties affected by the Project

This S&EIA process is being conducted for an EA to reclaim all three dumps and will be confined to farms Marievale 282 IR and Vlakfontein 281 IR, as well as all farms to be affected by the final pipeline route.

This is a “Brownfield Project” as it is the reclamation of historical tailings deposits with partly existing infrastructure. The potential negative and positive impacts of the Proposed Project on the environmental and social aspects will be objectively considered through studies undertaken by specialist professionals during the EIA phase.

Dump 7L5 and 7L6 are both located on the farm Marievale 282 IR; while dump 7L7 is spread over the Vlakfontein 281 IR and Marievale 282 IR farms. Most other properties have been identified as directly affected landowners for the pipeline alternatives of the project. See Table 2-1 and Table 2-3.

Table 2-1: Description of the Directly Affected Property

Farm Names	Farm Name:	Farm ID	Portion	Landowner
	Vogelstruisbult	127 IR	0 (RE)	Ekurhuleni Metropolitan Municipality
	Vogelstruisbult	127 IR	1	Transnet Ltd
	Vogelstruisbult	127 IR	2	City Council of Springs
	Vogelstruisbult	127 IR	3	Ekurhuleni Metropolitan Municipality
	Vogelstruisbult	127 IR	5	Transnet Ltd
	Vogelstruisbult	127 IR	6	Transnet Ltd
	Vogelstruisbult	127 IR	7	Transnet Ltd
	Vogelstruisbult	127 IR	8	Transnet Ltd
	Vogelstruisbult	127 IR	9	Transnet Ltd
	Vogelstruisbult	127 IR	10	Transnet Ltd
	Daggafontein	125 IR	1 (RE)	STI Consulting Services (Pty) Ltd
	Daggafontein	125 IR	93 (RE)	I&W Van Der Merwe Boerdery (Pty) Ltd
	Daggafontein	125 IR	104	To be determined
	Daggafontein	125 IR	108	WMG Estates (Pty) Ltd
	Daggafontein	125 IR	110	To be determined
	Daggafontein	125 IR	112	I&W Van Der Merwe Boerdery (Pty) Ltd
	Daggafontein	125 IR	113 (RE)	Consolidated Modderfontein Mines 1979 Ltd
	Daggafontein	125 IR	114	Fondagtuin Landgoed CC
	Daggafontein	125 IR	117 (RE)	CLPF Prop Inv (Pty) Ltd
	Daggafontein	125 IR	122	To be determined
	Daggafontein	125 IR	123	To be determined

Daggafontein	125 IR	125	Gauteng Provincial Government
Daggafontein	125 IR	126	STI Consulting Services (Pty) Ltd
Daggafontein	125 IR	127 (RE)	Palmkuilen (Pty) Ltd
Daggafontein	125 IR	128	EBM Project (Pty) Ltd
Daggafontein	125 IR	133	South African National Roads Agency Ltd
Daggafontein	125 IR	137	Transnet Ltd
Daggafontein	125 IR	146	Greater East Rand Metro
Daggafontein	125 IR	151 (RE)	East Rand Water Care Company
Daggafontein	125 IR	154 (RE)	Exxaro Base Metals (Pty) Ltd
Daggafontein	125 IR	159	Rappa Resources (Pty) Ltd
Daggafontein	125 IR	180	To be determined
Daggafontein	125 IR	181	To be determined
Daggafontein	125 IR	182	To be determined
Daggafontein	125 IR	184	South African National Roads Agency Ltd
Daggafontein	125 IR	196	To be determined
Daggafontein	125 IR	197	To be determined
Daggafontein	125 IR	198	To be determined
Daggafontein	125 IR	199	To be determined
Draaikraal	166 IR	2	National Government of the Republic of SA
Grootvaly	124 IR	1 (RE)	To be determined
Marievale	282 IR	282	Marievale Nature Reserve
Vlakfontein	281 IR	0 (RE)	Scarlet Sun 33 (Pty) Ltd
Vlakfontein	281 IR	9	National Government of the Republic of SA
Grootfontein	165 IR	0 (RE)	Gauteng Provincial Government
Grootfontein	165 IR	7	To be determined
Grootfontein	165 IR	10	Transnet Ltd
Grootfontein	165 IR	29	Inyanga Trading 102 ((Pty)) Ltd
Grootfontein	165 IR	35	To be determined
Grootfontein	165 IR	52 (RE)	Greater Nigel Transitional Local Council
Grootfontein	165 IR	81	Nigel Municipality
Grootfontein	165 IR	82	Nigel Municipality
Grootfontein	165 IR	85	Greater Nigel Transitional Local Council

	Grootfontein	165 IR	99	To be determined
	Rietfontein	128 IR	0 (RE)	To be determined
	Rietfontein	128 IR	46	Rand Water Board
	Rietfontein	128 IR	96 (RE)	City Council of Springs
	Rietfontein	128 IR	135 (RE)	Alstonville Investment ((Pty)) Ltd
	Rietfontein	128 IR	137	Rand Water Board
	Rietfontein	128 IR	167	To be determined
	Witpoortje	117 IR	1 (RE)	To be determined
	Witpoortje	117 IR	91	To be determined
	Witpoortje	117 IR	92	To be determined
	Witpoortje	117 IR	108	Greater East Rand Metro Metropolitan Municipality
	Witpoortje	117 IR	155	To be determined
	Witpoortje	117 IR	442	To be determined

Table 2-2: Property Details

Application Area (ha)	The Proposed Project site covers a combined area of approximately 140 Ha .
Magisterial District	Ward 88 of Ekurhuleni Metropolitan Municipality (EMM).
Distance and Direction from Nearest Town	The site is located approximately 6 km north-east from Nigel, 10 km south-east of Springs and falls within the Ekurhuleni Metropolitan Municipality district.

Table 2-3: 21-digit Surveyor General Code for each Farm Portion

Farm Names	Farm Name:	Farm ID	Portion	SG Code
	Vogelstruisbult	127 IR	0 (RE)	TOIR0000000001270000
	Vogelstruisbult	127 IR	1	TOIR00000000012700001
	Vogelstruisbult	127 IR	2	TOIR00000000012700002
	Vogelstruisbult	127 IR	3	TOIR00000000012700003
	Vogelstruisbult	127 IR	5	TOIR00000000012700005
	Vogelstruisbult	127 IR	6	TOIR00000000012700006
	Vogelstruisbult	127 IR	7	TOIR00000000012700007
	Vogelstruisbult	127 IR	8	TOIR00000000012700008
	Vogelstruisbult	127 IR	9	TOIR00000000012700009
	Vogelstruisbult	127 IR	10	TOIR00000000012700010
	Daggafontein	125 IR	1 (RE)	TOIR00000000012500001
	Daggafontein	125 IR	93 (RE)	TOIR00000000012500093

Daggafontein	125 IR	104	TOIR00000000012500104
Daggafontein	125 IR	108	TOIR00000000012500108
Daggafontein	125 IR	110	TOIR00000000012500110
Daggafontein	125 IR	112	TOIR00000000012500112
Daggafontein	125 IR	113 (RE)	TOIR00000000012500113
Daggafontein	125 IR	114	TOIR00000000012500114
Daggafontein	125 IR	117 (RE)	TOIR00000000012500117
Daggafontein	125 IR	122	To be determined
Daggafontein	125 IR	123	TOIR00000000012500123
Daggafontein	125 IR	125	TOIR00000000012500125
Daggafontein	125 IR	126	TOIR00000000012500126
Daggafontein	125 IR	127 (RE)	TOIR00000000012500127
Daggafontein	125 IR	128	TOIR00000000012500128
Daggafontein	125 IR	133	TOIR00000000012500133
Daggafontein	125 IR	137	TOIR00000000012500137
Daggafontein	125 IR	146	TOIR00000000012500146
Daggafontein	125 IR	151 (RE)	TOIR00000000012500151
Daggafontein	125 IR	154 (RE)	TOIR00000000012500154
Daggafontein	125 IR	159	TOIR00000000012500159
Daggafontein	125 IR	180	To be determined
Daggafontein	125 IR	181	To be determined
Daggafontein	125 IR	182	To be determined
Daggafontein	125 IR	184	TOIR00000000012500184
Daggafontein	125 IR	196	To be determined
Daggafontein	125 IR	197	To be determined
Daggafontein	125 IR	198	To be determined
Daggafontein	125 IR	199	To be determined
Draaikraal	166 IR	2	TOIR00000000016600002
Grootvaly	124 IR	1 (RE)	TOIR00000000012400001
Marievale	282 IR	282	TOIR00000000028200000
Vlakfontein	281 IR	0 (RE)	TOIR000000000281000RE
Vlakfontein	281 IR	9	TOIR00000000028100009
Vlakfontein	130 IR	10	TOIR00000000013000010
Vlakfontein	130 IR	85	TOIR00000000013000085
Vlakfontein	130 IR	92	TOIR00000000013000092
Vlakfontein	130 IR	96	TOIR00000000013000096
Grootfontein	165 IR	0 (RE)	TOIR00000000016500000
Grootfontein	165 IR	7	TOIR00000000016500007

Grootfontein	165 IR	10	TOIR00000000016500010
Grootfontein	165 IR	29	TOIR00000000016500029
Grootfontein	165 IR	35	TOIR00000000016500035
Grootfontein	165 IR	52 (RE)	TOIR00000000016500052
Grootfontein	165 IR	81	TOIR00000000016500081
Grootfontein	165 IR	82	TOIR00000000016500082
Grootfontein	165 IR	85	TOIR00000000016500085
Grootfontein	165 IR	99	TOIR00000000016500099
Grootfontein	165 IR	0 (RE)	TOIR00000000016500000
Rietfontein	128 IR	0 (RE)	TOIR00000000012800000
Rietfontein	128 IR	46	TOIR00000000012800046
Rietfontein	128 IR	96 (RE)	TOIR00000000012800096
Rietfontein	128 IR	135 (RE)	TOIR00000000012800135
Rietfontein	128 IR	137	TOIR00000000012800137
Rietfontein	128 IR	167	TOIR00000000012800167
Witpoortje	117 IR	1 (RE)	TOIR00000000011700001
Witpoortje	117 IR	91	TOIR00000000011700091
Witpoortje	117 IR	92	TOIR00000000011700092
Witpoortje	117 IR	108	TOIR00000000011700108
Witpoortje	117 IR	155	TOIR00000000011700155
Witpoortje	117 IR	442	TOIR00000000011700442

All outstanding landowner information is being actively sourced through one-on-one consultations and the Deeds Office. This information should be available during the Final Scoping phase.

2.2 Description of the Current Land Uses Applicable

According to the Gauteng Provincial Environmental Management Framework (2018), the Proposed Project area is in a Control Zone (Zone 3) and these are defined as sensitive areas that fall outside of Urban Zones. The current land uses of the surrounding areas are typified by mining and agricultural activities; dispersed settlements; sensitive areas like the Marievale Nature Reserve Bird Sanctuary and Blesbokspruit Wetland System (which are Conservation and Protected areas respectively); and other mine dumps such as dump 7L4, situated just north of the project site, and the 7L3 zinc dump being reclaimed by Exxaro Base Metals (EBM) 1 km north-west from the project site.

2.3 Known Mining Rights held in the Area

The assessment of cumulative impacts is required under the EIA Regulations 2014 (as amended in 2017), promulgated in accordance with Section 44 of the NEMA. In support of the above, Kongiwe will assess the impact of the Proposed Project in context of other similar activities in the local area. This will be undertaken during the EIA Phase of the project.

The Proposed Project area is enclosed by several active and historic mining activities. Notable current and prospective mining activities in the area vary in ownership but are primarily quarries (e.g Vlakfontein Quarry); coal mines such as the proposed Bloemendal Coal Mine (GP30/5/1/2/2/10071MR); the abandoned Grootvlei and Vogelstruisbult Gold Mines, and other proposed/active reclamation projects (e.g the EBM Projects' 7L3 zinc reclamation project). In addition, there are two proposed solar development projects within 30 km of the project site. A solar photovoltaic (PV) and concentrated solar power (CSP) development, with approved EA applications, under consideration. The EIA reference numbers for the developments are 14/12/16/3/3/1/569 and 14/12/16/3/3/2/706 respectively.

2.4 Description of the Activities to be Undertaken and the Infrastructure Plan

Ergo Mining (Pty) Limited (hereafter Ergo), intends to reclaim and reprocess gold residues from the Marievale tailings storage facilities (TSFs) Nos. 7L5, 7L6 and 7L7. The TSFs will be reclaimed by hydraulic mining. Water from hydraulic mining mixes with the unconsolidated material of the TSFs, resulting in a slurry. This slurry will be conveyed to the Ergo Processing Plant (hereafter Ergo Plant) for reprocessing using a newly constructed pipeline. Final deposition of the mine residue will be on the licenced Brakpan/Withok TSF.

The Proposed Project will investigate two pipeline routes to convey slurry from the TSFs to the Ergo Plant for reprocessing; and return process water to the project site for reclamation. The pipeline configuration would consist of two, 600 mm diameter, slurry pipelines and one, 600 mm diameter, process water pipeline.

The **first alternative** pipeline route is approximately 25 km long and is made up of a two parts. The first part would be a 7 km extension from the project site to the Daggafontein Plant; while the second part would be a 17 km extension from the Daggafontein Plant to the Ergo Plant.

The **second alternative** route would be a 19 km extension from the Proposed Project site, directly to the Ergo Plant.

The proposed reclamation site will be situated in Zone 3 of the Gauteng Provincial Environmental Management Framework (GPEMF) (2018); and even though some parts of the proposed pipelines may be laid in Zones 1 and 5, they may require authorisation in terms of the National Water Act (Act No. 36 of 1998) (NWA) for Section 21 water uses. An Integrated Water Use Licence Application (IWULA) will be prepared and submitted in accordance with the Water Use Licence Application and Appeals Regulations 2017 published in GNR 267 on 24 March 2017 and will be supported by a Technical Report and other necessary supplementary reports.

Major routes around the mine dumps are the N17 which runs parallel to and north of the dumps and the R51 which runs west of and perpendicular to the dumps. As far as possible, existing access roads will be utilised, and where this is not possible, these will be constructed as a two-by-two roadway, operating in both directions. Where access roads are to be constructed, these will be 4m wide gravel road with storm water earth channels and mitre drains to protect the road structure from flood damage. Intersections will be properly designed to provide safe entry and exit in and out of the mining area. Approvals from the provincial roads' authorities will be obtained where necessary.

Power will be supplied by Eskom and potable water will be purchased from Rand Water, with a contingency for portable JoJo tanks or connection to existing water pipeline infrastructure. In terms of process water, the water cycle operates as a closed circuit, meaning that limited make-up water will be required for the reclamation of the Marievale TSFs. Water required for the reclamation activities will be sourced from the existing central water storage facility located in Germiston and conveyed through existing and proposed process water pipelines to the project site for reuse in a closed circuit system. If make-up water is required additional sources will be sought.

The life of mine for the Proposed Project is expected to be 20 years. An estimated amount of 500 000 tons/month ramping up to 1.2 million tons/month of slurry is expected to be pumped from the Marievale TSFs to Ergo Plant for beneficiation.

Information that provides perspective on the scale of the Proposed Project is presented in Table 2-4 below. It should however be noted that this information may be refined further during the EIA Phase.

Table 2-4: Project perspective and technical details.

Group	Specific	Details
Mining	Target Mineral	Gold, nickel, silver, pyrites and all associated minerals in mine tailings dams and dumps.
	Minable Area	The Proposed Project site covers a combined total area of approximately 140 Ha .
	Depth of minerals	Only surface reclamation will be taking place.
	Extent of area for infrastructure	0.5 Ha at each dump
	Product	Gold will be the primary product during the reclamation of the dams, although nickel, silver and associated metals are present in the tailings.
Resource use	Water demand	Process water in a closed circuit for hydraulic mining and mining activities.
	Power demand	Eskom
Employment	Staff allocation: construction	Continual Development
	Operating Times	7 days a week- 24 hours a day

2.5 Listed and Specified Activities

Listed activities are activities identified in terms of Section 24 of NEMA which are likely to have a detrimental effect on the environment, and which may not commence without an EA from the Competent Authority (CA). An EA is required for any listed activity and is subject to the completion of an environmental process, either a Basic Assessment (BA) or a S&EIA.

Table 2-5 below contains all the listed activities identified in terms of NEMA, NEM:WA, and the EIA Regulations of 2014 (GN R982 of December 2014, as amended by GNR 326 of April 2017) and Listing Notices 1, 2 and 3 (GN R983, GN R984 and GN R985 of December 2014, as amended by GNR 327, GNR 325, and GNR 324 of April 2017, respectively) which may be triggered by the Proposed Project, and for which an application for EA has been submitted. The table also includes a description of those project activities which relate to the applicable listed activities.

The **DMRE** will act as the CA on the project.

The Commenting Authorities for the Marievale TSFs Reclamation Project are:

- ❖ Gauteng Department of Agriculture and Rural Development (GDARD);
- ❖ Department of Environmental Affairs (DEA);
- ❖ Department of Human Settlements, Water and Sanitation (DHSWS);
- ❖ Department of Environment, Forestry and Fisheries (DEFF);
- ❖ Department of Public Works and Infrastructure (DPWI);
- ❖ National Nuclear Regulator (NNR);

- ❖ Department of Health (DoH);
- ❖ South African Heritage Resource Agency (SAHRA), and;
- ❖ City of Ekurhuleni Metropolitan Municipality (EMM).

Table 2-5: Listed Activities Triggered by the Proposed Project.

Name of activity <i>Mining (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, stormwater control, berms, roads pipelines, power lines, conveyors, etc.)</i>	Aerial extent of the activity (ha) ² <i>Ha or m² Expressed in m² unless otherwise stated</i>	Listed activity <i>Mark with an X where applicable or affected.</i>	Applicable listing notice as amended <i>GNR 983 as amended by GNR 327, GNR 984 as amended by GNR 325 or GNR 985 as amended by GNR 324</i>	Waste management authorisation <i>(Indicate whether an authorisation is required in terms of the Waste Management Act). (Mark with an X)</i>	Water use licence authorisation ³
Access roads routed from existing entry points.		X	GNR 983 – 24 GNR 985 – 4		
Temporary Site infrastructure (offices, change house, workshops).		X			
•Satellite pump station / Reclamation Station		X	GNR 984 – 6	X	21(c) & (i)
• slurry receiving facility		X	GNR 983 – 12; 13 GNR 984 – 6 GNR 985 – 2; 14	X	

² The total area of the mining and associated areas is approximately 16.04 hectares.

³ Water use licences in terms of Section 21 of that National Water Act, 1998, will be required for various of the Listed Activities. These have not been specifically listed in this Application, but the necessary application will be submitted to the Department of Water and Sanitation

Name of activity <i>Mining (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, stormwater control, berms, roads pipelines, power lines, conveyors, etc.)</i>	Aerial extent of the activity (ha) ² <i>Ha or m² Expressed in m² unless otherwise stated</i>	Listed activity <i>Mark with an X where applicable or affected.</i>	Applicable listing notice as amended <i>GNR 983 as amended by GNR 327, GNR 984 as amended by GNR 325 or GNR 985 as amended by GNR 324</i>	Waste management authorisation <i>(Indicate whether an authorisation is required in terms of the Waste Management Act). (Mark with an X)</i>	Water use licence authorisation ³
• screening facility at the pump station		X	GNR 984 – 6	X	
• storage		X	GNR 984 – 6	X	
• transfer pumps in series		X	GNR 984 – 6	X	
Power supply (transformers and 11kV powerlines)					
Stormwater systems, including:					21(c) & (i)
Process water pipeline		X	GNR 983 – 9; 19		21(c) & (i)
Overland slurry pipeline		X	GNR 983 – 10; 19 GNR 985 - 7		21(c) & (i)

2.6 Environmental Authorisation Application: Activities and Infrastructure

2.6.1. Infrastructure intended for the project

The following infrastructure will be utilised on site:

- ❖ Two overland slurry pipelines of 600 mm in diameter;
- ❖ Overland return water pipeline of 600 mm in diameter;
- ❖ Reclamation pump stations;
- ❖ Water infrastructure, stormwater systems and spillage handling systems;
- ❖ Electricity reticulation;
- ❖ Temporary Administration buildings, including change houses and ablution facilities;
- ❖ Emergency Stormwater Dam;
- ❖ Access roads, routed from existing entry points; and
- ❖ Construction contractors' yards (temporary facilities).

2.6.2. Method of Reclamation

Hydraulic Mining of Slimes Dams:

The proposed mining method which will be used to remove the slimes dams are referred to as top-down hydraulic mining. This technique uses high-pressure water monitors (or mobile tracked hydraulic monitors) to deliver a high-pressure water jet to excavate unconsolidated tailings material within the slimes dams hydraulically. The water from the cannon mixes with the tailings and forms a slurry with a high solids content. The slurry then flows under gravity along trenches at the base of the TSF to a collection sump which is positioned at the lowest elevation of the bench being mined.

At the sump, finger screens remove any debris that may impact pumping operations, and a penstock will control water flow into the sump. The position of the collection sump will change as the reclamation progresses. From the collection sump, the slurry reports to a reclamation station. To control the volume of water reporting to the reclamation station, flapper valves are used to hold, and release slurry contained

in the collection sump. This slurry is then pumped via pipelines to the Ergo Processing Plant. At the Ergo Plant, the slurry is prepared and treated for gold extraction and beneficiation.



Figure 2-2: Mobile tracked hydraulic monitor on a tailings facility in South Africa

Mining will take place in predetermined benches (or ‘cuts’) and will move unidirectionally until the entire dump has been reclaimed. Generally, 30 m cuts are made for reclamation as per Figure 2-3 below.

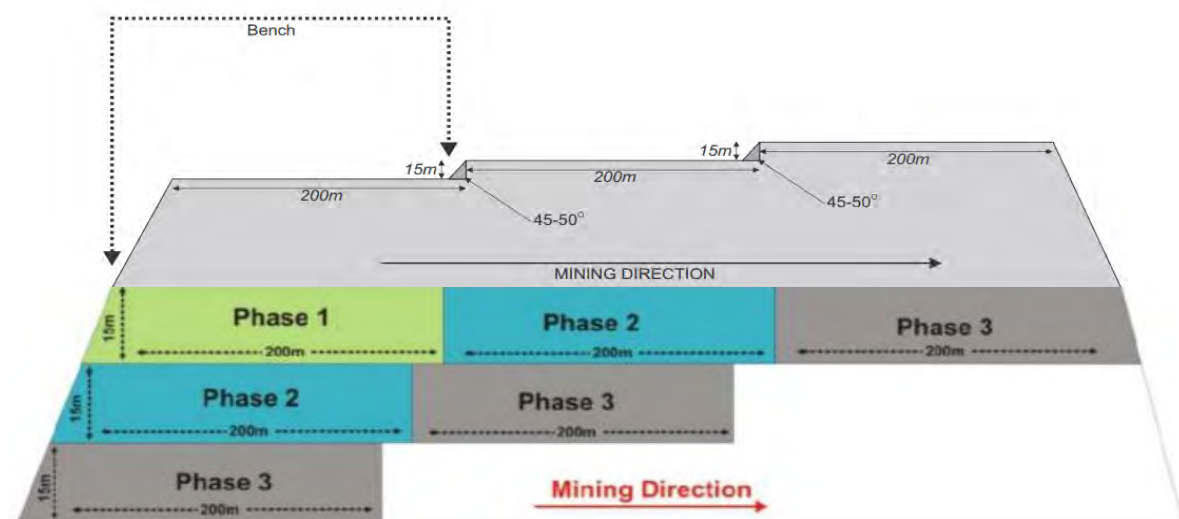


Figure 2-3: Typical mining widths proposed for a gold reclamation project (Source: www.drdgold.com/investors-and-media/circulars/cpr-samrec-wrtrp-26022018.pdf).

2.6.3. Rehabilitation

Once the dumps have been reclaimed, rehabilitated, cleared of radiation and closure has been agreed from the DMRE, the land will be shaped and revegetated.

2.6.4. The Period required for Environmental Authorisation:

The anticipated period required for EA is **20 years**.

2.6.5. Works Schedule

The anticipated life span of the project is approximately 20 years. It is expected that there would be a 5 year construction and ramp-up period which would include, the placement of infrastructure and site preparation, a 10 year Life of Operation (LOO) where active hydraulic mining and mechanical removal would take place, a 2 year ramp-down period and 3 years to rehabilitate the reclaimed sites.

3 Policy and Legislative Context

This chapter provides an overview of the policy and legislative context relevant to the reclamation of the Marievale TSFs. It identifies all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to the planned activities and are to be considered in the assessment process which may be applicable or have relevance to the Proposed Project.

The foundation for Environmental Preservation is entrenched in the **Constitution of South Africa (Act No. 108 of 1996)**. Following the birth of democracy in South Africa, legislative and environmental policies and regulations have undergone a large transformation, and various laws and policies were promulgated with a strong emphasis on environmental concerns and the need for sustainable development. The Constitution provides environmental rights (contained in the Bill of Rights, Chapter 2 (Section 24)) and includes implications for environmental management. The environmental rights are guaranteed in Section 24 of the Constitution, and state that:

“Everyone has the right –

- ❖ To an environment that is not harmful to their health or well-being and*
- ❖ To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that*
 - Prevent pollution and ecological degradation;*
 - Promote conservation and*
 - Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.”*

To ensure that the various spheres of the social and natural environmental resources are not overlooked, additional legislation and regulations have been promulgated in addition to those contained within the Constitution. The additional legislature and regulations ensure that there remains a key focus on various industries or components of the environment, and to ensure that the objectives of the Constitution are effectively implemented and upheld on an on-going basis. In terms of Section 7, a positive obligation is placed on the State to give effect to the environmental rights.

Table 3-1: Applicable National Legislation and Guidelines

Applicable Legislation and Guidelines used to compile the report.	Reference where Applied
<p><u>The Constitution of South Africa, 1996 (Act 108 of 1996)</u></p> <p>Section 24 of the Act states that everyone has the right to an environment that is not harmful to their health or well-being; to have the environment protected for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation; promote conservation; and secure ecological sustainable development and use of natural resources while promoting justifiable economic and social development.</p> <p>Section 32 of the Act states that every person has a right to information held by the State and to information held by other people that is required in the exercise or protection of a right.</p> <p>Section 33 of the Act states that everyone has a right to just and procedurally fair administrative action.</p> <p>The Marievale TSFs, along with mine works discharge, agricultural runoff and sewage effluent, have been identified as one of the pollution sources to the Blesbokspruit Wetland System (Ambani and Annegarn, 2015; McKay et al., 2018). The Proposed Project is in line with the Constitution of South Africa in removing a pollution source that will result in an improved environment for present and future generations.</p>	<p>As per the Requirements of NEMA and the NEMA EIA Regulations, alternative activities that are less taxing on the environment and resources must be investigated where possible. The DSR has been made available for public review & Draft EIA Report will be made available for public review (as per the PPP section of this report). The Appeal Process will be described to all stakeholders through the EA notification described in the PPP section of this report.</p>
<p><u>The One Environmental System</u></p> <p>In terms of the One Environmental System established by the NEMLAA, an EA in respect of a reclamation operation must be issued within 300 days of the application being submitted. This system aims to streamline the licensing processes for environmental authorisations and water use.</p>	<p>Ergo proposes to reclaim the Marievale TSFs and submit the required documents within the prescribed timeframes.</p>
<p><u>Mine Health and Safety Act (MHSA), Act 29 of 1996 (as amended):</u></p> <p>Although the Mineral and Petroleum Resources Development Act, 2002, does not apply to this project, Ergo operates in accordance to the MHSA and associated regulations. This includes creating a safe and healthy work environment</p>	<p>Although not strictly addressed in the Scoping Report or EMPr, protecting the environment contributes to a safe working environment. MHSA regulations will be worked into the</p>

Applicable Legislation and Guidelines used to compile the report.	Reference where Applied
<p>and providing the necessary protection and training to staff to ensure their health and safety is not compromised.</p> <p>Hazardous substances will be adequately stored and labelled. All regulations pertaining to safe use, handling, processing, storage, transport and disposal of hazardous substances; protection of equipment, structures and water sources and the surface of land; dumps and structures connected to reclamation operations; the monitoring and control of those environmental aspects which may affect the health and safety of persons will be applied on site. Regulations pertaining to provision of water, ablution facilities and staff health and safety will be applied on site.</p>	<p>mine’s Code of Practice (COP) and Standard Operating Procedures (SOPs).</p>
<p><u>National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA)</u></p> <p>The overarching principle of the NEMA is sustainable development. It defines sustainability as meaning the integration of social, economic and environmental factors into planning, implementation and decision making to ensure the development serves present and future generations. Section 2 of NEMA provides for the NEMA principle which apply throughout the Republic to the actions of all organs of state that may significantly affect the environment and in conjunction with other appropriate and relevant considerations. The NEMA principles serve as the general framework within which environmental management and implementation plans must be formulated and serve as a guideline by reference to which any organ of state must exercise any function when taking any decision in terms of the NEMA or any statutory provision concerning the protection of the environment. In this regard the MPRDA specifically states that the NEMA principles apply to all prospecting and mining operations and any matter or activity relating to such operation and serve as guidelines for the interpretation, administration and implementation of the environmental requirements of the MPRDA.</p> <p>NEMA authorises the Minister of the DEA to issue Regulations relating to the administration of the Act⁴, which has been done with the publication of the EIA 2014 Regulations, as amended. Section 24(2) allows the Minister to identify activities which may not commence without environmental authorisation from the competent authority. This</p>	<p>It is the objective of this application to align to NEMA.</p> <p>The NEMA is the overarching Act governing sustainable development and the NEMA principles apply to all prospecting and mining operations (which included reclamation activities) and any matter or activity relating to such operation.</p> <p>Listed activities as per the EIA 2014 Regulations, as amended, have been identified (refer to Chapter 2, subsection 2.5).</p>

⁴ Sections 24(5) and Section 44

Applicable Legislation and Guidelines used to compile the report.	Reference where Applied
<p>identification has been done in accordance with listing notices referred to as Listing Notice 1, Listing Notice 2 and Listing Notice 3. The NEMA also allows the Minister to determine which authority will be the competent authority to receive and evaluate applications for EAs.</p> <p>Listing Notice 1 identifies activities of limited scale and effect, which need to be assessed by a fairly simple process referred to as a BA, where after a Basic Assessment Report (BAR) is submitted to the competent authority. Listing Notice 2 identifies activities of significantly greater magnitude, which require evaluation through an initial Scoping Phase followed by an EIA and an EMPr. This process is generally referred to as the S&EIR process. Listing Notice 3 relates to activities limited to specified geographical areas and matters of concern to the various provinces which require a BAR process to be dealt with by the provincial authority concerned.</p> <p>Regulation 16 (1) prescribes the general application requirements and states that an application for an EA must be made on the official application form obtainable from the DMRE (the competent authority) and must, amongst others, include proof of payment of the prescribed application fee.</p> <p>Regulation 21 provides for the submission of the Scoping Report to the DMRE (the CA) for consideration and states that the scoping report must contain all the information set out in Appendix 2 to the EIA 2014 Regulations, as amended. In terms of regulation 22, the DMRE must, after considering the Scoping Report, either accept the report, with or without conditions and advise the applicant to proceed with the plan of study for EIA or refuse the EA. Once the Scoping Report is accepted by the DMRE, the applicant must submit the EIA Report inclusive of specialist reports and an EMPr which have been subjected to a PPP. The timeframes for submission of the Scoping Report and the EIA Report inclusive of the timeframes within which the DMRE must consider the reports and approve the EA are prescribed in regulations 21 to 24 of the EIA 2014 Regulations.</p> <p>Once a decision on the EA application has been reached, the DMRE (the competent authority) must notify the applicant in writing of the decision and give reasons for the decision.</p>	

Applicable Legislation and Guidelines used to compile the report.	Reference where Applied
<p><u>National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEM: WA)</u></p> <p>As part of the waste management matters dealt with in the NEM: WA, waste activities have been identified in GN 921 of 29 November 2013⁵: List of Waste Management Activities that have, or are likely to have, a Detrimental Effect on the Environment. GN R921 provides that the waste management activities listed in Category A and B thereof may not commence, be undertaken or conducted without a Waste Management Licence (WML). Activities listed in Category C of GN 921 may only be commenced with, undertaken or conducted in accordance with the National Norms and Standards published in terms of the NEM: WA.⁶</p> <p>Category A activities require a BAR process while Category B Activities require a S&EIR process. It should be noted that although previously residue deposits and residue stockpiles were regulated in terms of the MPRDA Regulations and in particular Regulation 73, the National Environmental Laws Amendments Act 25 of 2014 (NEMLAA) deleted section 4(b) from the NEM:WA and residue stockpiles and residue deposits therefore fall within the ambit of the NEM:WA and its various regulations. Activity B 4(11) of GN 921, as amended by GN 633 of 24 July 2015 now refers to “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)”. Since the Marievale TSFs are comprised of historic mineral deposits, the MPRDA does not apply and Activity B4(11) will likewise not apply. However, it must be noted that Schedule 3, Category A (Hazardous Waste) of NEM:WA itself adopts a definition for residue stockpiles precisely similar to the definition proposed for the MPRDA 3rd Amendment which never came into force. Accordingly, the Marievale TSFs must be regarded as waste accordingly and recovery operations would require a waste management licence, but in terms of Section 20 of the NEM:WA, not Activity B 4(11).</p>	<p>Listed activities as per the NEM: WA regulations have been identified (refer to Chapter 2, subsection 2.5).</p>

⁵ Published in Government Gazette 37083

⁶ The following National Norms and Standards have been published: Norms and Standards for Storage of Waste, 2013 (GN 926 of 29 November 2013); Standards for Extraction, Flaring or Recovery of Landfill Gas, 2013 (GN 924 of 29 November 2013); and Standards for Scrapping or Recovery of Motor Vehicles, 2013 (GN 925 of 29 November 2013)

Applicable Legislation and Guidelines used to compile the report.	Reference where Applied
<p>In addition to the requirement for a WML for the mine discard dump (historic mineral deposits), the mine is likely to trigger the following waste activities, all of which require a Category B WML:</p> <ol style="list-style-type: none"> 1) The storage of hazardous waste in lagoons excluding storage of effluent, wastewater or sewage; 2) 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 MPRDA. <p>The EA and WML are being dealt with as integrated application.</p>	
<p><u>National Water Act, 1998 (Act No. 36 of 1998) (NWA)</u></p> <p>In terms of the NWA, the national government, acting through the Minister of Water and Sanitation, is the public trustee of South Africa’s water resources, and must ensure that water is protected, used, developed, conserved, managed and controlled in a sustainable and equitable manner for the benefit of all persons (section 3(1)).</p> <p>In terms of the NWA a person may only use water without a license if such water use is permissible under Schedule 1 (generally domestic type use) if that water use constitutes a continuation of an existing lawful water use (water uses being undertaken prior to the commencement of the NWA, generally in terms of the Water Act of 1956), or if that water use is permissible in terms of a general authorisation issued under section 39 (general authorisations allow for the use of certain section 21 uses provided that the criteria and thresholds described in the general authorisation is met). Permissible water use furthermore includes water use authorised by a license issued in terms of the NWA.</p> <p>Section 21 of the NWA defines water uses which are governed in terms of the Act and for which a WUL is required. In terms of section 40 (1) of the NWA “a person who is required or wishes to obtain a licence to use water must apply to the relevant responsible authority for a licence.” These water uses, in terms of Section 21, are as follows:</p> <ol style="list-style-type: none"> (a) taking water from a water resource; 	<p>An IWULA and Technical Reports will be required for the reclamation of the Marievale TSFs and will be submitted to the DHSWS.</p>

Applicable Legislation and Guidelines used to compile the report.	Reference where Applied
<p>(b) storing water;</p> <p>(c) impeding or diverting the flow of water in a watercourse;</p> <p>(d) engaging in a stream flow reduction activity contemplated in Section 36;</p> <p>(e) engaging in a controlled activity identified as such in Section 37(1) or declared under Section 38(1);</p> <p>(f) discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit;</p> <p>(g) disposing of waste in a manner which may detrimentally impact on a water resource;</p> <p>(h) disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process;</p> <p>(i) altering the bed, banks, course or characteristic of a watercourse;</p> <p>(j) removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people; and</p> <p>(k) using water for recreational purposes.</p> <p>It is not likely that sub-sections (a), (b), (d), (e), (f), (g), (h), (j) or (k) will apply to the Proposed Project.</p> <p>Water uses associated with the reclamation activities, may include the actual reclamation of the Marievale TSFs within a wetland and the construction and operation of pipelines within 100 m of a river bank. These water uses will require an IWUL and will be reassessed once final placement and conceptual designs have been completed.</p> <p>The IWULA must be prepared and submitted in accordance with the Water Use Licence Application and Appeals Regulations 2017 published in GNR 267 on 24 March 2017 and must generally be supported by a Technical Report and Integrated Water and Waste Management Plan (IWWMP) with conceptual design drawing of all water related infrastructure including infrastructures that could potentially contaminate the receiving environment.</p>	
<p><u>National Environmental Management: Biodiversity Act, 2004 (Act No.10 of 2004) (NEM:BA)</u></p> <p>The NEM:BA provides for the management and conservation of South Africa’s biodiversity within the framework of</p>	<p>NEM:BA was used to inform the activities triggered by Listing Notice 3 (refer to Chapter 2, subsection 2.5).</p>

Applicable Legislation and Guidelines used to compile the report.	Reference where Applied
<p>NEMA, as well as the protection of species and ecosystems that warrant national protection and the sustainable use of indigenous biological resources. SANBI website and GIS tools were utilised to determine whether any nationally protected and threatened ecosystems occur on site. Therefore, NEMA Listing Notice 3 activities have been included in the EA application.</p> <p>The Proposed Project falls within the Gauteng Province, which has a provincial Biodiversity Assessment Protected Area Expansion Strategy. This strategy has been incorporated and considered throughout the compilation of this report.</p>	
<p><u>National Environmental Management: Protected Areas Act (NEM:PAA), Act 57 of 2003 as amended</u></p> <p>The National Environmental Management Protected Areas Act (No. 57 of 2003) (NEM:PAA) concerns the protection and conservation of ecologically viable areas representative of South Africa’s diversity and its natural landscapes and seascapes, and includes <i>inter alia</i>:</p> <ul style="list-style-type: none"> ❖ The establishment of a national register of all national, provincial and local protected areas; ❖ The management of those areas in accordance with national standards; and ❖ Inter-governmental co-operation and public consultation in matters concerning protected areas. <p>Sections 48 to 53 of the NEM:PAA lists restricted activities that may not be conducted in a protected area. Section 48 states that no person may conduct commercial prospecting or mining activities in a:</p> <ul style="list-style-type: none"> ❖ Special nature reserve or nature reserve; ❖ Protected environment without the written permission of the Minister and the Cabinet member responsible for minerals and energy affairs; and <p>Protected area referred to in Section 9:</p> <ul style="list-style-type: none"> ❖ (b) world heritage sites; and 	<p>SANBI website and GIS tools were utilised to determine if the project area overlaps with CBAs. Some sections of the project area were rated as Protected Area (PA) and Ecological Support Area (ESA); while some parts of the proposed pipeline routes traverse Ecological Support Areas, Important Areas and Protected Areas. Therefore, it is anticipated that some restrictions will apply to the reclamation project in terms of protected areas (pending ground truth verification).</p> <p>The Regulations were utilised to determine the need for any additional listed scheduled activities under GNR 985.</p>

Applicable Legislation and Guidelines used to compile the report.	Reference where Applied
<p>❖ specially protected forest areas, forest nature reserves and forest wilderness areas declared in terms of the National Forests Act (No. 84 of 1998);</p> <p>The Proposed Project is situated within 500 m of an important river (Blesbokspruit); within an important wetland and conservation area (Blesbokspruit Wetland System); and within a Protected Area (Marievale Bird Sanctuary Nature Reserve). However, the Proposed Project is neither a commercial prospecting nor mining activity but the reclamation of a pollution source from a protected site. Furthermore, the Proposed Project falls in an area identified in the 2018 Gauteng Environmental Management Framework’s Focus Areas for land-based protected areas expansion.</p>	
<p><u>National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA)</u></p> <p>The NHRA aims to promote good management of cultural heritage resources and encourages the nurturing and conservation of cultural legacy so that it may be bestowed to future generations.</p> <p>The Act requires all developers (including mines) to undertake cultural heritage studies for any development exceeding 0.5 ha. It also provides guidelines for impact assessment studies to be undertaken where cultural resources may be disturbed by development activities.</p> <p>❖ The South African Heritage Resources Agency (SAHRA) will need to approve the heritage assessment undertaken as part of the impact assessment process.</p> <p>The Marievale TSFs may represent ‘Historical Settlements and Townscapes’ as per the NHRA if they were established more than 60 years ago. The dumps and other associated mining infrastructure are integral components of the historical mining townscapes and settlements of the East Rand. This will be verified during the EIA phase of the project and if needed, appropriate authorisations will be sought via the NHRA.</p>	<p>A Heritage Impact Assessment will be undertaken as part of the EIA Phase and the assessment will be uploaded on the SAHRA web site along with the EIA Report.</p>
<p><u>Conservation of Agricultural Resources Act (No. 43 of 1983)</u></p>	<p>The protection of land, soil, wetlands and vegetation and the control of weeds and</p>

Applicable Legislation and Guidelines used to compile the report.	Reference where Applied
<p>The Conservation of Agricultural Resources Act (No. 43 of 1983) (CARA) includes the use and protection of land, soil, wetlands and vegetation and the control of weeds and invader plants. This is the only legislation that is directly aimed at conservation of wetlands in agriculture. The Act contains a comprehensive list of species that are declared weeds and invader plants dividing them into three categories. These categories are as follows:</p> <ul style="list-style-type: none"> ❖ Category 1: Declared weeds that are prohibited on any land or water surface in South Africa. These species must be controlled, or eradicated where possible; ❖ Category 2: Declared invader species that are only allowed in demarcated areas under controlled conditions and prohibited within 30m of the 1:50 year floodline of any watercourse or wetland; and ❖ Category 3: Declared invader species that may remain but must be prevented from spreading. No further planting of these species is allowed. <p>In terms of the Act, landowners are legally responsible for the control of alien species on their properties. Failure to comply with the Act may result in various infringement consequences and in some instances imprisonment and other penalties for contravening the law.</p>	<p>invader plants will be contained within the EIA Report.</p>
<p><u>The South African National Roads Agency Limited and National Roads Act, 1998 (Act No. 7 of 1998)</u></p> <p>The National Road Traffic Regulations, 2000 places specific duties on the consignor and consignee of dangerous goods. A consignor means the person who offers dangerous goods for transport (i.e. hazardous waste) and a consignee is the person who accepts dangerous goods, which have been transported in a vehicle. Both consignor and consignee must comply with the requirements of several SANS standard specifications and codes of practice relevant to dangerous goods which have been incorporated into the regulations.</p> <p>The mine owner is responsible for:</p> <ul style="list-style-type: none"> ❖ Offloading of the dangerous goods; ❖ Providing the dangerous goods offloading supervisor; and 	<p>The requirements of the Act and Regulations will be considered when assessing the project impacts and developing the associated mitigation measures in the EIA Phase.</p>

Applicable Legislation and Guidelines used to compile the report.	Reference where Applied
<p>❖ Ensuring that the loading and offloading are carried out by qualified employees trained in the relevant procedures.</p> <p>Ergo must, in line with Section 54 of the Act and GN R225, provide evidence that the company has appointed responsible personnel to oversee the off-loading of dangerous goods at its operations. A driver of a vehicle transporting dangerous goods is required to undergo training at an approved training body.</p>	
<p><u>Spatial Planning and Land Use Management Act, 2013 (Act No. 16 of 2013) (SPLUMA)</u></p> <p>The SPLUMA was promulgated in May 2015. SPLUMA is a framework act for all spatial planning and land use management legislation in South Africa. It seeks to promote consistency and uniformity in procedures and decision-making in this field. SPLUMA will also assist municipalities to address historical spatial imbalances and the integration of the principles of sustainable development into land use and planning regulatory tools and legislative instruments.</p>	<p>The Marievale TSFs are already in existence and fall within a Control Zone (Zone 3).</p>
<p><u>Hazardous Substances Act, 1973 (Act No. 15 of 1973)</u></p> <p>The Regulations for Hazardous Chemical Substances apply to an employer or a self-employed person who carries out work at a workplace which may expose any person to the intake of hazardous chemical substances at that workplace. Regulations 14 and 15 provide for the labelling, packaging, transportation and storage and the disposal of hazardous chemical substances respectively. These regulations set out specific requirements which form part of an employer’s duty to provide and maintain, as far as reasonably practicable, a working environment that is safe and without risk to the health of his or her employees.</p>	<p>The requirements of the Act and Regulations will be considered when assessing the project impacts and developing the associated mitigation measures in the EIA Phase.</p>
<p><u>National Development Plan, 2030</u></p> <p>The National Development Plan (NDP) offers a long-term perspective. It defines a desired destination and identifies the role different sectors of society need to play in reaching that goal.</p> <p>As a long-term strategic plan, it serves four broad objectives:</p>	<p>The requirements of this Plan will be considered when assessing the project impacts and developing the associated mitigation measures in the EIA Phase.</p>

Applicable Legislation and Guidelines used to compile the report.	Reference where Applied
<ol style="list-style-type: none"> 1. Providing overarching goals for what we want to achieve by 2030. 2. Building consensus on the key obstacles to us achieving these goals and what needs to be done to overcome those obstacles. 3. Providing a shared long-term strategic framework within which more detailed planning can take place in order to advance the long-term goals set out in the NDP. 4. Creating a basis for making choices about how best to use limited resources. <p>The Plan aims to ensure that all South Africans attain a decent standard of living through the elimination of poverty and reduction of inequality. The core elements of a decent standard of living identified in the Plan are:</p> <ul style="list-style-type: none"> ❖ Housing, water, electricity and sanitation; ❖ Safe and reliable public transport; ❖ Quality education and skills development; ❖ Safety and security; ❖ Quality health care; ❖ Social protection; ❖ Employment; ❖ Recreation and leisure; ❖ Clean environment; and ❖ Adequate nutrition <p>The Proposed Project falls in line with the goals of the NDP in creating a decent standard of living for all South Africans by removing a pollution source to the surrounding conservation and protected areas adjacent to the project site.</p>	
<p><u>Action Plan of the Environmental Initiative of the New Partnership of Africa’s Development, 2003.</u></p> <p>This Action Plan was established with the aim of encouraging sustainable development, conservation and acceptable use of biodiversity in Africa. It has been recognised that a healthy and productive environment is a prerequisite for</p>	<p>As the Proposed Project may result in the decrease of pollution affecting the Blesbokspruit Wetland System, the objectives of the NEPAD to systematically address and</p>

Applicable Legislation and Guidelines used to compile the report.	Reference where Applied
<p>the success of New Partnership of Africa’s Development (NEPAD), together with the need to systematically address and sustain ecosystems, biodiversity and wildlife. Six areas have been identified:</p> <ul style="list-style-type: none"> ❖ Combating land degradation, drought and desertification; ❖ Conserving Africa’s wetlands; ❖ Preventing and controlling invasive alien species; ❖ Conservation and sustainable use of coastal and marine resources; ❖ Combating climate change in Africa; and ❖ Cross-border conservation and management of natural resources. <p>The Proposed Project is expected to contribute to the conservation of Africa’s wetlands by removing a pollution source of the Blesbokspruit Wetland System.</p>	<p>sustain ecosystems, biodiversity and wildlife will be considered during the EIA Phase of the project.</p>
<p><u>South Africa’s National Biodiversity Strategy and Action Plan</u></p> <p>The National Biodiversity Strategy and Action Plan (NBSAP) sets out a framework and a plan of action for the conservation and sustainable use of South Africa’s biological diversity and the equitable sharing of benefits derived from this use. The NBSAP was prepared by the former Department of Environmental Affairs and Tourism (DEAT), during the period May 2003 to May 2005. The goal of the NBSAP is to conserve and manage terrestrial and aquatic biodiversity to ensure sustainable and equitable benefits to the people of South Africa, now and in the future. In support of this goal, five key strategic objectives (SOs) have been identified, each with a number of outcomes and activities. The schematic below represents the objectives and their interconnection in achieving the NBSAP “Goal”, although the project is related to reclamation, the following would still apply:</p>	<p>The Proposed Project is cognisant of the obligation to protect and preserve the integrity of the environment as well as its biodiversity. Principles of this plan will be taken into consideration during the EIA Phase.</p>

Applicable Legislation and Guidelines used to compile the report.	Reference where Applied
<div> <p>GOAL: Conserve and manage terrestrial and aquatic biodiversity to ensure sustainable and equitable benefits to the people of South Africa, now and in the future</p> <p>SO3: Integrated terrestrial and aquatic management across the country minimises the impacts of threatening processes on biodiversity, enhances ecosystem services and improves social and economic security</p> <p>SO4: Human development and well-being is enhanced through sustainable use of biological resources and equitable sharing of the benefits</p> <p>SO5: A network of conservation areas conserves a representative sample of biodiversity and maintains key ecological processes across the landscape and seascape</p> <p>SO1: An enabling policy and legislative framework integrates biodiversity management objectives into the economy</p> <p>SO2: Enhanced institutional effectiveness and efficiency ensures good governance in the biodiversity sector</p> </div> <p>Through the NSBA, it is recognised that biodiversity cannot be conserved through protected area networks only. All stakeholders, from private landowners and communities to business and industry must get involved in biodiversity management.</p> <p>The Proposed Project would need to incorporate operational systems that minimise the impacts of threatening processes on biodiversity during the operational phase of the project, and by streamlining specialist recommendations during the implementation of all phases of this project.</p>	

Applicable Legislation and Guidelines used to compile the report.	Reference where Applied
<p><u>Promotion of Access to Information Act, 2000</u></p> <ul style="list-style-type: none"> ❖ The PAIA gives effect to the constitutional right of access to any information held by the state and any information that is held by another person and that is required for the exercise or protection of any rights; and to provide for matters connected therewith. 	<p>The requirements of the Act will be considered when assessing and involving the public and registered interested and affected parties.</p>
<p><u>National Environmental Management Act; National Appeal Regulations, 2014</u></p> <p>The purpose of these regulations is to regulate the procedure contemplated in section 43(4) of the National environmental management act relating to the submission, processing and consideration of a decision on an appeal. This Act is used to help guide and understand the appeal process and the procedures may follow.</p>	<p>The requirements of the Act will be considered if an appeal may need to be or is lodged for the project.</p>

Table 3-2: Applicable Provincial and Local Policies, Guidelines and By-Laws

Policies, Guidelines and By-Laws	
<p><u>Gauteng Mine Residue Areas Strategy, 2012</u></p> <p>The aim of the project as a whole is to make more land available from the mine dumps in Gauteng to be used for other purposes, in line with government priorities. The objectives for the project are as follows:</p> <ul style="list-style-type: none"> ❖ To evaluate current pollution problems caused by mining activities and suggest how they should be addressed; ❖ To quantify the amount of land under mining activities and classify them in terms of impacts and potential for reclamation; ❖ To investigate which mining areas could be made available to be used for other purposes; and ❖ To provide preliminary and conceptual recommendations on the short-term priorities for the reclamation of the mining sites which could be economically sustainable. 	<p>The Proposed Project is in line with the objectives of the Strategy. The guidelines of the Strategy will be considered throughout the S&EIA process and reporting.</p>
<p><u>Gauteng Nature Conservation Bill, 2014</u></p>	<p>Aspects of this Bill are applicable to the Proposed Project. Where applicable, these</p>

Policies, Guidelines and By-Laws	
<p>The Bill was established in 2014, and contains the following objectives:</p> <ul style="list-style-type: none"> ❖ To provide for the sustainable utilization and protection of biodiversity within Gauteng; ❖ to provide for the protection of wild and the management of alien animals; protected plants; aquatic biota and aquatic systems; ❖ To provide for the protection of invertebrates and the management of alien invertebrates; ❖ To provide for professional hunters, hunting outfitters and trainers; ❖ To provide for the preservation of caves, cave formations, cave biota and karst systems; ❖ To provide for the establishment of zoos ❖ To provide for the powers and establishment of Nature Conservators; ❖ To provide for administrative matters and general powers; and to provide for matters connected therewith. <p>The Proposed Project is in close proximity to both the Blesbokspruit and Marievale Bird Sanctuary Nature Reserve; therefore, it is imperative for all phases of the S&EIR and those of the construction, operation and closure of the Proposed Project ensure the protection of biodiversity within Gauteng.</p>	<p>will be considered throughout the S&EIA process and will be included within the reporting documents.</p>
<p><u>Gauteng Conservation Plan Version 3.3</u></p> <p>The main purposes of C-Plan 3.3 are:</p> <ul style="list-style-type: none"> ❖ To serve as the primary decision support tool for the biodiversity component of the Environmental Impact Assessment (EIA) process; ❖ To inform protected area expansion and biodiversity stewardship programmes in the province; ❖ To serve as a basis for development of Bioregional Plans in municipalities within the province. <p>C-Plan 3.3 is a valuable tool to ensure adequate, timely and fair service delivery to clients of GDARD, and is critical in ensuring adequate protection of biodiversity and the environment in Gauteng Province.</p>	<p>Aspects of this Plan are applicable to the Proposed Project. Where applicable, these will be considered throughout the S&EIA process and will be included within the reporting documents.</p>

Policies, Guidelines and By-Laws	
<p><u>Gauteng Environmental Implementation Plan, 2016</u></p> <p>The purpose of the EIP is to:</p> <ul style="list-style-type: none"> ❖ Coordinate and harmonise environmental policies, plans and programmes and decisions to (i) minimise the duplication of procedures and functions; and (ii) promote consistency in the exercise of functions that may affect the environment; ❖ Give effect to the principle of cooperative governance in Chapter 3 of the Constitution; ❖ Secure the protection of the environment across the country as a whole; ❖ Prevent unreasonable actions in respect of the environment that is prejudicial to the economic or health interests of other provinces or the country as a whole; and ❖ Enable monitoring of the achievement, promotion and protection of a sustainable environment. 	<p>Aspects of this Plan are applicable to the Proposed Project. Where applicable, these will be considered throughout the S&EIA process and will be included within the reporting documents.</p>
<p><u>Gauteng Growth and Development Agency Strategic Plan 2014-2019</u></p> <p>The main purpose of the GGDA Strategic Plan is:</p> <ul style="list-style-type: none"> ❖ Addressing the persistent racial imbalances regarding ownership and general configuration of Gauteng’s economy; ❖ Addressing the spatially distorted economic development legacy of apartheid rule; ❖ Broadening the base of economic development beyond the Province’s dominant metropolitan municipal areas; ❖ The socio-economic transformation envisaged for the second phase of transition to a national democratic society; and ❖ Achieving the outcomes of creating decent work, economic inclusion and equality. 	<p>The Proposed Project will contribute towards employment creation within the Province and will also contribute positively towards economic growth within the region through both its development and operation.</p>
<p><u>Ekurhuleni Regional Spatial Development Framework,2015</u></p> <p>The Ekurhuleni Spatial Development Framework (SDF) provides a framework for making resource-effective decisions</p>	<p>Aspects of this SDF are applicable to the Proposed Project. Where applicable, these will be considered throughout the S&EIA</p>

Policies, Guidelines and By-Laws	
<p>that can help mitigate the following identified issues in the municipal zone:</p> <ul style="list-style-type: none"> ❖ Increasing pressure on the natural environment and green infrastructure; ❖ Urban sprawl and fragmentation; ❖ Spatial inequalities and the job-housing mismatch; ❖ Exclusion and disconnection emanating from high potential underused areas; ❖ Lack of securitisation and gated developments, and disconnected street networks (high cul-de-sac ratios and low intersection densities); ❖ Inefficient residential densities and land use diversity. <p>The Proposed Project is anticipated to contribute in decreasing the pressure on the natural environment by removing a pollution source to conservation and protected areas.</p>	<p>process and will be included within the reporting documents.</p>
<p><u>Ekurhuleni Environmental Management Framework (EMF), 2007</u></p> <p>The aim of the EMF for the EMM is to provide a framework that identifies and illustrates the general environmental characteristics of the municipality:</p> <p>The critical issues within the EMF are the identification of constraint zones and geographical areas. The development constraint zones within the EMF refer to the environmental suitability of land parcels for various types of land uses or activities. The types of development constraint zones identified in the EMF include:</p> <ul style="list-style-type: none"> ❖ low to no constraint zone; ❖ agricultural constraint zone; ❖ geotechnical constraint zone; ❖ hydrological constraint zone; and ❖ ecological constraint zone. 	<p>Aspects of this EMF are applicable to the Proposed Project. Where applicable, these will be considered throughout the S&EIA process and will be included within the reporting documents.</p>

Policies, Guidelines and By-Laws	
<p>The Proposed Project is within the vicinity of a protected and conservation area. These areas are identified as ecological constraint zones in the Ekurhuleni EMF. Guidelines discussed in the EMF, on these zones, will need to be considered throughout the S&EIR of the project.</p>	
<p><u>Ekurhuleni Bioregional Plan (BRP), 2014</u></p> <p>Subsequent to the approval of the Ekurhuleni BRP, the Guidelines for the compilation of the bioregional plans were set in terms of the National Environmental Management: Biodiversity Act. EMM, together with the South African Biodiversity Institute (SANBI) and the Gauteng Department of Agriculture and Rural Development (GDARD), developed the EMM Bioregional Plan. The purpose of the bioregional plan is to inform land-use planning, environmental assessment and authorisations, and natural resource management, by a range of sectors whose policies and decisions impact on biodiversity. This is done by providing biodiversity priority areas, referred to as ‘critical biodiversity areas and ecological support areas’, with accompanying land use planning and decision-making guidelines.</p> <p>Critical biodiversity areas within the bioregion are the portfolio of sites that are required to meet the region's biodiversity targets and need to be maintained in the appropriate condition for their category. The Ekurhuleni Metropolitan Municipality Bioregional Plan identified the following categories:</p> <ul style="list-style-type: none"> ❖ Critical Biodiversity Area One; ❖ Critical Biodiversity Area Two; ❖ Ecological Support Area One; ❖ Ecological Support Area Two; ❖ Protected areas; ❖ Important areas ❖ Other natural areas 	<p>Aspects of this EMF are applicable to the Proposed Project. Where applicable, these will be considered throughout the S&EIA process and will be included within the reporting documents.</p>

Policies, Guidelines and By-Laws	
The Project is expected to affect Ecological Support Areas, Protected Areas and Important Areas.	
<p><u>The Centre for Environmental Rights - Mining and your Community: Know your Environmental Rights</u></p> <p>To exploit a mineral, mining companies must get permission to mine from the government. This is known as an Environmental Authorisation. To get permission, the mining company is required to assess the environment and learn about the community and consult with everyone who will be affected by the proposed mining. The Guide published in 2014 by the CER discusses what rights communities and individuals who are affected by mining have, and what laws and processes must be followed by a mining company before it can start mining.</p>	<p>Even though the recovery of the Marievale TSFs is not mining governed by the MPRDA, this DSR incorporates the recommendations and guidelines listed in the guide when undertaking Public Participation (PP). All PP is implemented according to the requirements listed in the NEMA EIA Regulations of 2017.</p> <p>Refer to Chapter 7 for an overview of Public Participation to be undertaken.</p>
<p><u>The Gauteng Province Environmental Management Framework, 2014</u></p> <p>The Gauteng Department of Agriculture and Rural Development (GDARD) decided to produce an Environmental Management Framework for the whole of Gauteng. The objective of the GPEMF is to guide sustainable land use management within the Gauteng Province. The GPEMF, inter alia, serves the following purposes:</p> <ul style="list-style-type: none"> ❖ To provide a strategic and overall framework for environmental management in Gauteng; ❖ Align sustainable development initiatives with the environmental resources, developmental pressures, as well as the growth imperatives of Gauteng; ❖ Determine geographical areas where certain activities can be excluded from an EIA process; and ❖ Identify appropriate, inappropriate and conditionally compatible activities in various Environmental Management Zones in a manner that promotes proactive decision-making. 	<p>Aspects of this management framework are applicable to the Proposed Project. Where applicable, these will be considered throughout the S&EIA process and will be included within the reporting documents.</p>
<p><u>The Public Participation Guidelines in terms of the National Environmental Management Act, 1998 Environmental Impact Assessment Regulations, 2017</u></p>	<p>This guideline was used to ensure that all of the required steps are followed to ensure that a complete and successful public</p>

Policies, Guidelines and By-Laws	
<p>This document aims to assist with the participation process of all interested and affected parties regarding any Proposed Project. This guideline provides information and guidance for proponents or applicants, interested and affected parties, competent authorities and environmental assessment practitioners on the public participation requirements of the act, as well as provides information on the characteristics of a vigorous and inclusive public participation process.</p>	<p>participation process is conducted.</p>
<p><u>Integrated Environmental Management Guideline on Need and Desirability, 2017</u></p> <p>This document assists Environmental assessment practitioners on the best practice as well as how to meet the peremptory requirements prescribed by the legislation as well as sets out both the strategic and statutory context for the consideration of the need and desirability of a development involving any one of the NEMA listed activities. This document further sets out a list of questions which should be addressed when considering need and desirability of a proposed development.</p>	<p>This guideline was used to ensure that the need and desirability of the project was correctly considered and that the need and desirability of the project was thoroughly considered.</p>

4 The Need and Desirability of the Project

Historical underground mining operations on the Witwatersrand have left the area littered with Tailings Storage Facilities such as slimes dams, sand stockpiles and other accumulations of slimes. These TSFs have become pollution sources, safety risks to surrounding communities and a limitation to spatial development.

4.1 Environmental Pollution

TSFs are known to cause air and water pollution, as well as soil contamination. The impacts on soil are typically localised to the confines of the TSFs. However, the particulate matter associated with these areas can travel for kilometres, and pollution caused by decant can also be far reaching.

Dust is a human and animal health risk for a number of reasons. The dust usually contains fine particulate matter, which can be inhaled, causing damage to lung tissues. The dust also potentially contains a number of hazardous substances that can result in chemical toxicity. Tailings may have high levels of radioactive material which can cause radiological pollution. Collectively, the dust problem poses a significant health risk and reduces the quality of life for a large number of citizens. Furthermore, this undermines the credibility of the mining industry as a responsible corporate citizen (GDARD, 2012, p16). The approval of this project would eliminate the Marievale TSFs as a source of pollution to the surrounding areas.

According to the Gauteng Department of Agriculture and Rural Development (GDARD, 2011), water pollution from abandoned mines is commonly associated with the problem of Acid Mine Drainage (AMD), which usually refers to the 'point source' of pollution produced by the decant of contaminated water from shafts or inclines connecting the mine void to the surface. Some TSFs, especially slimes dams, are closely associated with these underground mine voids, so the issue of water ingress into those voids, via fissures arising from the geotechnically unstable surface, is of great importance. Unfortunately, many older TSFs were placed in riverbeds or over dolomites which allowed seepage directly into groundwater. The decanting of AMD is a high profile media issue, which is now driving investment decisions by a range of local and international investors, and which has been raised to the level of a national priority by the released AMD report. Possibly more important, however, is the broader issue of 'diffuse sources' of pollution represented by the TSFs and their possible interactions with precipitation, seepage, surface-water runoff and shallow groundwater. The long term sustainable solution is needed for both the AMD and TSF problems. This project would contribute in finding a solution to these problems.

Soil contamination, including the mere presence of TSFs in the surface environment, constitutes a pollution hazard through the direct access pathway. This occurs where people are contaminated by, or externally exposed to elevated levels of pollution after unauthorized entry to a mine site, by living in settlements directly adjacent to mines or in some cases, living in settlements on the contaminated TSFs of abandoned mines. Direct access to mine sites may also expose the public to risk due to direct external gamma radiation, radon exposure, inhalation and ingestion of radionuclides and chemotoxic metals, as well as the

physical dangers inherent to mining sites (GDARD, 2012, pg16).

Winde et al. (2019) conducted a study on *Human Exposure to Uranium in South African Gold Mining Areas Using Barber-Based Hair Sampling*. The study investigated hair samples from customers at barber shops across Gauteng and found that residents living in and around gold mining areas are exposed to elevated environmental levels of uranium which eventually finds its way into their bodies. Although the findings of this study were inconclusive, Winde et al. (2019) state that the Uranium (U) measurements in water, soil, and food that is in proximity to gold mining activities, in populated areas of Gauteng Province, suggest the possibility of exposure levels that may lead to adverse health consequences, including cancer.

The Proposed Project would play a significant role in eliminating some of these suspected Uranium pollution sources and reducing the extent of exposure to surrounding communities.

4.2 Safety and Security

According to GDARD (2012), most TSFs have an element of lawlessness to them and should be considered as badlands where state penetration is minimal. The absence of security results in theft of equipment and the damage of infrastructure required to mitigate the negative impacts of TSFs. Dust control equipment such as sprayers and pumps are often stolen, which reverts back to environmental issues; while copper theft in the TSFs has also been known to create, amongst other outcomes, the surge of voltage across the electric reticulation system, causing substantial damage to refrigerators, air conditioners, microwave ovens, TV sets, computers and other electronic equipment to surrounding communities.

Apart from theft, other issues that are commonly associated with TSFs include illegal mining and illegal settlements near the unsupervised properties. These issues pose safety risks for law enforcement, affected land owners and adjacent communities.

4.3 The Limitation of Spatial Development

Gauteng is South Africa's smallest but most densely populated province, housing 24% of the country's population. 97% of the province's population is urbanised, which has resulted in an increased requirement for land in urban spaces (GSDF, 2016).

Significant areas of land in Gauteng are devoted to and/or impacted upon by current and historical mining activities. The main 'gold mining belt' stretches from east to west across the centre of the province. However, gold mining has declined over the past few decades, leaving behind a legacy of TSFs. According to the Gauteng Strategic Development Framework (GSDF) (2016), one of the solutions to an ever growing demand for spaces in the province is by unlocking the mining belt and using these areas for their development potential.

The Proposed Project is situated in Zone 3 of the Gauteng Provincial Environmental Management Framework (GPEMF) (2018), which are sensitive areas outside of urban areas. It is also directly adjacent to

the Blesbokspruit Wetland System and Marievale Bird Sanctuary Nature Reserve, Conservation and Protected Areas respectively. The project site is also situated in one of the focus areas for land-based protected areas expansion identified in the GPEMF (2018), it is anticipated that the land will be levelled and revegetated to match the surrounding environment after it has been rehabilitated.

4.4 The Gold Industry of South Africa

South Africa has been undergone a long-term decline in gold output, the share of South Africa's world gold production decreased from 14% to about 5%. This trend continued in 2018. The overall decrease of gold production may be as a result of unreliable electricity-supply constraints, rising administered prices, labour issues, as well as waning productivity rates impeding its operational performance.

The reprocessing and reclamation of the Marievale TSFs will help retrieve gold from the slimes dams. The revival of gold processing and recovery will add valuable tonnages to a declining market.

4.5 Conclusion: Need and Desirability

The overall objective of this project is to recover residual gold from tailings within three existing TSFs (7L5, 7L6 and 7L7). The resultant residue from the reprocessing plant will be deposited at the Brakpan/Withok facility. This will allow for the rehabilitation and clearance of land currently occupied by the Marievale TSFs.

The land being cleared could be seen as a secondary or consequential product. The clearing of land is an extremely important and positive benefit, as the removal of the TSFs would result in the removal of a water, land and dust pollution source to a highly sensitive surrounding environment, as well as costs associated with tailings dam maintenance. The land would be cleared to ground level and thereafter be available for a different land use. This could result in the reinstatement of the natural drainage lines of the Blesbokspruit and the subsequent expansion of the Blesbokspruit Wetland System, as well as an improvement in the biodiversity of the Marievale Bird Sanctuary Nature Reserve (McKay et al., 2018).

The Proposed Project would also directly and indirectly contribute to the country's Growth Domestic Product (GDP), as well as provide continued employment to current employees of Ergo.

Overall, the Proposed Project is in line with the objectives of the Gauteng Mine Residue Area Strategy (2012), which are to reclaim and/or rehabilitate TSFs to the point where they become safe for adjacent communities and land can be made available for other purposes. See Figure 4-1 below for the GDARD TSFs Decision Tree.

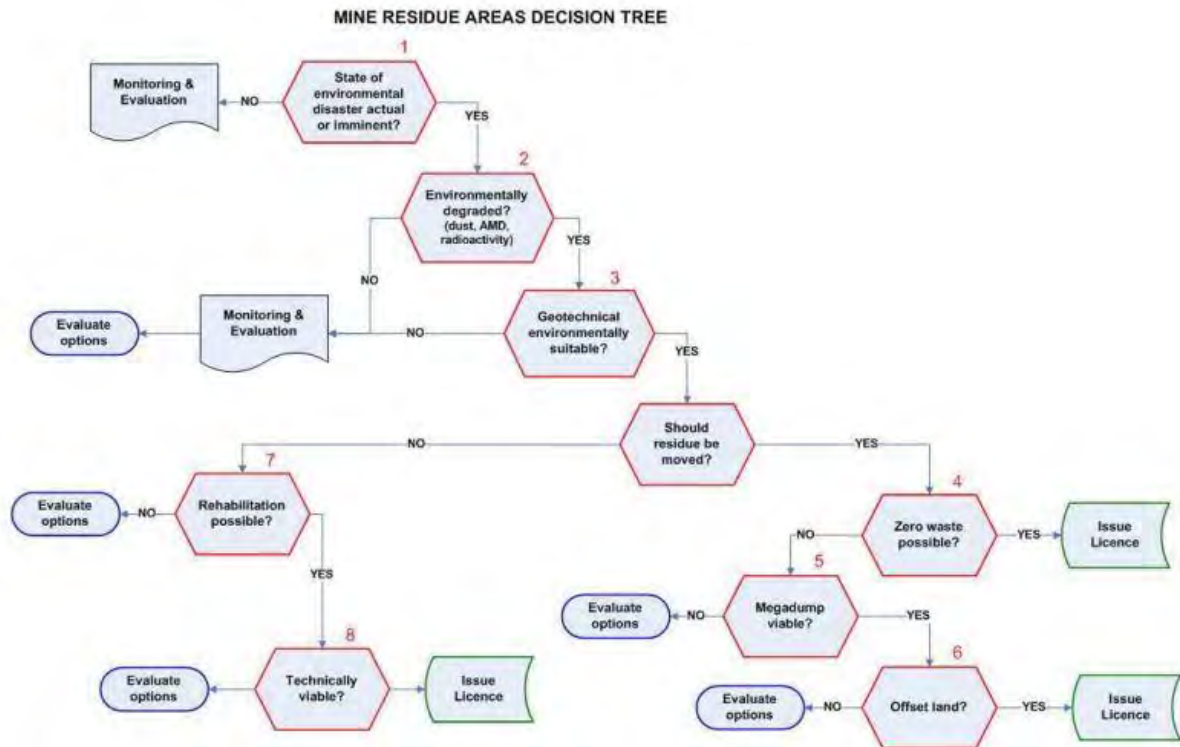


Figure 4-1: GDARD’s TSFs decision making tree as illustrated in the Gauteng Mine Areas Strategy (Source: GDARD, 2012).

5 Period for which the environmental authorisation is required

The environmental authorisation (EA) is required for **20 years**. Subsequent amendments can be lodged as the operational structures change accordingly.

6 Description of the Process Followed to Reach the Proposed Preferred Site

The Marievale TSFs are existing facilities. For the proposed pipelines, it is anticipated that the route will be evaluated as part of the EIA process, and a site sensitivity assessment will be carried out. The assessment will be conducted using desktop and mapping data to ensure that the reclamation areas can be suitably positioned within the site boundary and servitude areas, and that areas of environmental sensitivity are avoided as far as practically possible. Environmental sensitivities which might be identified and mapped for the project may include the following:

- ❖ **Low Sensitivities:** Low sensitivity areas are likely to be transformed with the risk of significant ecological impact being very low.
 - Grazing areas and pastures
 - Areas of historically cultivated land
 - Areas that are already heavily modified
- ❖ **Medium Sensitivities:** Medium sensitivity areas are likely to contain natural vegetation without any known highly sensitive features.
 - Areas of natural vegetation
 - Protected environments that have been modified
- ❖ **High Sensitivities:** High sensitivity areas are likely to contain some sensitive ecological features or processes that need to be addressed before development can be considered.
 - Sensitive areas that are species specific
 - Non-perennial and perennial pans and watercourses identified under the National Freshwater Ecosystem Priority Area (NFEPA)
 - Farm dams
 - Sensitive areas with landscape and local corridors
- ❖ **Very High Sensitivities:** Very high sensitivity areas are potentially unsuited for development owing to their high ecological importance.
 - Areas identified under the Gauteng Conservation Plan (GCP) as “Optimal” or “Irreplaceable” Critical Biodiversity Areas (CBA).
 - Areas identified under the Gauteng Conservation Plan (GCP) as “Species Specific” Ecologically Sensitive Areas (ESA).
 - Areas identified under the Gauteng Biodiversity Sector Plan as “National Park/Nature Reserve” and a “Protected Environment: Natural” Protected Areas (PA).

Following the completion of the specialist studies during the EIA Phase of the project, the infrastructure Plans and the pipeline route will be amended, where practical and feasible, based on specialist recommendations to have the least possible negative environmental impacts.

6.1 The Consideration of Alternatives

In accordance with the requirements outlined in Appendix 2 of the EIA 2014 Regulations, as amended, a consideration of reasonable and feasible alternatives, including site and technology alternatives and the “do-nothing” alternative must be undertaken. 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. When no feasible and/or reasonable alternatives can be identified and investigated in terms of a comparative assessment during the Scoping Phase, the EIA Report will then not contain a section with alternatives.

The EIA 2014 Regulations, as amended, define alternatives as the different means of meeting the general purpose and requirements of the activity, which may include alternatives to:

- ❖ The property on which or location where it is proposed to undertake the activity;
- ❖ The type of activity to be undertaken;
- ❖ The design or layout of the activity;
- ❖ The technology to be used in the activity;
- ❖ The operational aspects of the activity; and
- ❖ The option of not implementing the activity.

Although a collection of alternatives may exist for the Proposed Project, only feasible alternatives have been considered for this DSR and are discussed in greater detail below. Kongiwe strives to seek alternatives that maximise efficient and sustainable resource utilisation and minimise environmental impacts.

6.1.1 The property on which or location where it is proposed to undertake the activity

The Proposed Project is the reclamation of already existing TSFs (7L5, 7L6 and 7L7). Therefore, there can be **no alternative sites**.

Currently the TSFs are passive mineral disposal areas with no other land use or development associated with them. The goal of reclamation will be to return the sites to a condition that most resembles the pre-mining condition. When the TSFs have been reclaimed, rehabilitated and cleared of radiation, a closure certificate will be obtained and the land will be levelled and revegetated to match the surrounding environment.

6.1.2 The type of activity to be undertaken

The only optional activity for Ergo is to reclaim and reprocess the existing Marievale TSFs. Gold reclamation and processing is the recovery and treatment of gold surface tailings generated from historical underground mining operations. According to DRDGold (2018), the retreatment business is high-volume and low-risk. Vast quantities of material are processed monthly through their plants to recover gold from old mine dumps at a recovery rate that varies depending on the material being treated.

The depleting quantity and quality of gold recovered from underground mining operations in the province versus the extensive safety and environmental risks, as well as the labour and electricity costs associated with the activity has seen an underlining increase in the attractiveness of gold tailings reclamation. This, together with the incentive to find a solution to Gauteng’s TSF-related issues, has led to the ‘Preferred Activity’.

Table 6-1: The advantages and disadvantages of reclaiming and reprocessing of the Marievale TSFs – Preferred

OPTION	ADVANTAGE	DISADVANTAGE
Reclaiming and reprocessing of the Marievale TSFs (Preferred)	<ul style="list-style-type: none"> ❖ Low-technical-risk nature of tailings retreatment projects sets them apart from traditional underground operations ❖ Not labour intensive. ❖ Minimal safety issues. ❖ Easy access to surface tailings, as well as lower labour and operating costs. ❖ Boost to local economy. ❖ Removal of pollution source after rehabilitation and cessation of project. 	<ul style="list-style-type: none"> ❖ Potential profits rely on substantial volumes of material. ❖ Potential negative environmental effects during construction and operational phase of the project. ❖ Not labour intensive.

6.1.3 The Design and Layout of the Activity

The current layout plan alternatives for the Proposed Project are considered as the preferred layout plan. The layout plan is dictated by the existing location of the TSFs, their associated infrastructure and the routes of the proposed pipelines. The routes of these pipeline are limited to an existing servitude route or wayleave that is in favour of Ergo, where not existing, a new servitude, usufruct or wayleave will be sought.

The existing paddocks/stormwater dams may need to be desilted and/or reinstated. The paddocks are provided to capture storm water overflow from the TSFs in the event of a rain event, and for pump station overflows. If water accumulates within the storm water paddock below the pump stations it will be pumped back into the reticulation circuit.

The alternative layout plans for all other ancillary infrastructure will be assessed by specialist studies and will be addressed in the EIA phase.

6.1.4 The Technology to be Used in the Activity

The reclamation of the Marievale TSFs is the “Preferred Activity” and there are no alternatives. The dumps will be reclaimed using **Hydraulic Mining**. Other technology options which will be considered by Ergo for the reclamation of the Marievale TSFs are: Recycling initiatives, water conservation and electricity alternatives. These technology alternatives are discussed in greater detail below.

Hydraulic Mining:

Hydraulic mining is a method which uses a mobile, high-pressure water monitor to erode the slime dams in sections, washing the unconsolidated tailings material downstream (slurry) which is collected in a sump. Slimes dams are generally segregated by the coarseness of the material and grade of gold, and if a particular area of a dam is too coarse for pumping then blending is required. Once the required slurry density is obtained in the sump, and screening has prevented large objects from passing, the slurry is then pumped to thickeners and the underflow is reprocessed in a licenced processing plant. Waste material, after processing is then deposited onto a licenced TSF. A typical flow sheet for the reprocessing of a slimes dam is shown below:

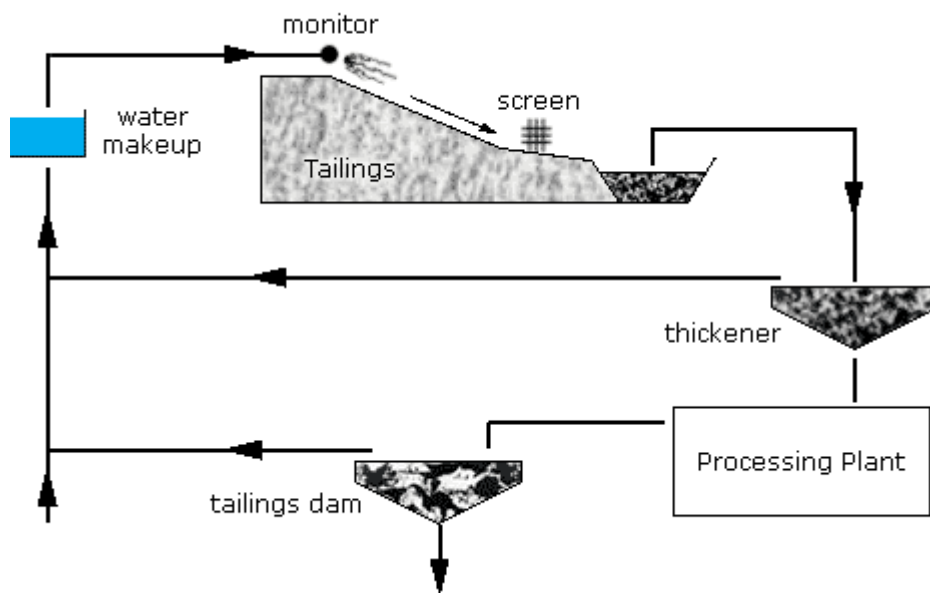


Figure 6-1: A typical flow sheet for the reprocessing of a slimes dam

Ergo believes that it will implement the best available technology in the best possible combination, in a way which is cost effective for this specific project. Best practices (as utilised in the industry) have been selected and, where applicable, SANS standards and legislative requirements will be followed in design, construction and management of infrastructure and activities on site.

Table 6-2: The advantages and disadvantages of hydraulic mining

OPTION	ADVANTAGE	DISADVANTAGE
Hydraulic Mining	<ul style="list-style-type: none"> ❖ Cost effective ❖ Easier to transport slurry for processing. ❖ Compatible with existing infrastructure. ❖ Lowered risks when compared to other methods of reclamation 	<ul style="list-style-type: none"> ❖ Dust emissions which are to be mitigated ❖ Not very labour intensive, thus new employment opportunities are limited ❖ May cause environmental impacts if not done responsibly.

Recycling, Water and Electricity

The reclamation of the Marievale TSFs will, in its operational phase, implement recycling policies and measures for optimal utilisation of resources and minimisation of waste generation. Potable water will be purchased from Rand Water, with a contingency for portable JoJo tanks or connection to existing water pipeline infrastructure. In terms of process water reticulation, the water cycle operates as a closed circuit, meaning that limited make-up water will be required for the reclamation of the TSFs. Water required for the reclamation activities will be recovered from recycled process water in the closed system. Fuel types will be investigated and energy conserving measures will be implemented where necessary.

Process alternatives imply the investigation of alternative processes or technologies that can be used to achieve the same goal. This includes using environmentally friendly designs or materials and re-using scarce resources like water and non-renewable energy sources. The preferred options, in terms of recycling, water and energy have been described below for the Proposed Project.

6.1.5 The Operational Aspects of the activity

Two operational alternatives are being considered for the transportation of slurry and return water. There are no alternatives to the processing plant and depositional facility, as all reclaimed slurry will be processed at the existing Ergo Plant and deposition will take place at the licensed Withok/Brakpan TSF. See Figure 6-2. These alternatives have been described in detail below to visualise the alternative concepts. The final preferred alternative will be reported on in greater detail in the EIA phase of the project following recommendations and findings from independent specialist studies.

- ❖ **Alternative 1:** Marievale TSFs are reclaimed, and slurry is transported through two new, 600 mm diameter, pipelines from the lowest point at 7L7 to the old Daggafontein Plant which is about 7 km north-west of the dumps. Thereafter, the slurry is transported a further 17 km to the Ergo Plant for reprocessing. Deposition will take place at the Withok/Brakpan TSF.
- ❖ **Alternative 2:** Marievale TSFs are reclaimed and slurry is transported via two new 19 km, 600 mm diameter, pipelines from the lowest point at 7L6 to the Ergo Plant for reprocessing. Deposition will also take place at the Withok/Brakpan TSF.

Table 6-3: The advantages and disadvantages of each operational alternative considered

OPTION	ADVANTAGE	DISADVANTAGE
<p><i>Alternative 1: Daggafontein Plant, Ergo Plant, Brakpan/Withok TSF and associated slurry and return water pipeline (s)</i></p>	<ul style="list-style-type: none"> ❖ The plant and deposition facility are existing. ❖ The route avoids traversing through any watercourses. ❖ Welded, HDPE lined steel pipelines. ❖ The Brakpan/Withok TSF is currently used as the preferred deposition facility for most reclamation clean-up projects. ❖ The Plant has the capacity to recovery the intended quantities of gold. 	<ul style="list-style-type: none"> ❖ Potential for tampering with infrastructure which could lead to mechanical failures and spillages. ❖ Security could be an issue during the construction of the above-ground pipeline. ❖ The proposed pipeline route is quite extensive. ❖ The proposed route traverses more residential areas.
<p><i>Alternative 2: Ergo Plant, Brakpan/Withok Tailings Storage Facility and associated slurry and return water pipeline (s)</i></p>	<ul style="list-style-type: none"> ❖ The plant and deposition facility are existing. ❖ The route avoids traversing through any watercourses. ❖ Welded, HDPE lined steel pipelines. ❖ The Brakpan/Withok TSF is currently used as the preferred deposition facility for most reclamation clean-up projects. ❖ The Plant has the capacity to recovery the intended quantities of gold. ❖ The proposed pipeline to be constructed will not traverse a great distance. ❖ The proposed route traverses less residential areas. 	<ul style="list-style-type: none"> ❖ Potential for tampering with infrastructure which could lead to mechanical failures and spillages. ❖ Security could be an issue during the construction of the above-ground pipeline.

6.1.6 The “No-Go” option

The Option of the project not proceeding would mean that the environmental and social status would remain the same as current. This implies that both negative and positive impacts would not take place. As such, the short-term negative impacts on the environment would not transpire; equally so, the long term positive impacts such as environmental pollution source removal, economic development, skills development, and the availability of land for re-development would not occur. The only alternative land use is to leave the dumps as they stand; there is no other potential use of the space as the project area is

a cluster of polluting historic mine dumps that impact upon the surrounding biophysical and social environment.

The “No-Go” Option also assumes the continuation of the current land use, implying the absence of any reclamation activities and associated infrastructures. This means that the attraction of the gold reserves located within the dumps could potentially enhance illegal mining, and if left as is, population settlement on or around the dumps could occur.

The ‘No Project’ alternative is not preferred due to the anticipated benefits of the proposed reclamation project. The expected indirect benefits resulting from the reclamation of the Marievale TSFs include:

- ❖ Removal of a source of pollution and radiation in the area.
- ❖ The potential to unlock land for redevelopment, as read in the Metropolitan Spatial Development Vision.
- ❖ Continued supply of gold to the local and national markets, and therefore contribution to local, provincial and international economy.
- ❖ Removal of a pollution source to the Blesbokspruit Wetland System and the associated Marievale Bird Sanctuary Nature Reserve.

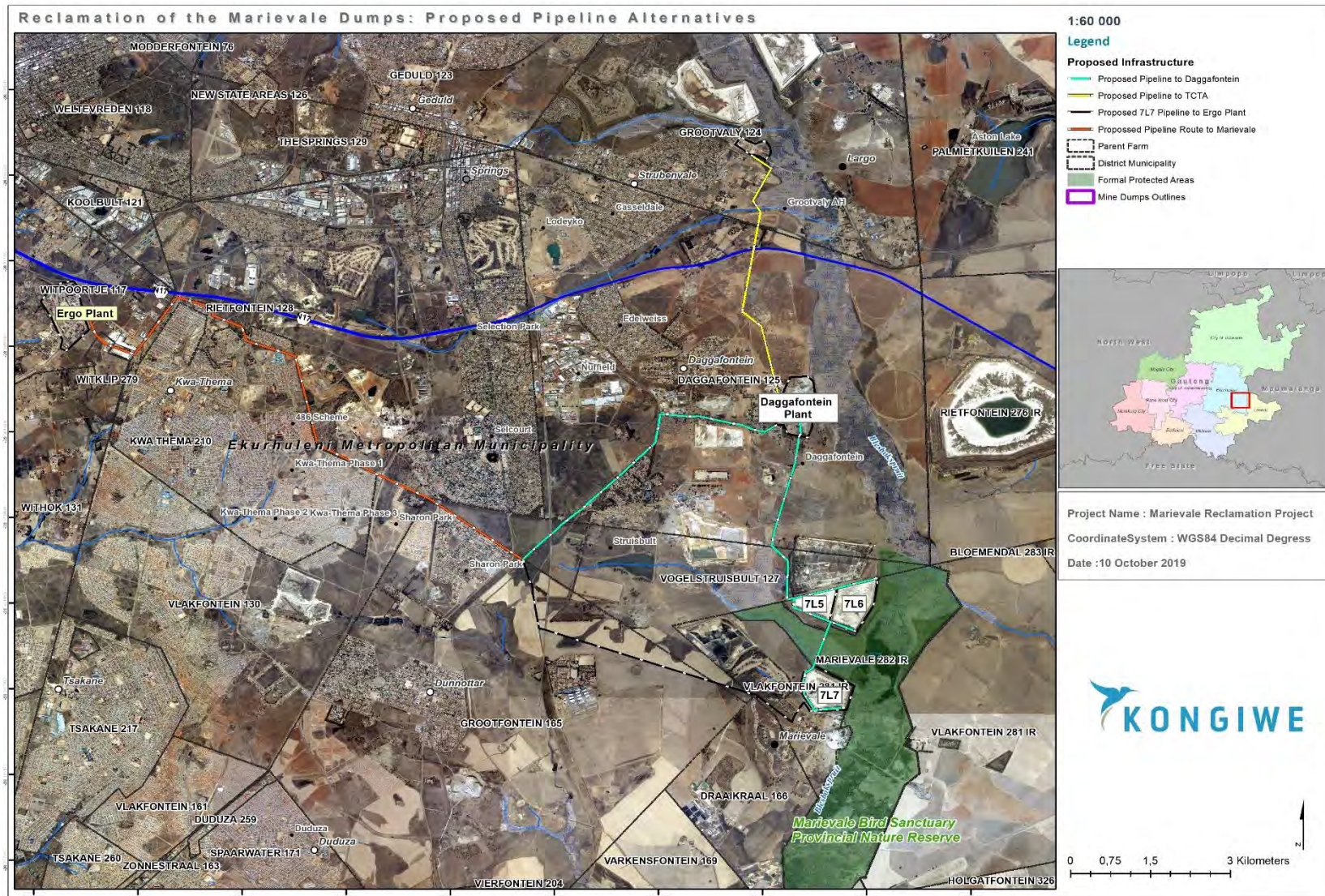


Figure 6-2: Pipeline alternatives for the Proposed Project

7 Public Participation

The public participation process offers stakeholders a fair opportunity to be informed about the Proposed Project, to raise issues of concern and to make suggestions for enhanced project benefits. The Public Participation Process (PPP) has been developed to ensure compliance with the Environmental Authorisation and the Integrated Water Use Licence Application for the Reclamation of the Marievale TSFs.

7.1 Public Participation Process Objectives

The PPP objectives are to:

- ❖ Ensure that stakeholders are informed about the Proposed Project;
- ❖ Provide stakeholders the opportunity to participate in the process and provide comment;
- ❖ Draw on local knowledge by identifying environmental and social concerns associated with the Proposed Project;
- ❖ Involve stakeholders in identifying ways in which concerns can be addressed;
- ❖ Verify that stakeholder comments have been recorded; and
- ❖ Comply with the legal requirements.

The PPP has four phases of consultation with stakeholders during the environmental regulatory process. These are presented in **Table 7-1** below:

Table 7-1: Activities undertaken and to be undertaken during the public participation process

PROJECT PHASE	ACTIVITIES UNDERTAKEN
Pre-scoping Phase	<ul style="list-style-type: none"> ❖ Identification of stakeholders; ❖ Providing project information to Stakeholders; ❖ Consultation with Stakeholders; and ❖ Obtaining comments, suggestions and concerns from Stakeholders.
Scoping Phase (WE ARE HERE)	<ul style="list-style-type: none"> ❖ Consult with Directly Affected Landowners ❖ Distribution and placement of project announcement materials; ❖ Updating of the Stakeholder database; ❖ Making the Scoping Report available for public comment; ❖ Providing Stakeholders with further details of the Proposed Project and associated specialist studies; ❖ Consult with Stakeholders; ❖ Obtaining further comments, suggestions and concerns from Stakeholders; and ❖ Informing specialists and the proponent of stakeholder comments.
EIA Phase	<ul style="list-style-type: none"> ❖ Provide feedback about the specialist studies conducted and mitigation measures proposed by means of consultation with Stakeholders; ❖ Make the relevant environmental reports available for public comment; ❖ Consult with Stakeholders;

PROJECT PHASE	ACTIVITIES UNDERTAKEN
	<ul style="list-style-type: none"> ❖ Provide opportunity for Stakeholders to comment on specialist findings, impacts assessments and recommendations; ❖ Verify that comments raised by Stakeholders have been accurately recorded; and ❖ Inform specialists and the proponent of stakeholder comments.
<p>Decision Making Phase</p>	<ul style="list-style-type: none"> ❖ Once the competent authority has come to a decision regarding the authorisation of the project, all registered Stakeholders will be notified of the decision made and the appeal process will be explained.

7.2 Summary of issues raised by stakeholder's

Comments raised by stakeholders during the draft scoping phase will be included in the Comments and Responses Report (CRR) of the Final Scoping Report.

7.3 Identification of Stakeholders

To ensure representation of stakeholders, the methods below were utilised to develop a comprehensive stakeholder database.

- ❖ WinDeed searches were undertaken for farm portions in and around the project site to verify land ownership and obtain contact details;
- ❖ Desktop and online research;
- ❖ Stakeholder networking and discussions to source additional stakeholder details:
 - This entailed telephonic consultation and meetings with landowners, Local and Provincial Government and community representatives; and
 - A site visit was undertaken in an effort to identify Stakeholders for which no contact details could be obtained.

Stakeholders identified who are affected by or interested in the Proposed Project are grouped into the following broad categories:

- ❖ Government: National, Provincial, District and Local Authorities;
- ❖ Parastatals: Various semi-Government entities, Organs of State;
- ❖ Landowners: Directly or indirectly affected and adjacent;
- ❖ Land occupiers: Directly or indirectly affected and adjacent;
- ❖ Surrounding communities
- ❖ Labour Unions;
- ❖ Agriculture and Water: Farmers associations, entities responsible for water management and/or regulation;

- ❖ Non-Governmental Organisations (NGOs): Environmental organisations, community-based organisations; and
- ❖ Business and industry: small to medium enterprises, mines, industrial and large business organisations.

A Stakeholder database has been compiled and will be updated throughout the environmental regulatory process (refer to **Appendix C1**).

7.4 Public Participation Materials

Considering the legislative requirements and good practice, the following documents below have been developed and distributed to stakeholders. The various PPP materials which were used during the Pre-Scoping and Scoping Phases are included as appendices to this report.

Background Information Document (BID): The BID (**Appendix C3**) provides aims to provide important information regarding the following:

- ❖ Project description;
- ❖ The Environmental Impact Assessment and the Public Participation Process to be undertaken in support of the reclamation process and relevant contact details;
- ❖ An Integrated Water Use Licence Application process;
- ❖ Details about how stakeholders can register as an Interested and Affected Party (I&AP) and be kept informed about the project developments;
- ❖ The public review and comment period for the Draft Scoping Report; and
- ❖ An invitation to attend an open day.

The BIDS were distributed as follows:

- ❖ Emailed to all stakeholders on the database,
- ❖ Hand delivered to the directly affected and surrounding landowners and public places;
- ❖ The BID is available on Kongiwe's website (under public documents).

Newspaper advertisements: Newspaper advert (**Appendix C4**) was placed in The Springs Advertiser, a local newspaper on Thursday, 24 October 2019 within project area. The newspaper advertisement provided the following details:

- ❖ Brief project description;
- ❖ Applicable listed activities;
- ❖ Information about availability of the DSR;
- ❖ Invitation to an open day;
- ❖ Registration as I&APs;
- ❖ Contact details of the public participation team.

Site notice: Site notices were developed to announce the Proposed Project and were placed in various public places. The information included in the site notice was similar to the information provided in the newspaper advertisement. A locality map of the project site was included in the site notice. Pictures and Co-ordinates of where the site notices were placed were recorded in the site notice report. **(Please refer to Appendix C5 for a copy of the site notice and the site notice report).**

Notification Letter with a Comment and Registration Form: A notification letter was sent to stakeholders on **Wednesday, 16 October 2019** to inform them about the Proposed Project, applicable legislation and competent authorities. The letter also shared details of the open day and invited stakeholders to register formally as stakeholders. A Registration Form was also provided for stakeholders to use for formal registration as stakeholders or to submit comments. (See **Appendix C6**)

Telephonic discussions: Stakeholders were also consulted by means of telephonic discussions. Furthermore, these discussions aided with the process of invitations to the open day.

7.5 Stakeholder Consultations

Pre-scoping consultation: Pre-scoping consultation with key stakeholders is aimed at providing stakeholders with an overview of the Proposed Project and to obtain initial comments which informed specialist studies and project planning. This will be done by means of a PowerPoint Presentation and a map showing the properties. Pre-consultation meetings will be held with the Competent and Commenting authorities and Environmental Non-Governmental Organisation. Meetings will also held with the directly affected landowners on a one-on-one basis. Minutes of these meetings will be compiled and distributed to stakeholders.

All comments raised by stakeholders during these meetings will also be captured into the Comment and Response Report (CRR). Responses to comments will be provided in line with the overall project scope and available information.

Open Day

Interested and Affected Parties are invited to attend an open day which will be held on **Saturday, 09 November 2019 at 10H00 – 15H00 at the Grootvaly Environmental Centre**. The purpose of the meeting will be to discuss the Proposed Project, contents of the Draft Scoping Report and also to provide stakeholders with an opportunity to raise their concerns/comments. Minutes from the open day will be compiled and distributed to all stakeholders who attended.

Mobilisation of stakeholders will be done for Authorities, NGOs, landowners / land occupiers and community members to promote attendance, by means of telephonic consultation and distribution of emails and Short Messaging System (SMS). All comments raised by stakeholders will be captured in the

CRR. Stakeholder comments will be closely considered and addressed, where applicable, by the project team to ensure that the scope for specialist studies to be undertaken is well defined. Responses will be provided to the comments raised by stakeholders and included in the CRR throughout the PPP.

Comment sheets and electronic copies of the Draft Scoping Report will be made available at the open day.

Availability of the Draft Scoping Report for public review and comment

This Draft Scoping Report (DSR) will be made available to stakeholders for a 30-day comment period from **Tuesday, 23 October 2019 to Wednesday, 21 November 2019** (please refer to Table 7-2 for a list of places where the report can be accessed). Notification of the availability of the documentation for review was distributed on **Wednesday, 16 October 2019**.

Table 7-2: Public places where the Draft Scoping Report can be accessed

Location	Physical Address	Contact person
Hard copies		
Dunnottar Public Library	47 Rhodes Avenue, Dunnottar	Mr Shelton Mmisi (Librarian) (011) 999 9118
Kwa-Thema Public Library	7019 Nkosi Street, Kwa-Themba, Springs	Ms Portia Moseitlhe (Librarian) (011) 999 8494
Electronic copies		
Kongiwe Environmental website	www.kongiwe.co.za/ public documents	Sibongile Bambisa / Vanessa Viljoen
For a CD copy please contact the stakeholder engagement team (Sibongile Bambisa/ Vanessa Viljoen), Tel: (012) 003 6627, Email: stakeholders@kongiwe.co.za		

The DSR was distributed to the Competent Authority, the Department of Mineral Resources and Energy (DMRE) and key Commenting Authorities.

Key Commenting Authorities that have received copies of the DSR are as follows:

- ❖ Department of Human Settlements, Water and Sanitation (DHSWS);
- ❖ National Nuclear Regulator (NNR);
- ❖ Gauteng Department of Agriculture and Rural Development (GDARD);
- ❖ National Department of Health (DoH);
- ❖ South African Heritage Resources Agency (SAHRA);
- ❖ Department of Public Works and Infrastructure (DPW);
- ❖ Department of Environment, Forestry and Fisheries (DEFF).
- ❖ Department of Environmental Affairs (DEA);
- ❖ Ekurhuleni Metropolitan Municipality (EMM)
- ❖ Sedebeng District Municipality.

Table 7-3 below provides details of the activities that formed part of the Draft Scoping Phase.

Table 7-3: PPP activities during the Draft Scoping Phase

Activity	Details	Reference in Draft Scoping Report
Pre-scoping Phase		
Identification of stakeholders	Stakeholders, were identified by means of WinDeed searches, stakeholder networking and research for the compilation of a stakeholder database.	Appendix C1 Stakeholder database
Identification of land claims	A formal enquiry, containing a list of all the directly affected land portions for the project, will be submitted to the Land Claims Commission Gauteng Regional Office at the Department of Agriculture, Land Reform and Rural Development (DALRRD)	Appendix C2 Land claims letters To form part of the FSR
Development of the Background Information Document	The BID was developed and emailed to the full stakeholder database on Wednesday 16 October 2019. The BID was also distributed at stakeholder meetings, libraries and it is available on Kongiwe’s website.	Appendix C3 BIDs
Placing of media advertisements	An advertisement will be placed in the Springs Advertiser on the 24 October 2019.	Appendix C4 Advertisements
Placing of site notices	<p>Site notices will be placed within at a publicly accessible places within proximity of the project area. A copy of a Site Notice will also place at the:</p> <ul style="list-style-type: none"> ❖ Marievale Bird Sanctuary Nature Reserve ❖ Dunnottar Public Library ❖ Kwa-Thema Public Library ❖ Selcort Public Library <p>A site notice placement report and map will be developed, indicating the exact locations where site notices were placed, with photos and GPS coordinates.</p>	Appendix C5 Site notice report and placement map To form part of the FSR

Activity	Details	Reference in Draft Scoping Report
Announcement of the project and Draft Scoping Report	<p>The announcement letter will be emailed to the full stakeholder database on Wednesday, 16 October 2019 to:</p> <ul style="list-style-type: none"> ❖ Announce availability of the Scoping Report; ❖ Share information of the open day; ❖ Indicate where the Scoping Report will be available for public review and comment; and ❖ Provide the public comment period. <p>The Draft Scoping Report will be made available on Kongiwe's website http://www.kongiwe.co.za/publications-view/public-documents/</p>	<p>Appendix C6</p> <p>Announcement Letter</p>
Stakeholder meetings	<p>One-on-one meetings and focus group meetings will be held with Authorities and Directly Affected landowners. A list of meetings and minutes of these meetings will be compiled and distributed.</p> <p>A high-level overview of the Proposed Project will be discussed, and stakeholder comments will be captured into and responded to in the CRR.</p>	<p>To form part of the FSR</p> <p>Appendix C7</p> <p>List of meetings & Meeting Minutes</p> <p>Comment and Response Report</p>
Open Day	<p>An open day will be held with stakeholders from 10H00 – 15H00 at the Grootvaly Environmental Centre, 9 November 2019. Minutes of this meeting will be distributed to everyone who attended the meeting. Comments raised from the meeting will be included in the Comment and Response Report.</p>	<p>Comments and Response Report</p>

7.6 Consultation Undertaken as Part of The Final Scoping Phase:

The aim of consultation during the Final Scoping Phase will be to focus on the formal EIA process, specialist impact studies, terms of reference and addressing stakeholder comments already submitted. Stakeholders will be notified of the availability of the Final Scoping Report for review. In the submission of the FSR, stakeholders will have the opportunity to verify that their comments were captured during the draft Scoping phase, and to review responses provided by the project team.

Table 7-4: PPP activities to be undertaken during the Final Scoping Phase

ACTIVITY	DETAILS
Update of stakeholder information	The stakeholder database will be updated with new Stakeholders who formally registered, attended stakeholder meetings or submitted comments.

ACTIVITY	DETAILS
Placement of Final Scoping Reports	The Final Scoping Report will be made available on the Kongiwe Environmental website http://www.kongiwe.co.za/publications-view/public-documents/
Announcement of the Final Scoping Report	Announcement letter of availability of the Final Scoping Report for comment will be emailed to the full stakeholder database.

7.7 Consultation with Stakeholders during the EIA Phase

Consultation with stakeholders during the EIA Phase will revolve around Stakeholders providing comments on specialist study findings, recommendations and mitigation measures proposed. These studies and recommendations will be included as part of the Draft EIA/EMP Report. A public meeting will also be held to present the findings of the specialist studies and to get comments from Stakeholders.

Consultation during the decision-making phase

Once the competent authority has come to a decision regarding the authorisation of the project, all registered stakeholders will be notified of the decision made and the appeal process to be followed.

8 The Baseline Environment

At this stage no specialist studies have been conducted for the study area. Specialist studies are in the process of being completed and findings will be included at the EIA stage.

8.1 Climate

The Marievale TSFs are situated within the Highveld climatic zone. The Highveld is characterised by warm, rainy summers; while winters are typified by mild to warm days and cold, frosty nights. The area receives mean annual rainfall of about 400 to 900 mm.

Mean maximum temperatures range from 21 to 24°C, and mean minimums range from 3 to 6° C, with temperatures sometimes reaching 38° C in the summer and -11°C in the winter (WWF, 2018). The area experiences strong winds during the month of August. The warmest months occur from October through to March; whereas the coolest months occur over the period of May to August. See Figure 8-1 below.

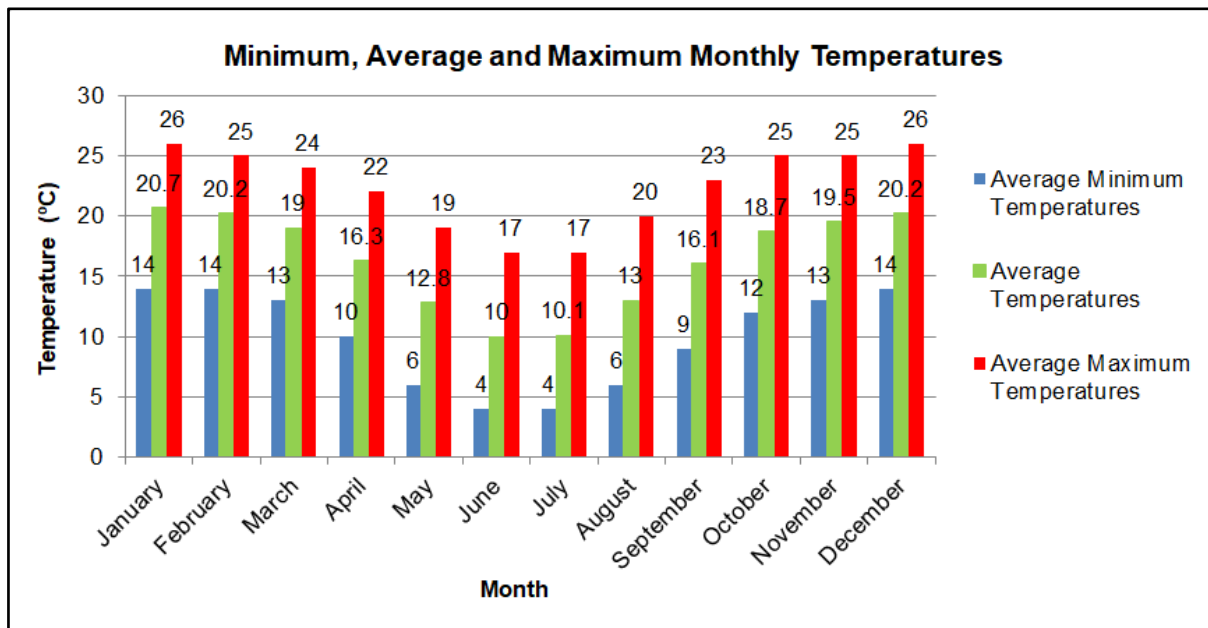


Figure 8-1: Minimum, average and maximum monthly temperatures for the Project

8.2 Topography

The Highveld inland plateau has an elevations varying from 1 400 m to 1 800 m (Johannesburg 1 757 m), prominent morphological features in the area include historic mine dumps which rise to about 50 - 60 m above ground. The local terrain morphology has been classified as undulating plains (GPEMF, 2014)

8.3 Geology

The Proposed Project area is located within the Central Rand Goldfields of the Witwatersrand Supergroup. The Central Rand Goldfield's are geologically one of the most interesting and economically significant areas in South Africa's history (Figure 8-2). Having yielded more than one third of all the gold ever produced on the planet, the Witwatersrand Basin held the world's largest gold reserves (Tucker et al., 2016).

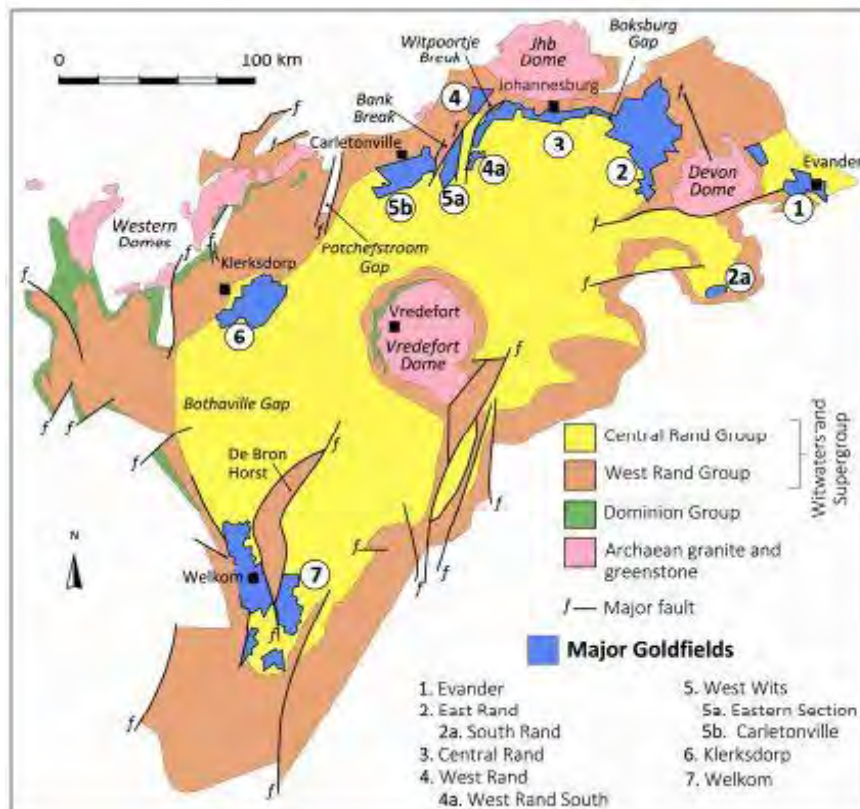


Figure 8-2: The geology of the Witwatersrand Basin stripped of younger cover and showing the position of the seven major goldfields (Source: Tucker et al., 2016).

The Witwatersrand Supergroup comprises of a lower “West Rand Group (WRG)” and an upper “Central Rand Group (CRG)” (SACS, 1980). The continuity of the major geological units, marker horizons and individual conglomerate reef horizons around the auriferous northern and western basin edges, are features of the Witwatersrand as exemplified by the major stratigraphic units of the Central Rand Group.

The WRG comprises of the lower Hospital Hill Subgroup; middle Government Subgroup and upper Jeppestown Subgroup. The shales of the WRG are characterised by the presence of magnetite bearing interlayers. These layers played a significant role during deep basin exploration, as they were used as magnetic markers.

The CRG contains by far the bulk of the gold mineralisation. It is divided into a lower Johannesburg Subgroup and an upper Turffontein Subgroup. These Subgroups are separated by the Booyens Shale

Formation, often called the “Upper Shale marker” in the Welkom Goldfield. The Central Rand Group comprises a number of formations which, although varying in thickness, can be traced and correlated, with a few exceptions, in all the goldfields. The gold-bearing conglomerate reefs tend to occur in clusters which are informally referred to as “reef groups”. All of the important gold reefs lie on prominent unconformity surfaces, many of which can be traced around the entire basin.

According to Tucker et al. (2016), another characteristic of the Witwatersrand mining area is a series of cross-cutting lineaments representing faults and dykes. The dykes are not 100% impermeable and fault appearance varies from a hairline width to large breccia filled widths and faults are commonly filled with intrusive material. The geology underlying the project area consist of the Turffontein and Johannesburg Subgroups of the Central Rand Group.

8.4 Soils, Land Capability and Land Use

8.4.1 Soils

According to a report by Environmental Assurance (2017), the soils in and around the project area are derived from underlying sandstone and clay, dolomite and chert, as well as tillite and diamictite of the Vryheid, Chunispoort and Dwyka Formations respectively. The soil types include Avalon (Av), Hutton (Hu), Katspruit (Ka), Rensburg (Rg), Witbank (Wb), and Wasbank (Wa).

The report further explains that the dominant soil in the area is **Avalon**, which is characterised by pinkish grey, structureless, sandy loam topsoil on brown to yellow-brown, structureless, non-calcareous, well drained sandy clay loam subsoil, underlain by mottled brown, non-calcareous soft plinthic.

In the higher areas just west of the dumps red, structureless, sandy loam topsoil on red, structureless, non-calcareous sandy clay loam subsoil occurs. The soil is well-drained and belongs mainly to the **Hutton** soil form. In the lower areas, the water table is present for longer and occurs higher in the soil profile, causing a cemented, mottled, hard plinthic subsoil. This gives rise to a pinkish-grey to brown, structureless, loamy sand topsoil on a hard plinthic B horizon. The dominant soil form is **Wasbank**. Areas with this soil are not cultivated, because of a shallow rooting depth.

In some areas, water tables occur close to the surface during the wet season. The dominant soil consists of a grey, moderately structured, non-calcareous, clay loam topsoil on a mottled grey, clayey calcareous subsoil gley horizon. The dominant soil form is **Katspruit**. Around dump 7L7, a narrow strip of soils with swelling clays occurs. The soils consist of dark-brown, moderately structured, calcareous clays on dark, swelling calcareous clays overlying a gleyed horizon. This dominant soil form is **Rensburg**. The soils immediately surrounding dumps 7L5 and 7L6 are very disturbed and can only be classified as belonging to the **Witbank** form (man-made soil materials). See Figure 8-3 below.

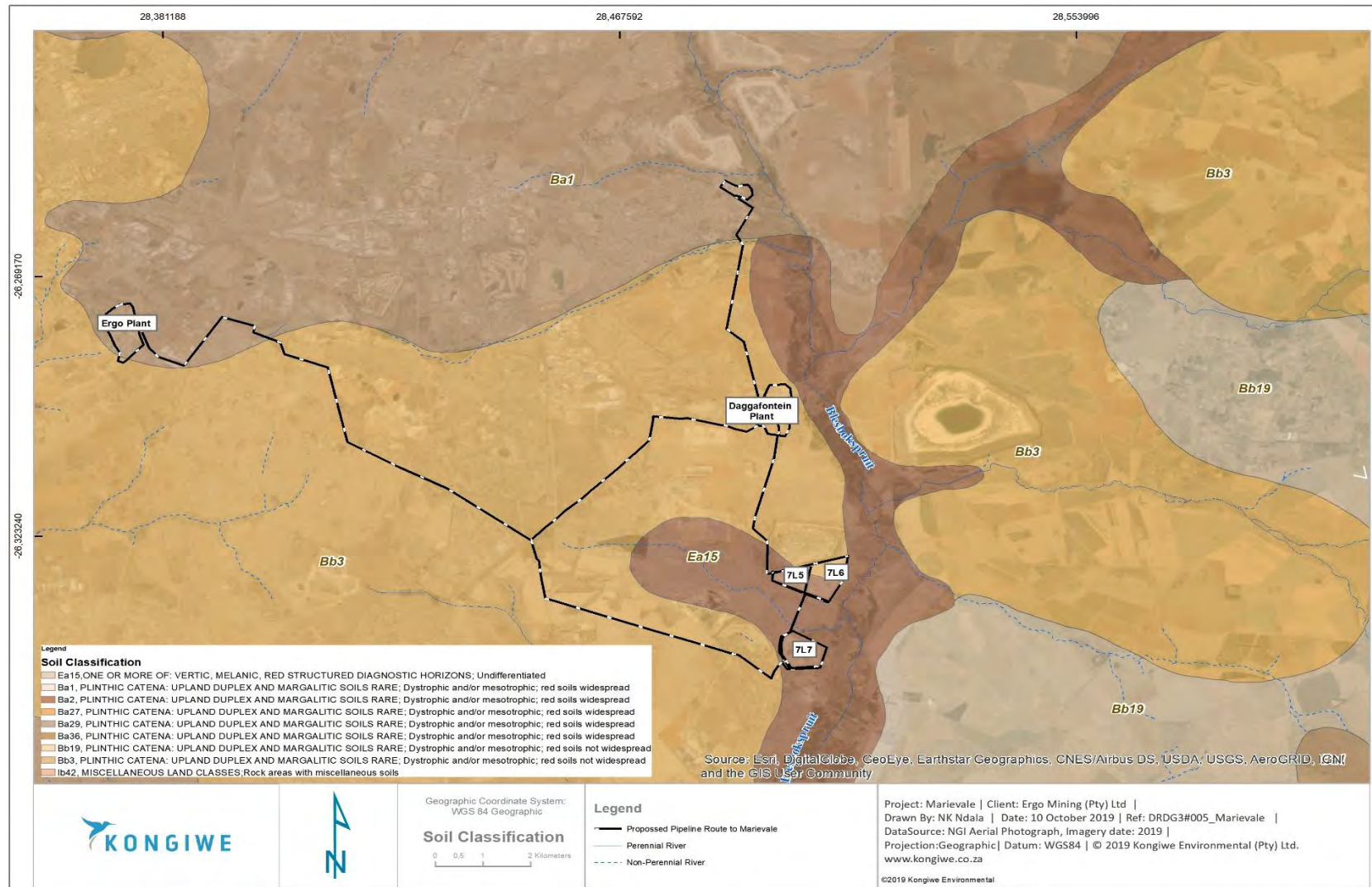


Figure 8-3: Soil classification map of Proposed Project area

8.4.2 Land Capability

The assessment of agricultural potential rests primarily on the identification of soils that are suited to crop production. For soils to qualify as high potential soils they require the right properties such as a deep profile, sufficient clay and rock content, a good structure and distribution, as well as good internal and external drainage (Cambardella and Karlen, 1999). Based on this, Avalon and Hutton soils hold the highest agricultural potential around the project area. However, due to the mining history of the area, the land has been significantly modified and degraded.

8.4.3 Land Use

According to the Gauteng Provincial Environmental Management Framework (2018), the Proposed Project area is in a High Control Zone (Zone 3) and these zones are defined as sensitive areas that fall outside of Urban Zones. These areas are sensitive to development activities and in several cases also have specific values that need to be protected (GPEMF, 2018).

The current land uses of the surrounding areas are typified by mining and agricultural activities, dispersed settlements, sensitive areas (i.e. the Marievale Bird Sanctuary Nature Reserve and Blesbokspruit Wetland System) and sections of TSFs. See Figure 8-4 below.

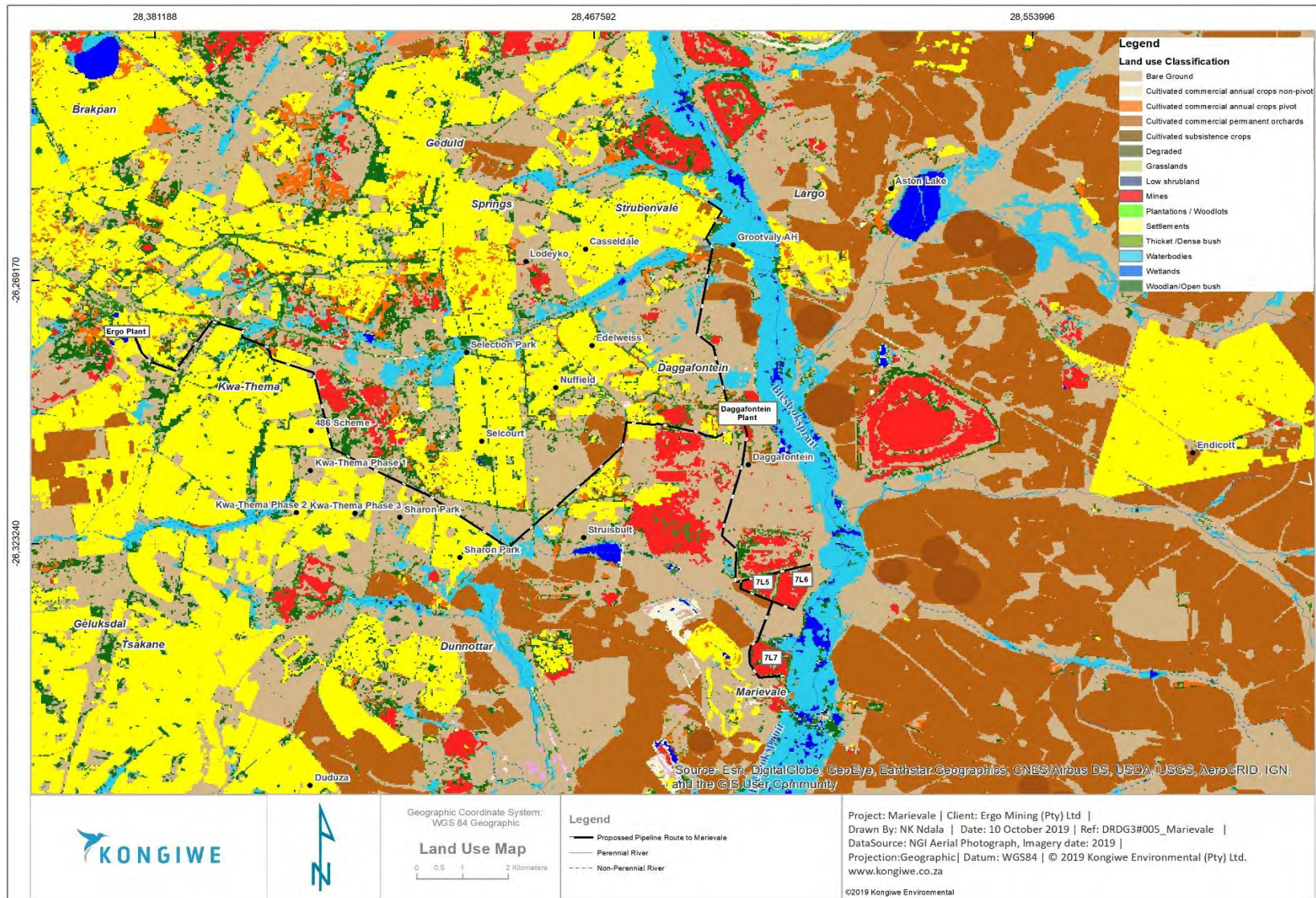


Figure 8-4: Land uses of the Proposed Project site and surrounding area

8.5 Surface Water and Ground Water

8.5.1 Surface Water

The water sources of South Africa are vital to the health and prosperity of its people, the sustenance of its natural heritage and to its economic development. The Orange/Vaal River Basin extends over four countries, covering an area of 964 000km². The Proposed Project area is located in the Upper Vaal Management Area, which is one of the 19 Water Management Areas (WMAs) included into Orange/Vaal River Basin. The Upper Vaal WMA is the most developed, industrialised and populous of the Orange/Vaal WMAs (DWAF, 2002). Large quantities of water are transferred into this WMA from the Usutu to Mhlathuze and the Thukela WMAs as well as from the Senqu (Orange) River in Lesotho. This WMA releases similar quantities of water into the Vaal River which leads to the Middle Vaal and Lower Vaal WMAs. Water is also transferred from here to the Crocodile West, Marico and Olifants WMAs (DWAF, 2002).

The Proposed Project is located within the C21E Quaternary catchment which is not classified as a Freshwater Ecosystem Priority Area (FEPA) (DHSWS, 2018). The Blesbokspruit was originally a non-perennial stream whose water levels are now artificially maintained by the inflow of mining, industrial and municipal effluents that are contained by embankments (Birdlife, 2018). According to Nel et al.(2007), the present ecological management class for Blesbokspruit is a Class C (moderately modified) which indicates a loss and change of natural habitat and biota has occurred; however, the basic ecosystem functions are still predominantly unchanged. The ecological management class of this quaternary catchment is a Class B, which describes a largely natural system with a few modifications. The Blesbokspruit is also considered irreplaceable by the Gauteng C-Plan, meaning no other river system available could meet its prescribed ecological targets, thus its protection is vital (Ferrar and Lotter, 2007).

McKay et al. (2018) state that the Blesbokspruit had unrestricted flow until the 1930's, this was due to land use changes associated with gold mining, industrialisation and urbanisation. At present the watercourse is characterised by upstream flooding caused by reed beds, wastewater discharges and even raw sewage spills. Significant threats to the watercourse have been listed as acid mine-water discharge from local mining operations (e.g abandoned Vogelstruispruit Grootvlei mine), nearby mine dumps such as the Marievale TSFs, the South African Pulp and Paper Industries (SAPPI) plant upstream, as well as impacts from urban and agricultural activities (livestock farming in particular) (McKay et al., 2018). The stream flows southerly until it connects to the Suikerbosrand, and then ultimately into the Vaal River. The Blesbokspruit is an important tributary of the Vaal River, a river that supplies water to over 10 million people (du Plessis et al., 2014). C21 has a Mean Annual Runoff (MAR) of 98.98 million cubic metres (MCM) and covers an area of about 3541 km² (Ilunga, 2017).

According to a surface water quality study conducted by McKay et al. (2018), water quality in the Blesbokspruit and its tributaries is significantly polluted by agricultural and mining activities near the catchment. Water quality results, from water quality testing conducted between October 2007 – September 2012, indicated several exceedances in the In-Stream Water Quality Guidelines (I-SWQG) for the BBS catchment. The catchment exhibited elevated levels of phosphate, nitrates, ammonia, *E. coli* and

electrical conductivity. The presence of nitrates, phosphate and ammonia are indicators of sewage and agricultural contamination; while the low dissolved oxygen levels, presence of *E. coli* and high conductivity levels exhibited by the water may be an indication of sewage pollution.

8.5.2 Ground Water

Regional Geohydrology

Based on a previous study (Environmental Assurance, 2017) adjacent to the Proposed Project area, the site is said to have both a shallow intergranular and a deep fractured aquifer. The shallow aquifer predominantly consists of carbonaceous rocks (sandstone); whereas the deeper, karst type, aquifer consists of carbonate rocks (dolomite). The borehole yield classification for the shallow aquifer is between 0.1 and 0-5l/s (low yielding boreholes) and for the deeper aquifer >5l/s (high yielding) (Hydrogeological Map Series of the RSA; Johannesburg, 1998). The average static water level is 12m and the average rainfall 686 mm/annum. Groundwater recharge is estimated at 35 mm/annum (South African Groundwater Decision Tool, DWAF).

Groundwater Quality

The Marievale area is characterised by TSFs and other active mining projects. Therefore, the local groundwater is expectedly compromised. A groundwater study conducted by Aquananzi Geoconsultants CC, between November 2016 and January 2017, concluded that water samples from two local boreholes were not within the recommended water quality limits as indicated by SANSA241:1:2011.

Groundwater quality monitoring data will be obtained from groundwater specialist studies and assessed in detail during the EIA phase of the project.

8.6 Fauna and Flora

Gauteng is the smallest of South Africa's nine provinces, but despite this, Gauteng is rich in biodiversity. The province is situated in two biomes (both the Savanna and the Grassland biome). Approximately 80% of the province's area is designated as Highveld Grassland, this is one of the richest primary grasslands in the world. This grassland is also particularly poorly conserved (less than 2% protected) (Pfab et al., 2017). The province has an estimated 2183 plant taxa, 125 mammal species, 488 bird species, 21 Amphibians and 92 reptile species. At least 11 taxa are endemic to the province.

The Gauteng Conservation Plan (Version 3.3) (Gauteng C-Plan) (GDARD, 2014) classified areas within the province based on its contribution to reach the conservation targets within the province. The Gauteng C-Plan uses the following terms to categorise the various land use types according to their biodiversity and environmental importance:

- ❖ Critical Biodiversity Area (CBA);
- ❖ Ecological Support Area (ESA);

-
- ❖ Important Area (IA);
 - ❖ Irreplaceable Area (IA);
 - ❖ Other Natural Area (ONA);
 - ❖ Protected Area (PA); and
 - ❖ Moderately or Heavily Modified Areas (MMA's or HMA's).

The Proposed Project is situated within 500 m of an important river (Blesbokspruit); within an important wetland and conservation area (Blesbokspruit Wetland System); and within a Protected Area (Marievale Bird Sanctuary Nature Reserve) (Environmental Screening Tool Report, 2019). This means that the Proposed Project falls within a high sensitivity area. See Figure 8-5 below.

However, according to the Gauteng C-plan and available desktop information (Figure 8-6), the actual project area containing the three dumps is identified as unclassified, and some parts of the proposed pipeline routes fall within ESAs, IAs, and PAs. The data used for this analysis is often captured remotely, thus an important aspect of this study will be to ground-truth the boundaries of these areas through appropriate specialist studies.

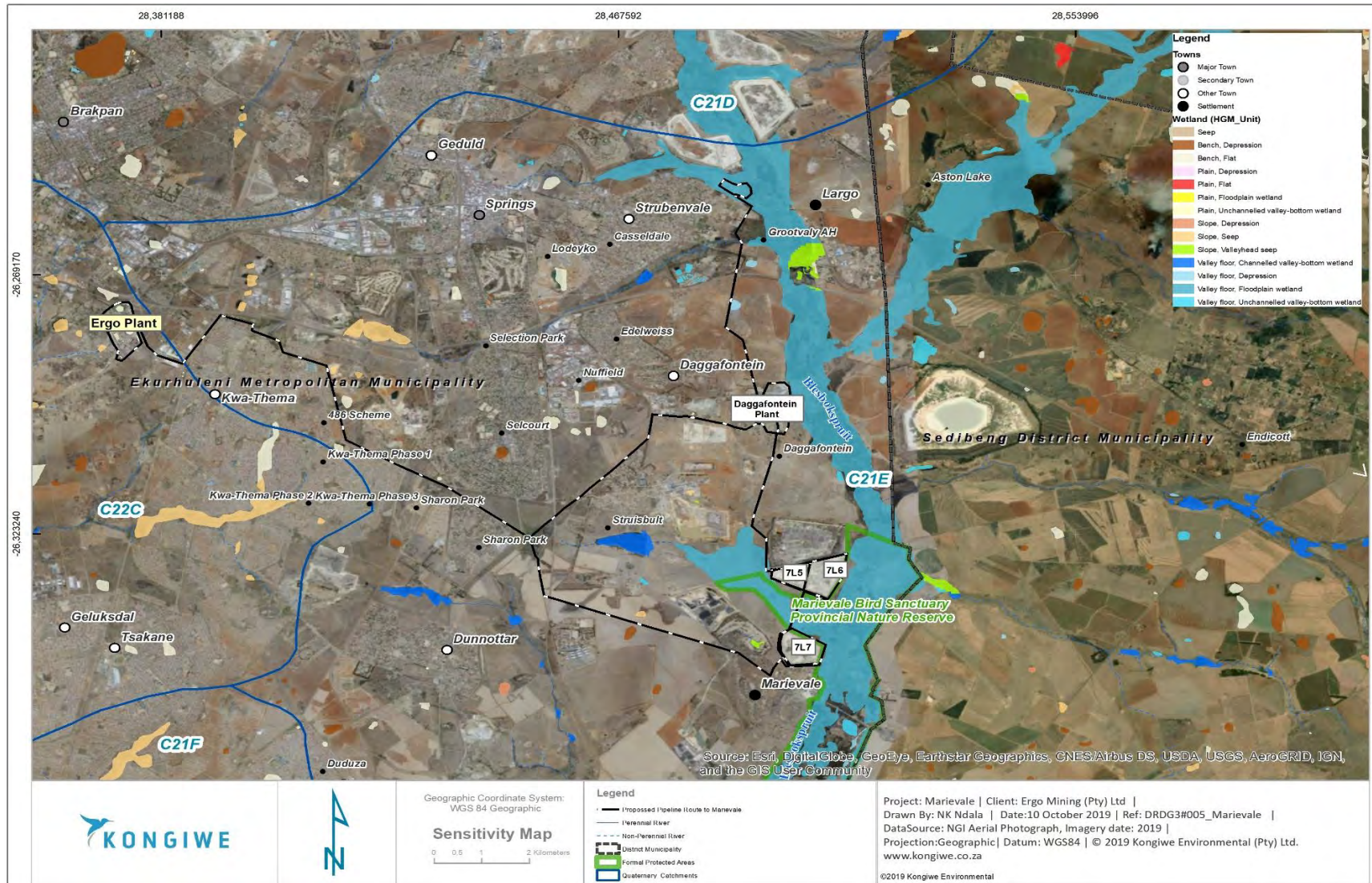


Figure 8-5: Sensitivity map of the Proposed Project

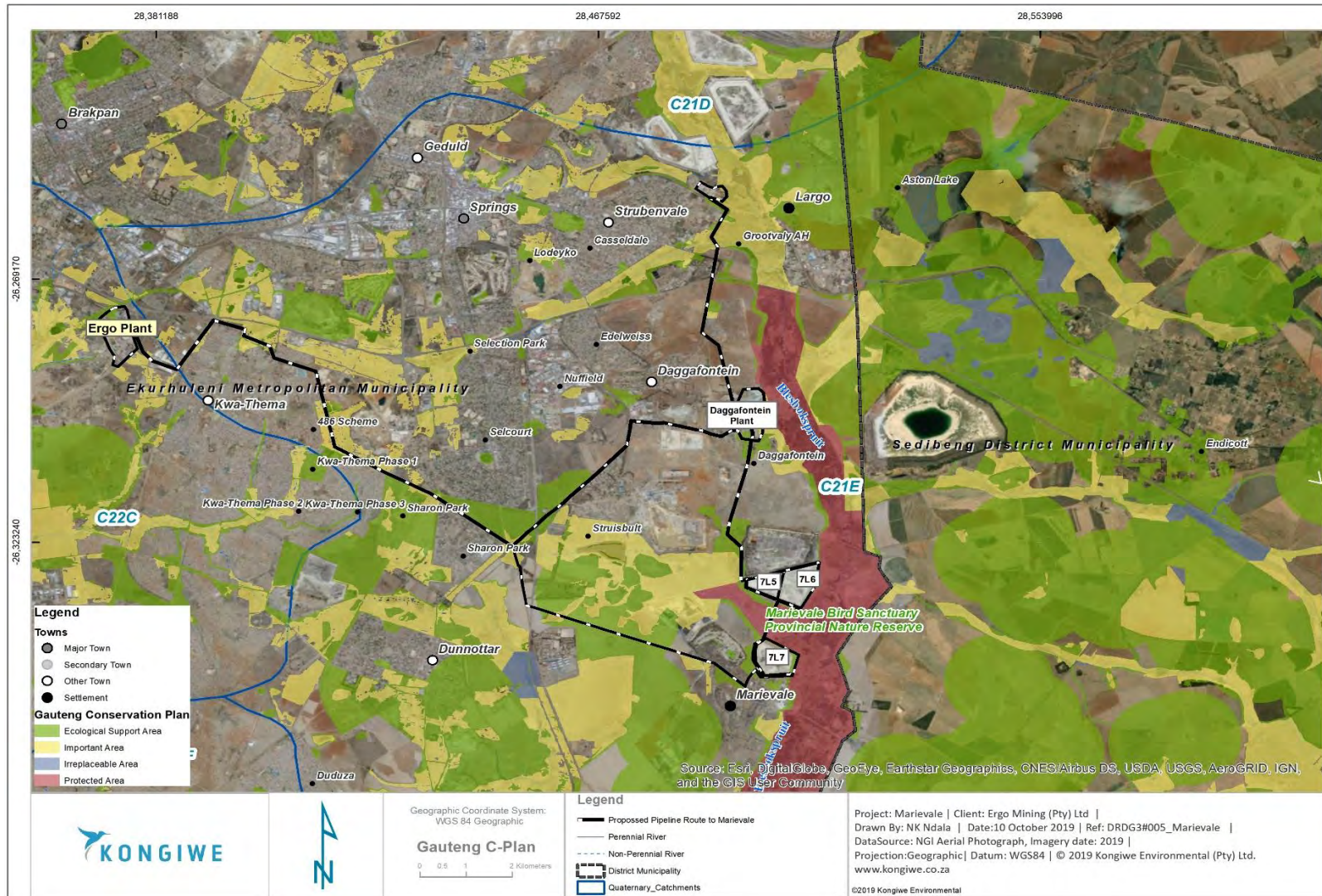


Figure 8-6: Marievale TSFs project area superimposed on the Gauteng C-plan.

8.6.1 Flora

The Gauteng province falls within two vegetation biomes, namely the Grassland and Savanna Biomes. These two biomes incorporate various bioregions like the Dry Highveld Grassland, Mesic Highveld Grassland and Central Bushveld. The province is represented by 17 vegetation types and these typically consist of several types of azonal vegetation.

The Proposed Project is situated within the Rand Highveld, Eastern Highveld and Tsakane Clay Grasslands. The dumps are located on Altered/Urban vegetation and enclosed by Wetlands/Wet Grasslands and Andesite Mountain Bushvelds (Environmental Management Framework for Ekurhuleni, 2007). See Figure 8-7.

8.6.2 Fauna

As mentioned above, Gauteng is relatively prosperous in biodiversity but this resource tends to be poorly conserved. The province has a vast range of mammal, bird, amphibian and reptile species. Moreover, the project site is directly adjacent to the Marievale Bird Sanctuary Nature Reserve which is an area of rich biodiversity.

The prevalence of all these species occurring at the specific project site is slim due to the availability of habitats suitable for survival, and anthropogenic influences which have led to the current altered state of the immediate project area.

The specific Proposed Project area (dump 7L5, 7L6 and 7L7) has an extremely altered and degraded habitat due to the historical mining activities that have occurred there. As a result, the possibility of many species being supported by the remaining immediate habitat is quite low. The anticipated fauna of the Proposed Project area is likely to be limited and associated with grasslands and cultivated lands on site.

The Blesbokspruit supports a variety of fish, amphibians, reptiles, crustaceans and rodents. Spotted-necked otters (*Lutra maculicollis*), Water mongoose (*Atilax palidinosus*) and many larger birds depend on these animals for their food. The Reedbuck (*Redunca arundinum*) regarded as uncommon in South Africa, has also been recorded in the area (Digby Wells, 2015, p21). In addition, the project is situated directly adjacent to the Marievale Bird Sanctuary Nature Reserve which is an important birding area with a wetland of Ramsar status and rich biodiversity despite pollution of the stream (Birdlife, 2018). However, the EIA phase will determine the presence of any sensitive animal species with certainty.

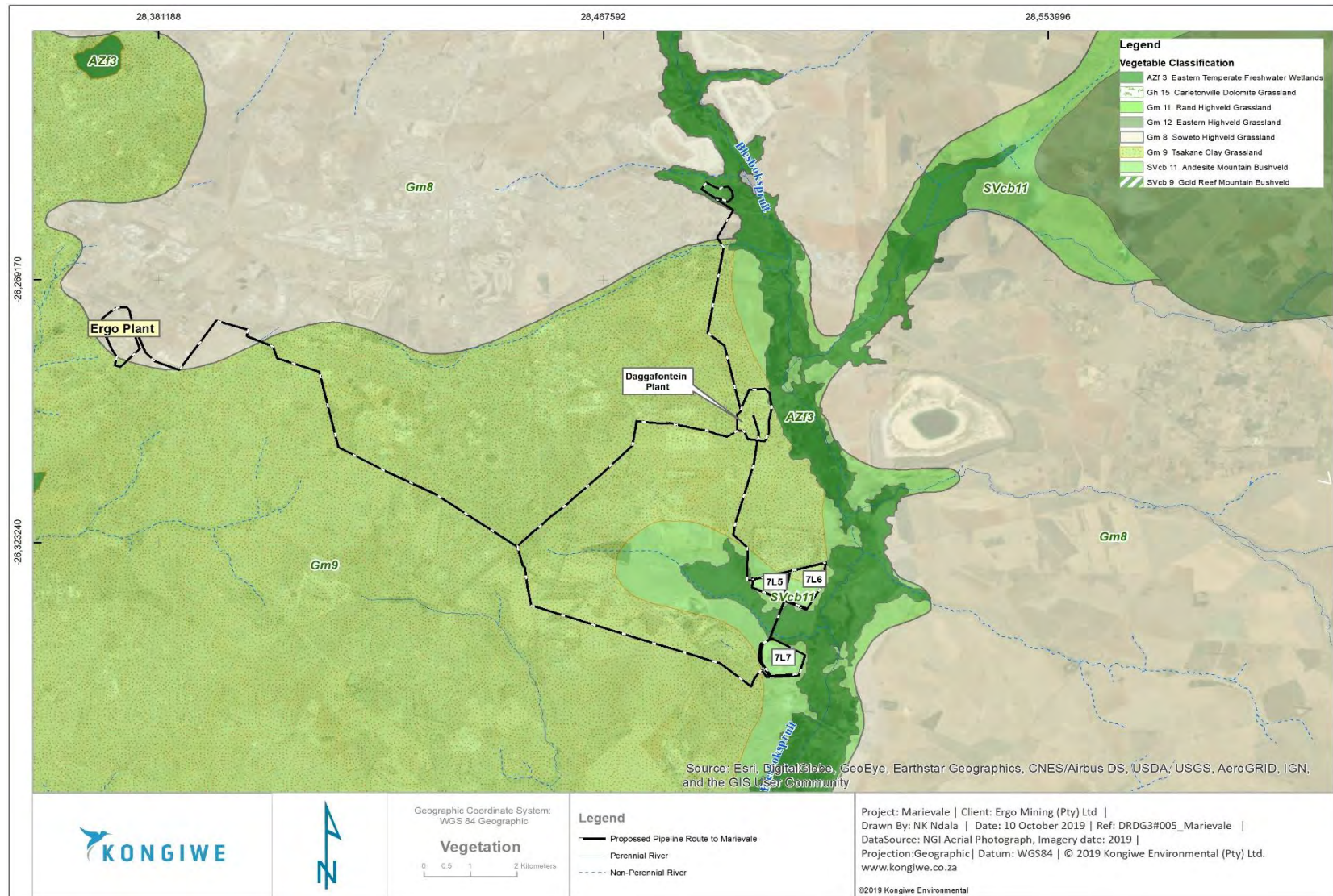


Figure 8-7: Vegetation type in and around the Proposed Project area

8.7 Wetlands

Wetlands are often biodiversity hotspots and provide ecosystem services such as flood control and aquifer recharge (Haukos and Smith, 1994; Keddy et al., 2009). Thus, if biodiversity is to be conserved, the maintenance of wetlands is essential. Unfortunately, a large number of wetlands have been degraded or lost worldwide in recent years due to land use conversions, water pollution and soil salinization amongst other reasons.

The Proposed Project site is situated adjacent to the Blesbokspruit Wetland System (BWS). It is a high-altitude Ramsar site of global significance and the largest permanent wetland in the Highveld region of South Africa, with significant bird and ecological diversity (McKay et al., 2018). The BWS covers about 1 858 km² and extends 21 km along the Blesbokspruit (from the Grootvaly Wetland Reserve in the north to the Marievale Bird Sanctuary Nature Reserve in the south) (McKay et al., 2018). The BWS hosts up to 250 bird species, along with many other species of fauna and flora. See Figure 8-8 below.

According to Driver et al. (2012), the BWS is under enormous threat from pollution caused by mining, sewage and industrial discharges, as well as runoff from agricultural activities upstream of the Blesbokspruit. This has left the BWS severely degraded with the wetland now characterised by poor water quality and ecological health, an artificially high water table, as well as an infestation of *Phragmites australis* and *Typha capensis* reeds (Phaleng, 2009; Carr, 1999). Thus, the wetland has been placed on the Montreux Record (1996) list of potentially threatened or degraded Ramsar sites. The Montreux Record of the Ramsar Convention is a register of wetland sites on the List of Wetlands of International Importance where changes in the ecological character and integrity have occurred, are occurring, or are likely to occur as a result of developments, pollution or other human interference (Digby Wells, 2015, p25).

That is why the possible removal of all pollution sources, including the Marievale TSFs, is paramount to the preservation of the BWS.

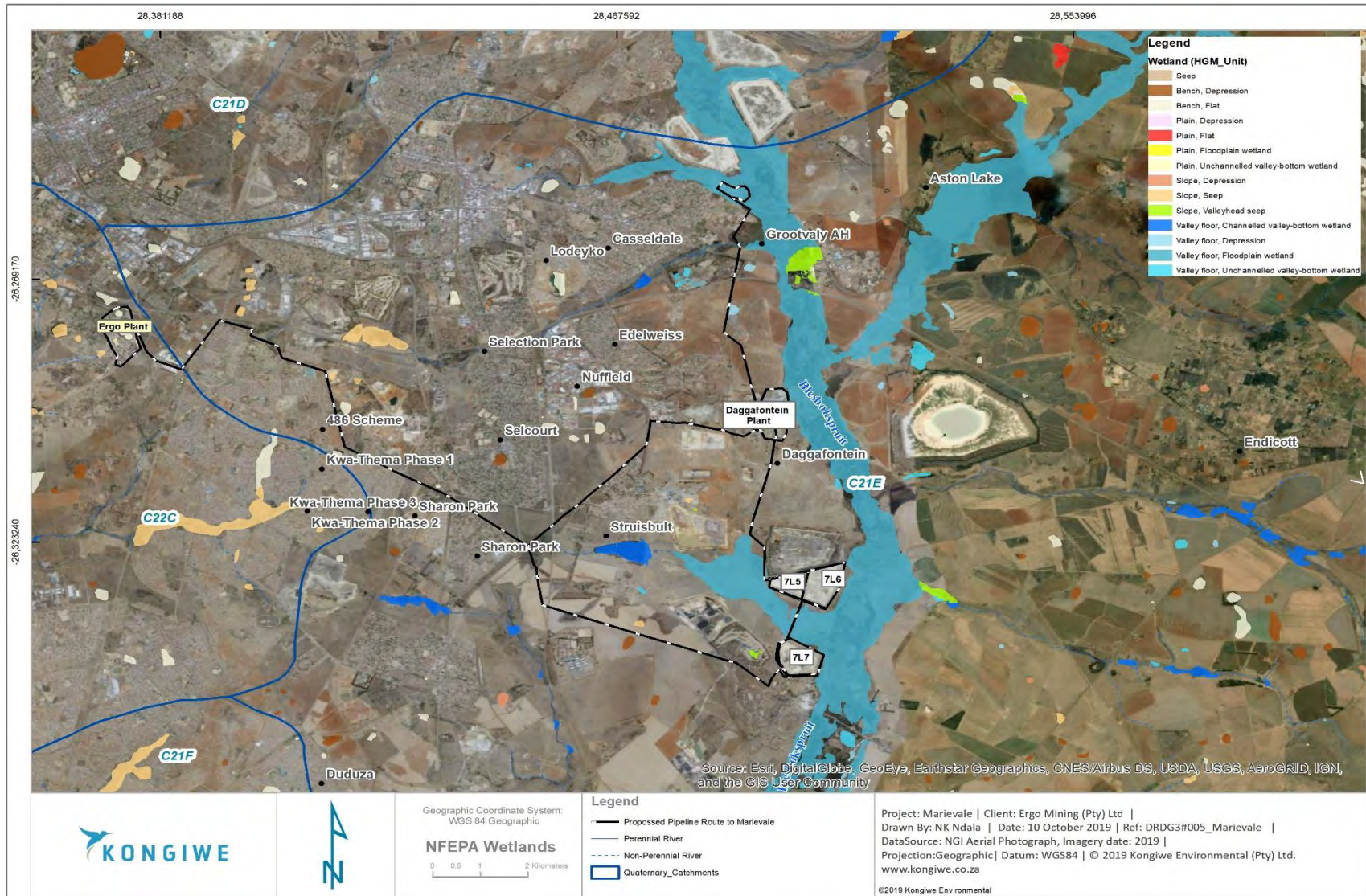


Figure 8-8: NFEPA wetlands around the Proposed Project Area

8.8 Air Quality

Numerous studies have found that air pollution in cities has a major negative impact on the health of both the environment and the surrounding communities. Repeated exposure to air pollutants over long periods of time may potentially cause several respiratory, cardiovascular, reproductive and gastrointestinal health problems (Mayer, 1999).

Particulate Matter (PM) exists in the atmosphere as either solid or liquid particles varying in chemical composition and size, these particles can be considered as either primary or secondary pollutants. Particles can be classified by their aerodynamic properties into coarse particles, PM₁₀ and fine particles, PM_{2.5} (Harrison and Van Grieken, 1998). The fine particles contain the secondarily formed aerosols such as sulphates and nitrates, combustion particles and re-condensed organic and metal vapours. The coarse particles contain earth crust materials and fugitive dust from roads and industries (Fenger, 2002). It is the amount of fine dust and the chemical and mineralogical composition of the dust which will dictate the potential for health impacts (Schwegler, 2006).

The Proposed Project falls within the Highveld Priority Area (HPA). This area of South Africa is associated with poor air quality, and elevated concentrations of criteria pollutants occurring due to the concentration of industrial and nonindustrial activities. The priority area covers 31,106 km², including parts of Mpumalanga Province (Highveld Priority Area Air Quality Management Plan, 2011). The Ekurhuleni Metropolitan Municipality has both a high population density and a high-density industrial sector (DEA, 2015).

The cumulative air pollution associated with the HPA means that it is imperative for the Proposed Project to formulate and implement a sustainable and effective air quality management plan, if one is found to be a requirement by the Air Quality Impact Assessment conducted during the EIA phase, to comply with P_{2.5} and P₁₀ national ambient air quality standards (NAAQS).

8.9 Noise

Natural sounds are a part of the environmental noise surrounding humans. Ambient sound levels are significantly affected by the area where the sound measurement location is situated. When the sound measurement location is situated within an urban area, close to industrial plants or areas with a constant sound source (ocean, rivers, etc.), seasons and even increased wind speeds have an insignificant to massive impact on ambient sound levels.

The Proposed Project site is in an area with a mixed-use development character, with agricultural and mining activities being the predominant activities in the area. The major noise sources in the area include; vehicular traffic on the national and provincial roads in the areas, noises from the local communities such as Nigel, Selcourt, Grootvlay and Springs; and other industrial and mining related noises.

There are a number of potential noise sources associated with the Proposed Project during both the construction and operational phase.

8.9.1 Construction Phase

The level and character of the construction noise will be highly variable as different activities with different equipment take place at different times, for different periods of time (operating cycles), in different combinations/sequences and on different parts of the construction site. The main construction related noises that are expected are listed below:

- ❖ Transport of workers, components & equipment to site – brought to site by means of flatbed trucks;
- ❖ Digging of foundations for infrastructure and pipeline support – TLB;
- ❖ Development of stormwater infrastructure – TLB;
- ❖ Civil work to install the substation / transformer, screens, tanks and pump station – cement truck, flatbed trucks (with mobile crane);
- ❖ Civil construction activities.

8.9.2 Operational Phase

The level and character of the noise during this phase is generally constant as it does not involve mobile equipment movement around the site. The noises expected during this phase are listed below:

- ❖ General operational noises;
- ❖ JCB/TLB backhoe loader being operated;
- ❖ The slurry pumps;
- ❖ Vibrating screens; and
- ❖ Water Dozers and site equipment.

Noise can be defined as "unwanted sound", and an audible acoustic energy that adversely affects the physiological and/or psychological well-being of people, or which disturbs or impairs the convenience or peace of any person. **Figure 8-9** illustrates the acceptable zone sound levels as set out by SANS. Ambient noise levels will be further assessed during the EIA phase and appropriate mitigation measures applied where applicable.

1	2	3	4	5	6	7
Type of district	Equivalent continuous rating level ($L_{Req,T}$) for noise dBA					
	Outdoors			Indoors, with open windows		
	Day/night $L_{R,dn}^a$	Daytime $L_{Req,d}^b$	Night-time $L_{Req,n}^b$	Day/night $L_{R,dn}^a$	Daytime $L_{Req,d}^b$	Night-time $L_{Req,n}^b$
a) Rural districts	45	45	35	35	35	25
b) Suburban districts with little road traffic	50	50	40	40	40	30
c) Urban districts	55	55	45	45	45	35
d) Urban districts with one or more of the following: workshops; business premises; and main roads	60	60	50	50	50	40
e) Central business districts	65	65	55	55	55	45
f) Industrial districts	70	70	60	60	60	50

Figure 8-9: Acceptable Zone Sound Levels for noise in districts (from SANS 10103:2008)

8.10 Traffic

The Proposed Project Site is located in an area with an existing road network. The site is surrounded by the N17 to the north, R51 to the west and street level routes.

Road Classification

The Road Classification and Access Management (RCAM) guideline 2010 provides for roads classification into

the following six class systems:

- ❖ Class 1 Principal arterial
- ❖ Class 2 Major arterial
- ❖ Class 3 Minor arterial
- ❖ Class 4 Collector
- ❖ Class 5 Local street
- ❖ Class 6 Walkway

The first three classes (the arterials) are mobility roads, the second three classes are activity/access streets. Regarding the Proposed Project, mobility roads will include the N17 and R51.

8.11 Visual

The Proposed Project site has been disturbed by the legacy of historic mining in the area. This then means that the Proposed Project will result in the removal of a visual disturbance source. The surrounding area around the dumps are lacking in natural vegetation that would help to screen off the proposed operation. The proposed site is also visible from the nearby residential and industrial areas as well as from the major

and minor road routes surrounding the proposed site. It is also anticipated that the project would result in a positive visual impact after the removal of the dumps in relation to the surrounding environment of the site.

8.12 Heritage and Palaeontology

Heritage Sensitivity

As a historical mining site, no significant heritage resource sites or places of historical significance that could be impacted by the Proposed Projects are expected at the Marievale TSFs. However, The Marievale TSFs may represent ‘Historical Settlements and Townscapes’ as per the NHRA if they were established more than 60 years ago. The dumps and other associated mining infrastructure are integral components of the historical mining townscapes and settlements of the East Rand.

Heritage sensitivity will further be assessed during the EIA phase.

Palaeontological Sensitivity

The Proposed Project is underlain by the Ecca and Dwyka Groups of the Karoo Supergroup (with high and moderate Palaeontological Sensitivity respectively) (Heritage Auctions, 2019) See Table 8-1. Rock formations of moderate to high Palaeontological Sensitivity are present in the study area; however, the Proposed Project is not anticipated to affect the underlying geology of the area and a Palaeontological study is not required.

Table 8-1: Palaeontological Sensitivity of the geological supergroups at the project site (Butler, 2018)

Supergroup	Group	Subgroup	Formation	Palaeontological Sensitivity
Karoo	Ecca		Vryheid	High
Karoo	Dwyka			Moderate
Transvaal Supergroup	Chuniespoort Group	Malmani		High
Witwatersrand	Central Rand	Turffontein		Zero
Witwatersrand	Central Rand	Johannesburg		Zero
Ventersdorp	Klipriviersberg			Zero

8.13 Socio-Economic

The Proposed Project has the potential to result in both positive and negative social impacts. As such, it is important that the socio-economic baseline conditions are understood to ensure accurate identification and assessment of potential impacts associated with the Proposed Project.

Gauteng is the largest urban economy in Africa, with a population estimated to be 13.3 million, (Gauteng Spatial Development Framework 2030) (GSDF). In terms of land area, Gauteng is the smallest province in

South Africa but also densely populated. Gauteng accounts for only 1.5% of the land area. Table 8-2 below provides an overview of the socio-economic baseline information for Gauteng province.

Table 8-2: Socio-economic baseline information: Gauteng at a glance

DESCRIPTION	STATISTICS
Demographics	
Population size	13 399 724 (about one-quarter of the figure in South Africa)
Population by size	Majority of the population (64%) is made up of the population group between the ages of 18-64.
Language	Isizulu is the most spoken language, approximately 3 022 844-slightly less than the figure in South Africa.
Migration	Approximately 93.9% of the population is born in South Africa (slightly less than the rate in South Africa)
Households	
Number of households	4 951 135, with 62% of the population reside in formal dwellings
Service Delivery	
Access to water services	96.8% are getting water from a regional or local service provider (about 10% higher than the rate in South Africa.
Access to electricity	7.4% have no access to electricity.
Toilet facilities	89% have access to flush or chemical toilets.
Education	
Educational level	78.7% have completed grade 9 or higher (about 10% higher than the rate in South Africa. 52.4% have completed Matric.
Employment	
Employment status	51% are employed (about 1.3 times the rate in South Africa).
Unemployment status	26.63%
Economics	
Economic sectors	Manufacturing sector providing 14% of the total provincial output, followed by construction at 3%, mining at 2% and agriculture at under 0.5%.
Average annual income	R57 500 nearly double the amount on South Africa

Information extracted from Stats SA: Census 2011 and the Community Survey: 2016

Ekurhuleni Metropolitan Municipality - Overview

The City of Ekurhuleni comprises of communities such as Tembisa, Katlehong, Vosloorus, Duduza, Daveyton and Thokoza that collectively house over 68% of the City's total population.

Ekurhuleni has a total surface area of 1975km² that accommodates a population of about 3 379 104 people, about one quarter of the figure in Gauteng (City of Ekurhuleni IDP, 2018). This population is living in an estimated 1 299 490 households, with 18.7% of those being informal dwellings (shacks). The city has a median age of 30 and 66% of the population is between the ages of 18-64, 18% is below the age of 18 and 6% is above the age of 65.

Black Africans make up 82% of the population. In 2015, the unemployment rate in Ekurhuleni (based on the official definition of unemployment) was approximately 29%. About half of the population have completed matric or higher, which is about 20% higher compared to the national statistic and approximately 4% of the population have post graduate qualification (IDP, 2018, 37).

Access to basic services (in terms of water supply) is relatively high, majority (98.5%) of the population get water from a regional or local service provider. 90% of the city has access to electricity; while only 89% of the population has flushing toilet facilities (Community Survey, 2016).

Key Challenges with Ekurhuleni

According to the IDP 2018/2019 review, the municipality is currently faced with the following challenges:

- ❖ Service delivery failure;
- ❖ Rapid population growth spurred by in-migration;
- ❖ Mushrooming of informal settlements which contributes to service delivery challenges;
- ❖ Ageing sanitation infrastructure and an increasing backlog for infrastructure in new developments;
- ❖ Illegal mining;
- ❖ Unemployment.

The abovementioned issues have a bearing on how the Proposed Project may bring about social change within the affected local area.

9 Potential Impacts Identified during the Scoping Phase

9.1 Methodology for determining the Significance of Environmental Impacts

This part of the document focuses on the identification of the major potential impacts the activities, processes and actions may have on the surrounding environment. Table 9-1 will be inserted into the EIA report once all specialist studies have been completed. The table represents compliance with the EIA Regulations of 2014 in terms of assessing the significant of direct, indirect, cumulative and residual impacts. Each specialist has been requested to include Table 9-1 whilst compiling their reports to streamline the coherence of the EIA Report.

Potential environmental impacts (physical, biological, social and economic) associated with the Proposed Project listed in Table 9-2. The significance of these impacts will be systematically assessed and rated, using the assessment mythology described in Section 9.1, once the results of the various specialist studies are available. The EIA will include a full risk assessment of all environmental impacts. The EIA/EMPr Report will set out mitigation measures to be implemented during the Construction, Operational, Decommissioning and Closure and Post-Closure Phases in accordance with NEMA requirements.

Table 9-1: Typical tables used to identify and classify the significance of identified impacts

Nature of The Impact: <i>Describe the Impact in Respect to The Activity to be Undertaken</i>		
	Impact Rating Without Mitigation	Impact Rating With Mitigation
<i>Extent (Local, Regional, International)</i>		
<i>Duration (Short term, Medium term, Long term)</i>		
<i>Magnitude (Major, Moderate, Minor)</i>		
<i>Probability (Definite, Possible, Unlikely)</i>		
<i>Calculated Significance Rating (Low, Medium, High)</i>		
Impact Status: (positive or negative)		
Reversibility: (Reversible or Irreversible)		
Irreplaceable loss of resources: (Yes or No)		
Can impacts be enhanced: (Yes or No)		
Residual impacts		
❖ (List these below)		
Cumulative Impacts		
❖ (List these below)		
Mitigation measures		

Table 9-2 below will be used during the EIA Phase to describe the identified impacts of the Proposed Project, as well as the relevant mitigation measures proposed by specialist studies.

Table 9-2: Potential Impacts Identified for the Project

ENVIRONMENTAL COMPONENT	COMPONENT TYPE	POTENTIAL IMPACT	SPECIALIST STUDY PLANNED FOR EIA
Physical Environment (non-living)	Hydrology (including wetlands, surface water and ground water)	<ul style="list-style-type: none"> ❖ Potential for further acid mine drainage (AMD), increased heavy metal concentrations and increased sulphate concentrations in the adjacent Blesbokspruit and local groundwater if runoff from operations is not adequately managed through efficient storm water management structures; ❖ Improved surface and ground water quality around the project area due to the removal of the TSFs; ❖ Changes in natural surface water flow parameters due to the removal of the TSFs; ❖ Potential impact on drainage lines from access runoff during the operational phase of the project; ❖ Improved visual aesthetics of the area after the removal of the TSFs 	<p>Surface Water Impact Assessment</p> <p>Groundwater Impact Assessment</p> <p>Wetland Impact Assessment</p>
Biological Environment (living)	Ecology and Biodiversity (including fauna and flora)	<ul style="list-style-type: none"> ❖ Disturbance of sites and species of ecological importance; ❖ Loss of migration corridors, and access to nesting and refuge areas, watering points, food supplies for faunal species by removing the TSFs; ❖ Displacement of animal habitat by removing the TSFs; ❖ Removal of invasive species from the TSFs; ❖ Improvement of species diversity in the Blesbokspruit Wetland System by removing a pollution source in the form of the TSFs; 	Biodiversity Impact Assessment

ENVIRONMENTAL COMPONENT	COMPONENT TYPE	POTENTIAL IMPACT	SPECIALIST STUDY PLANNED FOR EIA
		<ul style="list-style-type: none"> ❖ Long-term improvement of ecosystem health and functioning of the project area following rehabilitation. 	
Cultural Environment	Heritage Resources	<ul style="list-style-type: none"> ❖ Should heritage resources be present in the area, the reclamation project could potentially impact these; ❖ Destruction of a heritage resource, if the TSFs are older than 60 years, by reclaiming the TSFs. 	Heritage Impact Assessment
Social and Economic Environment	Employment	<ul style="list-style-type: none"> ❖ Continued employment and job security; ❖ Continued investment in local economy; ❖ Removal of the dumps could eliminate the attraction of illegal/informal miners who seek gold. 	Social Impact Assessment
	Land-use	<ul style="list-style-type: none"> ❖ Land use will change to an active reclamation site; ❖ Restoration and unlocking of land for future land uses. The removal of TSFs could result in the extension of the Blesbokspruit Wetland System footprint; ❖ Better management and control of the area against illegal/informal mining. 	Social Impact Assessment
	Noise	<ul style="list-style-type: none"> ❖ Increase in ambient noise levels during the operational phase; ❖ Disturbances to faunal species during the operational phase. 	Noise Impact Assessment
	Air Quality	<ul style="list-style-type: none"> ❖ Possible increase in dust levels in some areas during operations; ❖ Overall removal of an air pollution source after the removal of the TSFs; ❖ Health impacts on livestock and people in proximity to the project site due to fine particulate emissions during operational phase. 	Air Quality Impact Assessment

The impact significance rating process serves two purposes: firstly, it helps to highlight the critical impacts requiring consideration in the management and approval process; secondly, it shows the primary impact characteristics, as defined above, used to evaluate impact significance.

The impact significance rating system is presented in Table 9-3, Table 9-4, and Table 9-5 involves three parts:

- ❖ **Part A:** Define impact consequence using the three primary impact characteristics of magnitude, spatial scale/ population and duration;
- ❖ **Part B:** Use the matrix to determine a rating for impact consequence based on the definitions identified in Part A; and
- ❖ **Part C:** Use the matrix to determine the impact significance rating, which is a function of the impact consequence rating (from **Part B**) and the probability of occurrence.

9.1.1 Part A: Defining Consequence in Terms of Magnitude, Duration and Spatial Scale

Use these definitions to define the consequence in Part B.

Table 9-3: Consequence Rating Methodology

IMPACT CHARACTERISTICS	DEFINITION	CRITERIA
Magnitude	Major -	Substantial deterioration or harm to receptors; receiving environment has an inherent value to stakeholders; receptors of impact are of conservation importance; or identified threshold often exceeded
	Moderate -	Moderate/measurable deterioration or harm to receptors; receiving environment moderately sensitive; or identified threshold occasionally exceeded
	Minor -	Minor deterioration (nuisance or minor deterioration) or harm to receptors; change to receiving environment not measurable; or identified threshold never exceeded
	Minor +	Minor improvement; change not measurable; or threshold never exceeded
	Moderate +	Moderate improvement; within or better than the threshold; or no observed reaction
	Major +	Substantial improvement; within or better than the threshold; or favourable publicity
Spatial scale or population	Site or local	Site specific or confined to the immediate project area
	Regional	May be defined in various ways, e.g. cadastral, catchment, topographic
	National/ International	Nationally or beyond
Duration	Short term	Up to 18 months.
	Medium term	18 months to 5 years

IMPACT CHARACTERISTICS	DEFINITION	CRITERIA
	Long term	Longer than 5 years

9.1.2 Part B: Determining Consequence Rating

Rate consequence based on definition of magnitude, spatial extent and duration.

Table 9-4: : Consequence Rating Methodology

			SPATIAL SCALE/ POPULATION		
			Site or Local	Regional	National/ international
MAGNITUDE					
Minor	DURATION	Long term	Medium	Medium	High
		Medium term	Low	Low	Medium
		Short term	Low	Low	Medium
Moderate	DURATION	Long term	Medium	High	High
		Medium term	Medium	Medium	High
		Short term	Low	Medium	Medium
Major	DURATION	Long term	High	High	High
		Medium term	Medium	Medium	High
		Short term	Medium	Medium	High

9.1.3 Part C: Determining Significance Rating

Rate significance based on consequence and probability.

Table 9-5: Significance Rating Methodology

Probability (of exposure to impacts)	Consequence Negative			Consequence Positive		
	Low	Medium	High	Low	Medium	High
Definite	Medium	Medium	High	Medium	Medium	High
Possible	Low	Medium	High	Low	Medium	High
Unlikely	Low	Low	Medium	Low	Low	Medium

9.2 Possible Positive and Negative Impacts identified

The table below identifies the positive and negative impacts associated with each alternative identified for the Proposed Project:

Table 9-6: Positive and negative impacts regarding project alternatives for the Project

OPTION	POSITIVE IMPACTS	NEGATIVE IMPACTS
The property on which or location where it is proposed to undertake the activity		
The Proposed Project is the reclamation and reprocessing of already existing dumps (7L5, 7L6 and 7L7). Therefore, there can be no alternative sites.		
The Type of Activity to be undertaken		
1. Alternatives to reclaiming and treating existing gold dumps.		
The Reclamation and Processing of the Marievale TSFs (Preferred Option)	<ul style="list-style-type: none"> ❖ Low-technical-risk nature of tailings retreatment projects sets them apart from traditional underground operations ❖ Not labour intensive. ❖ Minimal safety issues. ❖ Easy access to surface tailings, as well as lower labour and operating costs. ❖ Boost to local economy. ❖ Removal of pollution source after rehabilitation and cessation of project. 	<ul style="list-style-type: none"> ❖ Potential profits rely on substantial volumes of material. ❖ Potential negative environmental effects during construction and operational phase of the project. ❖ Not labour intensive.
The Design and Layout of the Activity		
None – No reasonable and feasible alternatives exist for the Proposed Project.		
Technology to be used in the Activity		
<p>The reclamation of the Marievale TSFs is the “Preferred Activity” and there are no alternatives. The dumps will be reclaimed using Hydraulic Mining. Other technology options which will be considered by Ergo for the reclamation of the Marievale TSFs are: Recycling initiatives, water conservation and electricity alternatives. These technology alternatives are discussed in greater detail below.</p> <p>Recycling, Water and Electricity</p> <p>The reclamation of the Marievale TSFs will, in its operational phase, implement recycling policies and measures for optimal utilisation of resources and minimisation of waste generation. Potable water will be purchased from Rand Water, with a contingency for portable JoJo tanks or connection to existing water pipeline infrastructure. In</p>		

OPTION	POSITIVE IMPACTS	NEGATIVE IMPACTS
<p>terms of process water reticulation, the water cycle operates as a closed circuit, meaning that limited make-up water will be required for the reclamation of the TSFs. Water required for the reclamation activities will be recovered from either of the four TSFs mentioned above, or from water contained in existing mine shafts and wastewater treatment facilities. Fuel types will be investigated and energy conserving measures will be implemented where necessary.</p>		
<p>1. Technological Alternatives Considered</p>		
<p>Hydraulic Mining</p>	<ul style="list-style-type: none"> ❖ Cost effective ❖ Easier to transport slurry for processing. ❖ Compatible with existing infrastructure. ❖ Lowered risks when compared to other methods of reclamation 	<ul style="list-style-type: none"> ❖ Dust emissions which are to be mitigated ❖ Not very labour intensive, thus new employment opportunities are limited ❖ May cause environmental impacts if not done responsibly.
<p>The operational aspects of the activity</p>		
<p>Two operational alternatives are being considered for the transport of slurry and return water. These alternatives have been described in detail in Chapter 6. The final preferred alternative will be reported on in greater detail in the EIA phase of the project following recommendations and findings from independent specialist studies.</p>		
<p>1. Two Operational Alternatives Considered</p>		
<p>Alternative 1: Daggafontein Plant, Ergo Plant, Brakpan/Withok TSF and associated slurry and return water pipeline (s)</p>	<ul style="list-style-type: none"> ❖ The plant and deposition facility are existing. ❖ The route avoids traversing through any watercourses. ❖ Welded, HDPE lined steel pipelines. ❖ The Brakpan/Withok TSF is currently used as the preferred deposition facility for most reclamation clean-up projects. ❖ The Plant has the capacity to recovery the intended quantities of gold. 	<ul style="list-style-type: none"> ❖ Potential for tampering with infrastructure which could lead to mechanical failures and spillages. ❖ Security could be an issue during the construction of the above-ground pipeline. ❖ The proposed pipeline route is quite extensive. ❖ The proposed route traverses more residential areas.
<p>Alternative 2: Ergo Plant, Brakpan/Withok Tailings Storage Facility and associated slurry and return water pipeline (s)</p>	<ul style="list-style-type: none"> ❖ The plant and deposition facility are existing. ❖ The route avoids traversing through any watercourses. 	<ul style="list-style-type: none"> ❖ Potential for tampering with infrastructure which could lead to mechanical failures and spillages. ❖ Security could be an issue during the

OPTION	POSITIVE IMPACTS	NEGATIVE IMPACTS
	<ul style="list-style-type: none"> ❖ Welded, HDPE lined steel pipelines. ❖ The Brakpan/Withok TSF is currently used as the preferred deposition facility for most reclamation clean-up projects. ❖ The Plant has the capacity to recover the intended quantities of gold. ❖ The proposed pipeline to be constructed will not traverse a great distance. ❖ The proposed route traverses less residential areas. 	<p>construction of the above-ground pipeline.</p>
No-Go Option		
<p>The Option of the project not proceeding would mean that the environmental and social status would remain the same as current. This implies that both negative and positive impacts would not take place. As such, the short term negative impacts on the environment would not transpire; equally so, the long term positive impacts such as environmental pollution source removal, economic development, skills development, and the availability of land for re-development would not occur. The only alternative land use is to leave the dumps as they stand; there is no other potential use of the space as the project area is a group of polluting historic mine dumps that impact upon the surrounding biophysical and social environment.</p> <p>The “No-Go” Option also assumes the continuation of the current land use, implying the absence of any reclamation activities and associated infrastructures. The means that the attraction of the gold reserves located within the dumps could potentially enhance Illegal mining, and if left as is, illegal settlements on or around the dumps could occur.</p> <p>The ‘No Go’ alternative is not preferred due to the anticipated benefits of the proposed reclamation project. The expected indirect benefits resulting from the reclamation of the Marievale TSFs include:</p> <ul style="list-style-type: none"> ❖ Removal of a source of pollution and radiation in the area. ❖ The potential to unlock land for redevelopment, as per GDARD’s (2012) Gauteng Mine Areas Strategy. ❖ Continued supply of gold to the local and national markets, and therefore contribution to local, provincial and national economy. 		

9.3 Cumulative Impacts

Due to the existence of other TSFs and mining operations in the region, cumulative impacts and their assessment are of great importance. The identification and assessment of cumulative impacts will be undertaken, and mitigation measures suggested during the detailed EIA level investigation. The impact identification and calculation methodology employed by all specialists incorporates cumulative impacts in a quantitative manner to determine the final impact score and corresponding rating.

9.4 Application of Possible Mitigation Measure

Mitigation measures are implemented to ensure that the identified impacts from the Proposed Project activities are reduced as far as possible. Mitigation measures will be provided in the specialist reports to be undertaken in the EIA Phase of the project. Specialist will be informed to be cognisant of the following mitigation measure objectives:

- ❖ To find more environmentally sound ways of undertaking specific activities;
- ❖ To enhance any environmental and social benefits of a proposed activity;
- ❖ To avoid, minimise or remedy negative environmental impacts; and
- ❖ To ensure that any residual negative environmental impacts are environmentally acceptable.

The identification of appropriate mitigation measures will be conducted in a hierarchal manner:

1. Preventative measures will be identified to avoid, where possible, negative impacts that may arise as a result of the proposed activity;
2. Measures will be identified to minimise and/or reduce the negative impacts to “as low as practicable” levels; and
3. Measures will be identified to compensate or remedy residual negative impacts that are unavoidable and cannot be minimised or reduced any further (Department of Environmental Affairs, 2006).

Proposed mitigation measures will be communicated to the applicant for review as part of draft EMPr. The applicant will comment on the feasibility and practicality of implementing the mitigation measures. The mitigation measures may be adjusted based on the applicant’s comments.

9.5 Outcome of the Site Selection Matrix. The Final Site Layout Plan

The finalisation of specialist studies and recommendations made within the reports will help to inform a final site layout plan. At the time of compiling this DSR, preliminary site layout plans have been included in **Appendix B** and these maps will be presented as part of the pre-application process with stakeholders.

9.6 Motivation where no Alternative sites were considered

Alternatives were considering during this DSR as per Chapter 6 above and the site selected was chosen based on economic and environmental criteria.

9.7 Statement motivating the Preferred Site

The preferred sites were chosen as per Chapter 6.

10 Plan of Study for the Environmental Impacts Assessment

10.1 Alternatives to be considered, including the “No-Go” Option

Alternatives to be considered during the EIA phased will be informed by the Alternatives described in Chapter 6 above.

10.2 Aspects to be assessed as part of the Environmental Impact Process

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

- ❖ Terrestrial Ecology
- ❖ Wetlands;
- ❖ Surface Water;
- ❖ Groundwater;
- ❖ Air Quality;
- ❖ Heritage;
- ❖ Social Impact; and
- ❖ Noise.

10.3 Terms of Reference for Specialist Studies

Table 10-1 outlines the studies proposed during the EIA Phase of the project and the proposed scope of work to be undertaken as part of the S&EIA process:

Table 10-1: Terms of Reference for Specialist Studies.

STUDY	TERMS OF REFERENCE
<p>Terrestrial Ecology</p>	<p><u>Impact Assessment</u></p> <p>1. The terrestrial biodiversity impact assessment report will consist of the following:</p> <ul style="list-style-type: none"> ❖ Assess impacts of ongoing and proposed activities on biodiversity of the project area; ❖ Assess whether proposed activities are likely to have significant impacts on biodiversity and specifically species of conservation concern; ❖ Identify practically implementable mitigation measures to reduce the significance of proposed activities on biodiversity; ❖ Assess residual and cumulative impacts after implementation of mitigation measures; and ❖ Compilation of biodiversity management and monitoring plan. <p>The outcome of the impact assessment phase will be an integrated biodiversity impact assessment report detailing the findings of each of the various sub-specialist studies. The impact assessment report will provide an integrated assessment of the significance of the potential impacts on the biodiversity of the project area with specific emphasis on observed red data species. The report will identify suitable mitigation measures and assess the revised significance of potential impacts on biodiversity post-implementation of mitigation measures. The integrated biodiversity impact assessment report will also include a biodiversity monitoring programme.</p>
<p>Wetland Study</p>	<p><u>Impact Assessment</u></p> <p>The water resource impact assessment will consist of the following:</p> <ul style="list-style-type: none"> ❖ Assess impacts of ongoing and proposed activities on the local water resources; ❖ Assess whether proposed activities are likely to have significant impacts on the water resources; ❖ Identify practically implementable mitigation measures to reduce the significance of proposed activities on the water resources; and ❖ Assess residual and cumulative impacts after implementation of mitigation measures.

STUDY	TERMS OF REFERENCE
<p>Surface Water</p>	<p>A full, detailed hydrological assessment will be undertaken for the EIA Phase of the project.</p> <p><u>Impact Assessment:</u></p> <p><u>1. Flood Lines</u></p> <p>The flood peaks for the 1:50- and 1:100-year return intervals will be calculated for the contributing catchment area associated with each river. Flood peak determination will factor in regional rainfall and relevant catchment characteristics influences. Based on the provided elevations, and utilising the calculated flood peaks, the flood lines for current conditions will be generated using the HEC-RAS one dimensional backwater flow model. The model can simulate the effects of various control points/obstructions located within the watercourse. It assumed that topographical data at an acceptable resolution of the site will be provided.</p> <p><u>2. Conceptual Stormwater Management Plan</u></p> <p>Based on the information gathered during the desktop review and the site walkover, a conceptual stormwater management plan will be developed for the Project. ‘Dirty’ and ‘clean’ contributing catchments will be discretised based on topographical fall, associated activities. Furthermore, the discretisation of the catchments will factor in existing stormwater infrastructure and the overall functionality and the most practical and feasible implementation of the final stormwater management plan. Based on the discretised catchments, the required stormwater management drainage elements (including channels, pipes, berms, and pollution control dams) will be defined to ensure appropriate stormwater management according to the management principles outlined in the GN704 and BPGs.</p> <p><u>3. Water and Salt Balance</u></p> <p>An annual average static water balance associated with the mine will be developed using Excel, based on a Process Flow Diagram (PFD) developed in conjunction with Ergo. The PFD will indicate sources and movement of water within the mine and projected volumes. A final project site plan is required to finalise the water balance. The salt balance calculations will be based</p>

STUDY	TERMS OF REFERENCE
	<p>on the volumes calculated within the water balance and water quality data provided. If available, Total Dissolved Solids (TDS) data will be used to calculate the salt balance.</p> <p><u>4. Water Quality Analysis and Monitoring Data</u></p> <p>A surface water quality analysis will be undertaken, and a monitoring programme will be developed for the mine to allow for the appraisal of impacts to surface water as a result of onsite activities and to allow for the formulation of various management actions associated with the protection of water resources. Sampling locations, methodology, sampling frequency and an analytical programme (i.e. analytes) will be rationalised as part of the assessment. Water quality data obtained from the site will be compared against the relevant DHSWS water quality standard limits. A water quality monitoring plan will be developed to determine key water quality monitoring points, chemical monitoring suites and the frequency of water quality sampling and analysis.</p>
<p>Ground Water Assessment</p>	<p><u>Impact Assessment:</u></p> <p>The Impact Assessment phase will involve several tasks, as explained below. The results will help characterise the underlying aquifer systems and define potential impacts on the local aquifers, but also groundwater users and sensitive receptors in the Project area</p> <p><u>1. Data Review</u></p> <p>During this task all available data for the project area will be collated and reviewed. This includes geological, hydrogeological, groundwater monitoring, meteorological data and National Groundwater Archive data. A review will be conducted, and interpretations performed to establish a conceptual idea of the hydrogeological nature of the area and what risks currently exists.</p> <p><u>2. Hydrocensus</u></p>

STUDY	TERMS OF REFERENCE
	<p>During the hydrocensus important data pertaining to the current groundwater conditions and use will be collected. This will include localities of current groundwater abstraction points (boreholes, hand dug wells or springs), ownership, current usage volumes and types, equipment and groundwater levels; outside tDRDGold’s water monitoring network. Groundwater samples (5 samples) will be taken from selected boreholes. The hydrocensus will include:</p> <ul style="list-style-type: none"> ❖ A groundwater use assessment within a 1-kilometre radius of the Marievale TSFs; and ❖ Sampling of accessible boreholes and springs. A spectrum of determinants will be analysed, similar to DRDGold’s current analysis. The samples will be sent to a SANAS accredited laboratory for inorganic analyses. ❖ This data together with its spatial distribution will determine the current water resource and environmental status and serve as reference to the proposed reclamation. ❖ Data from the Department of Water and Sanitation will be sourced to help define water use and borehole localities in the area. <p>3. <u>Reporting</u></p> <p>An impact assessment report will present the results and interpretations of the groundwater desktop and hydrocensus assessments, with an indication of potential current impacts. The impact assessment report will include the following:</p> <ul style="list-style-type: none"> ❖ Characteristics of the local groundwater environment, including current groundwater use and groundwater qualities; ❖ Definition of the local geology and potential roles the structural geology and depth of weathering may play in surface water-groundwater interactions; ❖ Identification of potential hydrogeological impacts and sensitive receptors associated with the reclamation activities; and ❖ A groundwater monitoring network that will effectively monitor the groundwater quality and level changes during the reclamation phase and after closure.

STUDY	TERMS OF REFERENCE
Air Quality	<p><u>Baseline Assessment</u></p> <p>The baseline assessment will consist of a desktop assessment. The objective will be to inform the subsequent Air Quality Impact Assessment Study and will include the following:</p> <ul style="list-style-type: none"> ❖ Literature review of air pollutant emissions from Tailing Facilities. ❖ Literature review of potential health effects associated with these emissions. ❖ Outlining of relevant air quality legislation and ambient air quality standards. ❖ Description of the site location, topography, general surroundings of the site, as well as the relevant site-specific environment. ❖ Establishment of the baseline air quality from Air Quality Management Plans and Air Quality Monitoring Reports in the area. ❖ Description of the nature of other major sources of air pollution in the study area. ❖ Sourcing and evaluation of local meteorological data to determine the prevailing meteorological conditions. ❖ Sourcing and evaluation of Weather and Research Forecasting Model (WRF) meteorological data to facilitate modelling. <p>The baseline assessment will include:</p> <ul style="list-style-type: none"> ❖ Site Location and Topography ❖ Air Quality Legislation and Standards ❖ Health Effects of Particulate Pollutants ❖ Regional Meteorological Overview ❖ Ambient Air Quality ❖ Local Meteorology

STUDY	TERMS OF REFERENCE
	<p><u>Impact Assessment</u></p> <p>Preparation of the Air Quality Impact Assessment will include and be based on the information from the scoping/baseline assessment and will also include:</p> <ul style="list-style-type: none"> ❖ Compilation of an emissions inventory – a list of activities which are sources of air pollution in the project. ❖ Characterisation of the emission sources and the pollutants emitted from them. ❖ Calculations of emission rates from the sources identified in the emissions inventory. ❖ Preparation of Met data for modelling. <p>Determining and preparing the input parameters for modelling:</p> <ul style="list-style-type: none"> ❖ Source type. ❖ Source dimensions: lateral, vertical. ❖ Source location and orientation. ❖ Emission rate. ❖ Receptor grid. ❖ Dispersion modelling of the emissions, using the AERMOD model, to predict maximum ground level concentrations of particulate pollutants resulting from the activities and to determine the zones of influence around the emission sources accordingly. ❖ Presentation of model outputs/results in the form of contour plots and a summary of the results. ❖ Evaluation of the results of the air dispersion modelling against NAAQS as set out by the Department of Environmental Affairs (DEA). ❖ Assessment of any potential cumulative impacts in terms of the NAAQS. ❖ Provision of practical and implementable mitigation measures by which to manage and reduce the identified impacts where necessary. ❖ A recommendation in terms of an air quality monitoring programme if necessary.

STUDY	TERMS OF REFERENCE
Heritage & Palaeontology	<p><u>Impact Assessment:</u></p> <p>The Heritage Scoping Report will be compiled in compliance with NHRA (no 25 of 1999) and the National Environmental Management Act (NEMA) (No. 107 of 1998). The HIA process consists of three steps:</p> <p><u>1. Literature Review and initial site analysis:</u></p> <p>The background information to the field survey relies greatly on the Heritage Background Research which was undertaken through archival research and evaluation of aerial photography and topographical maps of the study area.</p> <p><u>2. Physical Survey:</u></p> <p>A physical survey is subsequently conducted on foot through the Proposed Project area by a qualified heritage specialist/s (e.g. an archaeologist and a palaeontologist)) and is aimed at locating and documenting sites falling within and adjacent to the proposed development footprint.</p> <p>3. The final step involves the recording and documentation of relevant heritage resources identified in the physical survey, the assessment of resources in terms of the HIA criteria and report writing, as well as mapping and constructive recommendations.</p> <p>The significance of heritage sites is based on four main criteria in accordance with site integrity (i.e. primary vs. secondary context), amount of deposit, range of features (e.g., stonewalling, stone tools and enclosures), and density of scatter (dispersed scatter):</p> <ul style="list-style-type: none"> ❖ Low - <10/50m² ❖ Medium - 10-50/50m²

STUDY	TERMS OF REFERENCE																								
	<ul style="list-style-type: none"> ❖ High - >50/50m2 ❖ Uniqueness; <p>Management actions and recommended mitigation, which will result in a reduction in the impact on the sites, will be expressed as follows:</p> <ul style="list-style-type: none"> ❖ A - No further action necessary; ❖ B - Mapping of the site and controlled sampling required; ❖ C - No-go or relocate development activity position; ❖ D - Preserve site, or extensive data collection and mapping of the site; and ❖ E - Preserve site. <p>Impacts on these sites by the development will be evaluated as follows:</p> <p>Site significance classification standards prescribed by the SAHRA (2006) and approved by the ASAPA for the Southern African Development Community (SADC) region, were used for the purpose of this report.</p> <table border="1"> <thead> <tr> <th>FIELD RATING</th> <th>GRADE</th> <th>SIGNIFICANCE</th> <th>RECOMMENDED MITIGATION</th> </tr> </thead> <tbody> <tr> <td>National Significance (NS)</td> <td>Grade 1</td> <td>-</td> <td>Conservation; National Site nomination</td> </tr> <tr> <td>Provincial Significance (PS)</td> <td>Grade 2</td> <td>-</td> <td>Conservation; Provincial Site nomination</td> </tr> <tr> <td>Local Significance (LS)</td> <td>Grade 3A</td> <td>High Significance</td> <td>Conservation; Mitigation not advised</td> </tr> <tr> <td>Local Significance (LS)</td> <td>Grade 3B</td> <td>High Significance</td> <td>Mitigation (Part of site should be retained)</td> </tr> <tr> <td>Generally Protected A (GP. A)</td> <td>-</td> <td>High / Medium Significance</td> <td>Mitigation before destruction</td> </tr> </tbody> </table>	FIELD RATING	GRADE	SIGNIFICANCE	RECOMMENDED MITIGATION	National Significance (NS)	Grade 1	-	Conservation; National Site nomination	Provincial Significance (PS)	Grade 2	-	Conservation; Provincial Site nomination	Local Significance (LS)	Grade 3A	High Significance	Conservation; Mitigation not advised	Local Significance (LS)	Grade 3B	High Significance	Mitigation (Part of site should be retained)	Generally Protected A (GP. A)	-	High / Medium Significance	Mitigation before destruction
FIELD RATING	GRADE	SIGNIFICANCE	RECOMMENDED MITIGATION																						
National Significance (NS)	Grade 1	-	Conservation; National Site nomination																						
Provincial Significance (PS)	Grade 2	-	Conservation; Provincial Site nomination																						
Local Significance (LS)	Grade 3A	High Significance	Conservation; Mitigation not advised																						
Local Significance (LS)	Grade 3B	High Significance	Mitigation (Part of site should be retained)																						
Generally Protected A (GP. A)	-	High / Medium Significance	Mitigation before destruction																						

STUDY	TERMS OF REFERENCE			
	Generally Protected B (GP. B)	-	Medium Significance	Recording before destruction
	Generally Protected C (GP. A)	-	Low Significance	Destruction
Social Impact Assessment	<p>Social Impact Assessment:</p> <p>The objective of the Social Impact Assessment (SIA) is to is to:</p> <ul style="list-style-type: none"> ❖ Assess the social impacts of the Proposed Project including any impacts on local infrastructure and services; ❖ Recommend mitigation measures to minimise adverse impacts and maximise benefits of the Project; and ❖ Facilitate the consideration of alternatives. <p>The SIA will use both quantitative and qualitative data collection techniques. In terms of the quantitative data, data from Statistics SA was used to understand the local social circumstances of the Proposed Project area. This method was used to gather baseline information for the purposes of the Scoping report. The qualitative method includes focus group meetings and in-depth interviews will be conducted to understand the affected communities’ perceptions, how they view themselves and the environment around them. Qualitative date will be collected as the project progresses. The SIA will use the following sets of data to inform the study:</p> <ul style="list-style-type: none"> ❖ An investigative site visit; 			

STUDY	TERMS OF REFERENCE
	<ul style="list-style-type: none"> ❖ Interviews with Ward Councillors, municipal officials, directly affected land owners/occupiers ❖ Statistics South Africa data; ❖ A literature review of the Integrated Development Plan and the Spatial Development Framework; and ❖ Scan and analysis of the Comments and Responses Report and various specialist studies (Compiled by Kongiwe Environmental)
<p>Noise</p>	<p><u>Impact Assessment:</u></p> <p>A noise impact assessment must be completed for the following reasons:</p> <ul style="list-style-type: none"> ❖ If there are potential noise-sensitive receptors staying within 1,000 m from a proposed industrial activity (SANS 10328:2008) ❖ It is a controlled activity in terms of the NEMA regulations and an ENIA is required, because: ❖ It may cause a disturbing noise that is prohibited in terms of section 18(1) of the Government Notice 579 of 2010; and ❖ It is generally required by the local or district authority as part of the environmental authorization or planning approval in terms of Regulation 2(d) of GN R154 of 1992. <p>In addition, the South African National Standard (SANS) 10328:2008 (Edition 2) specifies the methodology to assess the potential noise impacts on the environment due to a proposed activity that might impact on the environment. This standard also stipulates the minimum requirements to be investigated for Scoping purposes. These minimum requirements are:</p> <ul style="list-style-type: none"> ❖ The purpose of the investigation; ❖ A brief description of the project; ❖ A brief description of the existing environment; ❖ The identification of the noise sources; ❖ The identified noise sources that were not considered and the reasons why they were not investigated; ❖ The identified noise-sensitive developments and the estimated impact on them; ❖ Any assumptions made with regard to the estimated values used;

STUDY	TERMS OF REFERENCE
	<ul style="list-style-type: none"> ❖ An explanation, either by a brief description or by reference, of the methods that were used to estimate the existing and predicted rating levels; ❖ The location of the measurement or calculation points, i.e. a description, sketch or map; ❖ Estimation of the environmental noise impact; ❖ Alternatives that were considered and the results of those that were investigated; ❖ A list of all the interested or affected parties that offered any comments with respect to the environmental noise impact investigation; ❖ A detailed summary of all the comments received from interested or affected parties as well as the procedures and discussions followed to deal with them; ❖ Conclusions that were reached; ❖ Recommendations, i.e. if there could be a significant impact, or if more information is needed, a recommendation that an environmental noise impact assessment be conducted.

10.4 Methodology proposed

The EIA will be undertaken according to the method detailed below. This methodology is compliant with the NEMA 2014 EIA Regulations, as amended in 2017.

Generally, the impact assessment is divided into three parts:

- ❖ **Issue identification** – each specialist will be asked to evaluate the ‘aspects’ arising from the project description and ensure that all issues in their area of expertise have been identified;
- ❖ **Impact definition** – positive and negative impacts associated with these issues (and any others not included) then need to be defined – the definition statement should include the activity (source of impact), aspect and receptor as well as whether the impact is direct, indirect or cumulative. Fatal flaws should also be identified at this stage; and
- ❖ **Impact evaluation** – this is not a purely objective and quantitative exercise. It has a subjective element, often using judgement and values as much as science-based criteria and standards. The need therefore exists to clearly explain how impacts have been interpreted so that others can see the weight attached to different factors and can understand the rationale of the assessment.

To understand the impact evaluation, the sensitivity of the receiving environment, the effect on the receiving environment and the significance of the impacts, these three points above need to be clearly described. The impact assessment methodology that will be used during the EIA Phase is described in Chapter 9.

10.4.1 Assessment of the Duration of significance

Duration of significance of impacts will be assessed using the following criteria, where the duration of time relates to how long that impact will occur for during that phase of the project. Specific durations will be allocated to each project phase in the EIA document where the detailed impact assessment rating will be undertaken. For example, for the operational phase:

- ❖ Short term: Up to 18 months;
- ❖ Medium term: 18 months to 5 years; and
- ❖ Long term: Longer than 5 years.

10.4.2 Stages at which the Competent Authority will be consulted

The DMRE and Commenting Authorities will be consulted at various stages during the EIA process. This includes:

- ❖ Pre-application meetings;
- ❖ Announcement and Scoping Phase; and
- ❖ EIA Phase.

10.4.3 Public Participation to be undertaken during the EIA Phase

Stakeholder engagement during the EIA Phase involves a review of the findings of the impact assessment presented in the EIA Report for public comment which will be made available. Stakeholders will be notified using the following:

- ❖ Media advertisements in the same newspapers used during the Scoping Phase to announce the availability of the EIA Report for public comment;
- ❖ Registered stakeholders will be informed by way of personal letters/ SMS distributed by mail and e-mail in advance of the report being available; and
- ❖ Stakeholders will be invited to attend one of two public open days where the contents of the EIA Report will be presented, and stakeholders will have an opportunity to comment. Details of the meetings will be confirmed closer to the time of the meetings.

Following the availability of the EIA Report, meetings with relevant stakeholders will be undertaken. During the EIA Phase, stakeholders will be invited to comment on the EIA Report in any of the following ways:

- ❖ By raising comments during key stakeholder/ public meetings where the content of the EIA Report will be presented;
- ❖ By completing comments sheets available with the report at public places, and by submitting additional written comments, by email, fax or by telephone, to Kongiwe;
- ❖ The EIA Report will be available for comment for a period of 30 days at public places in the project area, sent to stakeholders who request a copy, and placed on the Kongiwe website.

All comments and issues raised during the 30-day public comment period will be incorporated into the final EIA Report to be submitted to the competent and commenting authorities. Description of the information to be provided to stakeholders includes:

- ❖ The project description (final site layout, all alternatives investigated) and the surrounding baseline environment;
- ❖ Findings from the specialist studies undertaken;
- ❖ Potential biophysical and socio-economic impacts during construction, operations, closure and decommissioning phases of the project;
- ❖ Management/ mitigation measures developed to address the potential impacts;
- ❖ The closure objectives, plan and financial provision; and
- ❖ Details on how stakeholders can comment on the EIA Report.

10.4.4 Tasks to be undertaken during the Environmental Impact Phase

The plan of study for the EIA Report is set out below for review by the authorities and stakeholders. The rationale for the different levels of study for the various environmental components will be taken from the issues raised by stakeholders, the expected severity of impacts and the level of confidence required in

their prediction. The level of information required to develop adequate, practical management and mitigation measures was also a consideration in determining the terms of reference of studies.

Within the EIA Phase, the EIA Report, IWUL and stakeholder engagement activities will run concurrently. During the EIA Phase, the following will be undertaken:

- ❖ Specialists will conduct and complete specialist impact assessments. Workshops will be held with specialists to workshop all potential impacts and integrate specialist studies;
- ❖ Stakeholder engagement materials will be prepared (advertisements, notification letters, site notices), and public open days, focused group meetings and consultation with affected landowners will be undertaken;
- ❖ An EIA Report will be compiled, and management measures and commitments workshopped with Ergo;
- ❖ The EIA Report will be made available for public review and comment; and
- ❖ The revised EIA Report, including public comments and responses, will be submitted to authorities for decision-making.

10.4.5 Mitigation, Management and Monitoring of Identified Impacts

The summary of potential issues identified during the Scoping Phase of the project have been indicated in Section 9.4.5. These impacts require further investigation during the EIA Phase. Section 9 provides an indication of the independent specialist studies, field surveys and assessments that are required to form part of the EIA Phase. The specialist studies will consider the footprint proposed for the Marievale TSF Reclamation project, including all associated infrastructure. With this information, the Proposed Project will be able to fully assess and investigate the feasible and reasonable alternatives proposed in **Chapter 6**.

The possible mitigation measures that could be applied and the level of risk is depicted as follows:

The potential impacts identified for the reclamation of the Proposed Project have been described below. It is important to note that these impacts have not been ground-truthed or rated for significance. The impacts have been described based on what the current status of the sites, as well as existing information assessed at a desktop level. The below impacts, and other identified impacts, will be fully described during the Environmental Impact Assessment (EIA) phase.

Table 10-2: High Level Mitigation Measures for Potential Impacts Identified for the Marievale Project.

ACTIVITY	POTENTIAL IMPACT	STAKEHOLDER COMMENT	MITIGATION MEASURES
CONSTRUCTION			
<p>Construction of infrastructure, temporary infrastructure, pipelines and potential roads.</p> <p>All necessary activities involved with site preparation including site clearing.</p>	<p>Socio-economic:</p> <ul style="list-style-type: none"> ❖ Potential to further contractor opportunities; ❖ Disruption of movement patterns and other displacement impacts; ❖ Project-induced population influx ; ❖ Local & regional economic development; and ❖ Increase in the availability of land <p>The removal of the dumps will result in a certain short term impacts, however, it is envisaged that the long term impact will be positive.</p>		<ul style="list-style-type: none"> ❖ Attempt to extend goods and services from local businesses who are BBBEE compliant and currently contracted by DRDGold’s subsidiaries. ❖ If jobs are available, Ergo should ensure that local communities are made aware of the employment opportunities by means of a structured stakeholder engagement programme. ❖ Develop skills development and training targets for local procurement and include these in contractor management plans; ❖ Successfully complete the removal of all Dumps and the rehabilitation of the remaining footprints to prevent the creation of new/more contaminated areas; and ❖ Assess end-land uses for each individual rehabilitated site. Rehabilitation must be consistent with the relevant end land-use objectives of closure plans
	<p>Air quality: Short term air quality impacts could arise from:</p> <ul style="list-style-type: none"> ❖ Increased particulate matter (PM₁₀ and PM_{2.5}) load in the atmosphere leading to deteriorated air quality. 		<ul style="list-style-type: none"> ❖ Regular, light watering of unpaved roads; ❖ Strict speed control on unpaved roads; ❖ Wet suppression wherever possible, ❖ Wind-speed reduction barriers around construction sites.

ACTIVITY	POTENTIAL IMPACT	STAKEHOLDER COMMENT	MITIGATION MEASURES
	<p>The removal/reclamation of the dumps will result in the reduction of current air quality issues. There is a long term positive impact envisaged.</p> <p>Noise: Construction activities will result in a short term increase in noise levels.</p> <p>Noise impacts are anticipated to only contribute to the surrounding ambient sound levels for a short period of time.</p> <p>Surface Water: Potential pollution from:</p> <ul style="list-style-type: none"> ❖ Increase sedimentation on downstream watercourses due to exposed surfaces resulting in siltation of surface water resources. ❖ Mixing of upstream clean water runoff with dirty water runoff from cleared site areas. ❖ Potential for flooding of pipeline structures at river crossings. ❖ Seepages/spillages of excess rainfall stored on the dumps and the existing paddocks. 		<ul style="list-style-type: none"> ❖ Undertake construction operations during working hours only. ❖ Construction equipment should be properly maintained and switched off when not operational. ❖ Regular planned vehicle services are considered best practise. ❖ Comply with the Gauteng Noise Control Regulations <ul style="list-style-type: none"> ❖ The runoff from the upstream clean water catchment is to be diverted away from the proposed infrastructure. ❖ Infrastructure to be established should be outside any modelled flood lines. ❖ Surface water quality monitoring must be implemented according to a detailed plan. ❖ Dirty water runoff should be captured and contained within the dedicated storage facility such as the existing paddocks. ❖ To minimise seepage and the effects of ponding, water volumes should be contained when necessary, pumped out and re-used where required during the construction phase of the project.

ACTIVITY	POTENTIAL IMPACT	STAKEHOLDER COMMENT	MITIGATION MEASURES
	<p>The removal/reclamation of the dumps will result in the removal of a source of environmental pollution.</p>		
	<p>Groundwater: Decrease in surface and groundwater quality as a result of water.</p> <p>The removal/reclamation of the dumps will result in the removal of a source of environmental pollution.</p>		<ul style="list-style-type: none"> ❖ Surface water management measures must ensure that runoff and dirty water spills are contained; ❖ Implement a detailed groundwater monitoring plan for the project as described in the ground water impact report.
	<p>Wetland: Potential loss and disturbance of wetland and aquatic habitat due to site preparation and clearing of vegetation. There could also be alien plant infestation due to the disturbance.</p> <p>The removal of the dumps will reduce the current risk of AMD seepage, and the removal of the environmental point source in the long term.</p>		<ul style="list-style-type: none"> ❖ Adhere to any prescribed buffers should any be recommended; ❖ Adhere to the recommendations proposed in the surface water and groundwater reports; ❖ Minimise the footprint of any areas disturbed during construction; ❖ Locate all temporary offices, constructors' camps, laydown areas, ablution facilities etc. a minimum of the prescribed distance from any delineated sensitive watercourse/wetland (should wetlands exist). ❖ Develop and implement a construction stormwater management plan prior to the commencement of site clearing activities; ❖ A rehabilitation Plan for disturbed wetland must be in place as prescribed by the wetland specialist study.
	<p>Heritage:</p>		<ul style="list-style-type: none"> ❖ Conduct heritage impact assessment to identify heritage sites within the project area

ACTIVITY	POTENTIAL IMPACT	STAKEHOLDER COMMENT	MITIGATION MEASURES
	<ul style="list-style-type: none"> ❖ Construction activities could cause damage to or destroy any physical heritage resources that may be present in the development footprint areas; ❖ The installation of pipelines and power lines outside of existing servitudes will cause damage to or destroy any physical heritage resources that may be present within the development footprint. 		<ul style="list-style-type: none"> ❖ If any heritage sites are identified, appropriate steps as per the Heritage Resources Act will be undertaken.
	<p>Traffic:</p> <ul style="list-style-type: none"> ❖ Increase in traffic volumes on existing traffic network ❖ Cumulative impact on the road surface condition <p>This impact is expected to be localised and short term.</p>		<ul style="list-style-type: none"> ❖ Traffic signage at site access points ❖ Upgrade gravel roads to tarred roads where required. ❖ Road maintenance, on the public road network, is not a responsibility of Ergo. It is therefore recommended that Ergo engages with the planning authorities regarding future maintenance needs of the surrounding road network.
	<p>Fauna and Flora:</p> <ul style="list-style-type: none"> ❖ Direct loss of floral species/vegetation types and biodiversity. ❖ Direct habitat loss for species that has established on the dumps ❖ Alien vegetation recruitment. 		<ul style="list-style-type: none"> ❖ Minimise disturbance and destruction of areas that are not going to be directly reclaimed. ❖ In the case of plants, if this is not possible relocation permits may be required. ❖ The ecosystem present must be preserved, this includes areas not directly affected by project activities, and can be achieved by limiting project activities to areas where they are essential.

ACTIVITY	POTENTIAL IMPACT	STAKEHOLDER COMMENT	MITIGATION MEASURES
			<ul style="list-style-type: none"> ❖ The risk of habitat fragmentation must be reduced through preservation of natural corridors. ❖ Rehabilitation plans must be initiated during construction to minimise disturbed areas. ❖ Follow any local and national policies and plans regulating and protecting biodiversity in the project area.
OPERATION			
Reclamation of the Marievale TSFs by Hydraulic Mining.	Socio-economic: These are anticipated to be the same as those impacts predicted during the construction phase.		<ul style="list-style-type: none"> ❖ These should be read with what is proposed as mitigation measures for the Construction Phase.
	Air quality: These are anticipated to be the same as those impacts predicted during the construction phase. As the dumps will be hydraulically mined, this could create dust fall out.		<ul style="list-style-type: none"> ❖ Regular, light watering of unpaved roads; ❖ Strict speed control on unpaved roads; ❖ Ensuring that all tailings material is removed to 'red earth' before moving on to the next section (this will reduce the area of fine material exposed to wind erosion);
	Noise: Potential impacts include: <ul style="list-style-type: none"> ❖ Potential for noise disturbance from the operation of the reclamation station and pipelines. 		<ul style="list-style-type: none"> ❖ Comply with the Gauteng Noise Control Regulations; ❖ If complaints are received about the noise from the pump station, then noise barriers could potentially be installed between the pump station and the specific complainant. ❖ Regular service maintenance on the pumps and pipelines to mitigate water hammer noise as well as maintaining a constant flow rate during pumping of

ACTIVITY	POTENTIAL IMPACT	STAKEHOLDER COMMENT	MITIGATION MEASURES
			<p>water and slurry.</p> <ul style="list-style-type: none"> ❖ Machines and vehicles used during reclamation must be serviced to ensure noise suppression mechanisms are effective. ❖ Machines and vehicles should be switched off when not in use.
	<p>Surface Water: Potential impacts include:</p> <ul style="list-style-type: none"> ❖ Overflow of the collection sumps to the downstream surface water resources. ❖ Overflow dirty of the water collected in the dumps during a severe weather event. ❖ Decrease of salt loads reporting to the waterbodies/watercourse in the area due to reduction in discharges 		<ul style="list-style-type: none"> ❖ The pumps located at each of the sumps should be installed within closed off/bunded areas to contain material spillages. ❖ In times of power failure, manual monitoring of the sump associated with the reclamation station should be carried out. ❖ Overflow channels should be constructed so as to contain any spillages that do occur into the pollution control area.
	<p>Groundwater: Seepage from the dumps and existing Paddocks could negatively influence the groundwater quality in the underlying aquifers during the operational phase.</p>		<ul style="list-style-type: none"> ❖ These are expected to be the same as the mitigation measures proposed for the Construction phase. Mitigation would thus include: <ul style="list-style-type: none"> ○ Continuous monitoring of groundwater quality.
	<p>Wetlands and Aquatics: Potential impacts</p>		<ul style="list-style-type: none"> ❖ Adhere to any prescribed buffers, should any be

ACTIVITY	POTENTIAL IMPACT	STAKEHOLDER COMMENT	MITIGATION MEASURES
	<p>include:</p> <ul style="list-style-type: none"> ❖ Continued loss of water input into surrounding watercourses ❖ Pipeline could pollute the watercourse if failure of the pipeline occurs; ❖ Potential for sedimentation and salt loading in the watercourse ❖ Potential to discharge treated water, if required. <p>The pipelines are designed to minimise spillages and failure as far as possible.</p>		<p>recommended;</p> <ul style="list-style-type: none"> ❖ Adhere to the recommendations proposed in the surface water and groundwater reports; ❖ Minimise the footprint of any areas disturbed during construction; ❖ Locate all temporary offices, constructors' camps, laydown areas, ablution facilities etc. a minimum of the prescribed distance from any delineated sensitive watercourse/wetland (should wetlands exist). ❖ Develop and implement a construction stormwater management plan prior to the commencement of site clearing activities; ❖ A rehabilitation plan for disturbed wetland must be in place as prescribed by the wetland specialist study. ❖ Dust suppression for the farm roads will decrease the windblown sediments, this should be read with the Air Quality Impact Assessment during the EIA Phase.
	<p>Heritage: During operation, the sources of risk to heritage resources are primarily restricted to the processes associated with the hydraulic reclamation of the historical dumps.</p> <p>This will be confirmed by a Heritage Impact Assessment.</p>		<ul style="list-style-type: none"> ❖ Conduct heritage impact assessment to identify heritage sites within the project area ❖ If any heritage sites are identified, appropriate steps as per the Heritage Resources Act will be undertaken

ACTIVITY	POTENTIAL IMPACT	STAKEHOLDER COMMENT	MITIGATION MEASURES
	<p>Traffic: These are expected to be the same as for construction.</p>		<ul style="list-style-type: none"> ❖ Mitigation measures for the construction phase apply here
	<p>Fauna and Flora: The major impacts are expected during construction. During operation, the following impact could occur:</p> <ul style="list-style-type: none"> ❖ Disturbance of local biodiversity during operation and routine maintenance. ❖ Potential for windblown particulates to pollute habitat quality. 		<ul style="list-style-type: none"> ❖ Minimise disturbance and destruction of areas that are not going to be directly reclaimed. ❖ Create awareness regarding environmental preservation amongst all personnel involved in the Marievale TSFs reclamation project. ❖ Monitor surrounding vegetation to assess the affect the reclamation activities on the said vegetation.
DECOMMISSIONING			
<p>Completed Reclamation of the Marievale TSFs.</p>	<p>Socio-economic: Potential impacts include:</p> <ul style="list-style-type: none"> ❖ Improved Quality of life. ❖ Increased access to land. ❖ Potential for dependency on the Project for sustaining the local economy. 		<ul style="list-style-type: none"> ❖ Appointment of workforce and investment in the local economy where applicable during rehabilitation.
<p>Rehabilitation to Red Earth and the removal of infrastructure.</p>	<p>Air quality: The final rehabilitation of the dumps will make use of heavy machinery and vehicles similar to the construction phase. The landscaping and transportation of material to and off site will result in fugitive dust</p>		<ul style="list-style-type: none"> ❖ Monitoring dust levels on site, at upwind and downwind locations preferably at discrete receptors (if identified).

ACTIVITY	POTENTIAL IMPACT	STAKEHOLDER COMMENT	MITIGATION MEASURES
	generation. It is anticipated that this will be very short term.		
	Noise: Potential for noise disturbance when rehabilitating. However, with the rehabilitation activities using similar machinery and vehicles than the construction phase, it is expected that the noise impact during this phase will be similar.		❖ Refer to the construction phase mitigation measures.
	<p>Surface Water: Potential impacts include:</p> <ul style="list-style-type: none"> ❖ Water pollution from accidental spillages of decommissioned infrastructure. ❖ Residual water pollution from rehabilitated infrastructure footprints post closure 		<ul style="list-style-type: none"> ❖ Ensure that the pipelines are emptied of all residual material before decommissioning. ❖ Ensure the consideration of the durability and longevity of water management designs, e.g. provision of erosion protection for long-term control of erosion and potential pollution to water resources during decommissioning. ❖ It should be ensured that the potential future impacts from the reclamation of the dumps has been identified. ❖ The final topography should be planned, as far as possible, to be free-draining.
	Groundwater: If Seepage continues, this could negatively influence the groundwater quality in the underlying aquifers		❖ These are expected to be the same as the mitigation measures proposed for the Construction and operation phase.
	Wetlands and Aquatics: Potential impacts		❖ Rehabilitation of the footprints must be done

ACTIVITY	POTENTIAL IMPACT	STAKEHOLDER COMMENT	MITIGATION MEASURES
	include those associated with removing site infrastructure, including pipelines.		<p>according to the Rehabilitation Plan.</p> <ul style="list-style-type: none"> ❖ Pipelines must be flushed clean and rendered safe for decommissioning and removal. ❖ Decommissioning and rehabilitation should be done in the dry season. However, it is recommended that seeding be done with the first rains.
	<p>Heritage: No sources of risk to heritage resources are envisaged for the decommissioning phase of the project at this stage. However, if structures older than 60 or 100 years at the time of decommissioning exists, these may be impacted upon by decommissioning.</p>		<ul style="list-style-type: none"> ❖ Conduct heritage impact assessment to identify heritage sites within the project area ❖ If any heritage sites are identified, appropriate steps as per the Heritage Resources Act will be undertaken
	<p>Traffic: These are expected to be the same as for construction.</p>		<ul style="list-style-type: none"> ❖ Mitigation measures for the construction phase apply here
	<p>Fauna and Flora: No impacts are envisioned during this stage.</p>		<ul style="list-style-type: none"> ❖ Follow a detailed rehabilitation plan. ❖ Minimise disturbed areas. ❖ Follow any local and national policies and plans regulating and protecting biodiversity in the project area.

10.5 Other Information Requirements

10.5.1 Impact on the Socio-economic Conditions of any Directly Affected Parties

A Social Impact Assessment will be undertaken and will be finalised during the EIA Phase. Potential Social impacts have been included in Table 10-2.

10.5.2 Impact on any National Estate referred to in Section 3(2) of the National Heritage Resources Act

Heritage Sensitivity

As a historical mining site, no significant heritage resource sites or places of historical significance that could be impacted by the Proposed Projects are expected at the Marievale TSFs. However, mine dumps are sometimes regarded as landmarks with significant cultural heritage. Heritage sensitivity will further be assessed during the EIA phase.

Palaeontological Sensitivity

The Proposed Project is underlain by the Ecca and Dwyka Groups of the Karoo Supergroup (with high and moderate Palaeontological Sensitivity respectively) (Heritage Auctions, 2019). Rock formations of moderate to high Palaeontological Sensitivity are present in the study area; however, the Proposed Project will not have an impact on the underlying geology. Thus, a palaeontological assessment would not be required.

11 Declaration of Independence

11.1 Undertaking Regarding Correctness of Information

I, **Siphehile Dambuza**, herewith undertake that the information provided in the foregoing report is correct.



Signature of EAP

DATE: 21 October 2019

1.6 Undertaking Regarding Level of Agreement

I, **Siphehile Dambuza**, herewith undertake that the information provided in the foregoing report is correct, and that the level of agreement with interested and Affected Parties and stakeholders has been correctly recorded and reported herein.



Signature of EAP

DATE: 21 October 2019

12 References

- Ambani, A.E. and Annegarn, H., 2015. A reduction in mining and industrial effluents in the Blesbokspruit Ramsar wetland, South Africa: Has the quality of the surface water in the wetland improved? *Water SA*, 41(5), pp.648-659.
- Barnard, H.C. (2000). An explanation of the 1:500 000 General Hydrogeological Maps, Johannesburg 2526. Department of Water Affairs and Forestry.
- “Blesbokspruit - BirdLife South Africa.” *BirdLife South Africa*, 5 June 2018, www.birdlife.org.za/iba-directory/blesbokspruit/. Accessed 16 Sept. 2019.
- Bosch, D.W., 1987. Retreatment of residues and waste rock. *GG Stanley, The extractive metallurgy of gold in South Africa*, 2.
- Beukes, N. & Nelson, J., 1995. Sea-level fluctuation and basin subsidence controls on the setting of auriferous palaeoplacers in the Archaean Witwatersrand Supergroup: a genetic and sequence stratigraphic approach. pp. 860-863.
- Cabanga Environmental, 2016. Scoping Report for The Re-Processing of Tailings, and Associated Expansion of The Kinross DUMPS.
- Cambardella, C.A. and Karlen, D.L., 1999. Spatial analysis of soil fertility parameters. *Precision Agriculture*, 1(1), pp.5-14.
- Carr, A. A management Plan for the Blesbokspruit Ramsar Site: Proposals for the implementation of the consultant’s recommendations and suggestions for the way forward. Gauteng Department of Agriculture, Conservation and Environment, Johannesburg, South Africa. Unpublished document, 1999.
- DEAT. (2006). *Initial State of Air Report*. The National Air Quality Management Programme (NAQMP), Output C.4. Department of Environmental Affairs and Tourism.
- Department of Environmental Affairs (2011). *Hlghveld Priority Area Air Quality Management Plan*. [online] Available at: <http://www.saaqis.org.za/documents/HIGHVELD%20PRIORITY%20AREA%20AQMP.pdf> [Accessed 6 Aug. 2019].
- Department of Water Affairs and Forestry (2002). *Annual Report*. [online] Available at: <http://www.dwa.gov.za/documents/AnnualReports/DWAF%20AR%202002.pdf> [Accessed 6 Aug. 2019].

-
- Department of Water and Sanitation (DHSWS). (2018). *Proposed reserve determination of water resources for the Vaal catchment*. Pretoria, Department of Water and Sanitation.
- Digby Wells, 2015. Final Basic Assessment Report for a Prospecting Right Application for Slimes Dam 7L4, near Nigel, Gauteng Province.
- Driver, A., Nel, J.L., Snaddon, K., Murray, K., Roux, D.J., Hill, L., Swartz, E.R., Manuel, J. & Funke, N. (2011). Implementation Manual for Freshwater Ecosystem Priority Areas. Report to the Water Research Commission.
- DrdGold.com. (2018). *Ergo | Our business | DRDGOLD*. [online] Available at: <http://www.drdgold.com/our-business/Ergo> [Accessed 10 Oct. 2019].
- Durand, J, F. (2012) *The impact of gold mining on the Witwatersrand in the rivers and karst system of Gauteng and North West Province, South Africa*. Journal of African Earth Science; 68 (2012), 24-43.
- Du Plessis, A., Harmse, T., Ahmed, F. Quantifying and Predicting the Water Quality Associated with Land Cover Change: A Case Study of the Blesbok Spruit Catchment, South Africa. *Water* 2014, 6, 2946-2968.
- Du Toit, A.J.I., Du Toit, W.H. and Jonck, F., 1998. Hydrogeological map series of the Republic of South Africa. *Pretoria: Department of Water Affairs and Forestry*.
- Ekurhuleni Metrop[olitan Municipality. 2007. Environmental Management Framework for Ekurhuleni. *Kempton Park: EMM*.
- Environmental Assurance, 2017. Draft Scoping Report for the Proposed Mining of Clay, Sand and Coal.
- Environomics. (2014). *Gauteng Provincial Environmental Management Framework (GPEMF)*. Pretoria, Environomics.
- Eriksson, K.A., Turner B.R. and Vos, R.G., 1979. Evidence of Tidal Processes from the Lower Part of the Witwatersrand Supergroup, South Africa. *Econ. Geol. Res. Unit. Info. Circ., Volume 140*, p17.
- Fenger, J. (2002). Urban air quality. In J. Austin, P. Brimblecombe, & W. Sturges (Eds.), *Air Pollution Science for the 21st Century*. Oxford: Elsevier.
- Ferrar A.A. and Lötter M.C., 2007. Mpumalanga Biodiversity Conservation Plan Handbook. Mpumalanga Tourism & Parks Agency, Nelspruit.
- Gauteng Department of Agriculture and Rural Development, 2012. Gauteng Mine Residue Areas Strategy Final Report.
- Gauteng Department of Agriculture and Rural Development - GDARD. (2009). Conceptual study on

reclamation of mine residue areas for development purposes. (Authors: P.W. van Deventer, A.M. Hattingh, F. Botha, F. du Plessis) Prepared by Northwest University for GDARD, Johannesburg, November 2009, pp. 1-103.

Gauteng Department of Agriculture and Rural Development (2018). *Gauteng Provincial Environmental Management Framework*. [online] pp.201-202. Available at: https://sfiler.environment.gov.za:8443/ssf/s/readFile/folderEntry/20461/8afbc1c761d660120161e6c9919f00a2/1519994473000/last/EMF_1%20and%205_260917.png [Accessed 1 Aug. 2019].

Gauteng Department of Agriculture and Rural Development (2014). *Gauteng Provincial Environmental Management Framework*.

GDARD (2011). Feasibility Study on Reclamation of mine Residue Areas for Development Purposes: Phase II Strategy and Implementation Plan, Technical Report, December 2011, 788/06/01/2011, Final, 90 pp & Appendices A-I. [Prepared by Umvoto Africa (Chris Hartnady, Andiswa Mlisa, Oliver Barker, Amanda Fitschen, Harold Annegarn) in association with TouchStone Resources (Anthony Turton), technical editing by R Taviv, GDARD].

GDARD. (2014b). Technical Report for the Gauteng Conservation Plan (Gauteng C-Plan v3.3). Gauteng Department of Agriculture and Rural Development: Nature Conservation Directorate. 60 pages. Pretoria.

Goldfields (2018). *Gold Fields: Mineral Resource and Mineral Reserve Overview 2011 - 4. Geological setting and mineralisation*. [online] Goldfields.com. Available at: https://www.goldfields.com/reports/ar_dec_2011/minerals/ops_sa_kloof_geo.php [Accessed 10 Oct. 2018].

Haukos, D.A., Smith, L.M. The Importance of Playa Wetlands to Biodiversity of the Southern High Plains. *Landsc. Urban Plan.* 1994, 28, 83-98.

Harrison, R. M., and Van Grieken, R. E. (1998). *Atmospheric Aerosols*. Great Britain: John Wiley.

Harrison, P., and Zack, T. (2012) *The power of mining: the fall of gold and the rise of Johannesburg*. *Journal of Contemporary African Studies*; *Journal of Contemporary African Studies*; 30,(4). 551-570.

Held, G. (1996). *Air Pollution and its Impacts on the South African Highveld*. (G. Held, B. J. Gore, A. D. Surridge, G. R. Tosen, & R. D. Walmsley, Eds.) Environmental Scientific Association.

iap2.org. (2017). *2006 Conference Proceedings - International Association for Public Participation*. [online] Available at: <https://www.iap2.org/page/170> [Accessed 13 Oct. 2019].

Ilunga, M., 2017. Assessing catchment resilience using entropy associated with mean annual runoff for the Upper Vaal catchment in South Africa. *Entropy*, 19(5), p.147.

-
- Jordaan, A., 2014. Centre for Environmental Rights and Lawyers for Human Rights. *Mining and your Community: Know your Environmental Rights*. Pg 1-32.
- Keddy, P.A., Fraser, L.H., Solomeshch, A.I., Junk, W.J., Campbell, D.R., Arroyo, M.T., Alho, C.J. Wet and Wonderful: The World's Largest Wetlands Are Conservation Priorities. *Bioscience* 2009, 59, 39-51.
- Kotze, D.C., Marneweck, G.C., Batchelor, A.L., Lindley, D.C. & Collins, N.B. (2009). A Technique for rapidly assessing ecosystem services supplied by wetlands. Mondi Wetland Project.
- IUCN. (2017). The IUCN Red List of Threatened Species. www.iucnredlist.org (Accessed: November 2017).
- Manzi, M.S., Hein, K.A., King, N. and Durrheim, R.J., 2013. Neoproterozoic tectonic history of the Witwatersrand Basin and Ventersdorp Supergroup: New constraints from high-resolution 3D seismic reflection data. *Tectonophysics*, 590, pp.94-105.
- McKay, Tracey & Ahmed, A & Welsh Ndlopfu, Vukosi. (2018). The Blesbokspruit wetland, South Africa: A high altitude wetland under threat.
- Mucina, L. and Rutherford, M.C. (eds) 2006. The vegetation of South Africa, Lesotho and Swaziland. *Strelitzia* 19. South African National Biodiversity Institute, Pretoria.
- Nel, J.L., Roux, D.J., Maree, G., Kleynhans, C.J., Moolman, J., Reyers, B., Rouget, M. and Cowling, R.M., 2007. Rivers in peril inside and outside protected areas: a systematic approach to conservation assessment of river ecosystems. *Diversity and Distributions*, 13(3), pp.341-352.
- Phaleng, D.M. 2009 Anthropogenic Impacts on the Integrity of the Blesbokspruit Catchment: A Case Study of Surface Water Pollution. University of South Africa, Pretoria, South Africa 2009.
- Pfab, M.F., Compaan, P., Whittington-Jones, C.A., Engelbrecht, I., Dumalisile, L., Mills, L., West, S.D., Muller, J., Masterson, G.P.R., Nevhultalu, L.S., Holneem S.D., and Hoare, D.B. (2017). The Gauteng Conservation Plan: Planning for biodiversity in a rapidly urbanising province. *Bothalia – African Biodiversity and Conservation* 47 (1), pp 1-16.
- Pretorius, D.A., 1963. *The geology of the Central Rand goldfield*. University of the Witwatersrand, Economic Geology Research Unit.
- Pretorius, D., 1974. The nature of the Witwatersrand Gold-Uranium Deposits. *Econ. Geol. Res. Unit Info. Circ.* 86, p. 50.
- Principles and Guidelines for Social Impact Assessment. *Impact Assessment and Project Appraisal*, 21(3), 231-250.
- SAAQIS. (2018). *Air Quality Monitoring*. Retrieved from South African Air Quality Information System:

<http://www.saaqis.org.za/>

SABAP2 (Bird Atlas Project). (2017). <http://vmus.adu.org.za/>. (Accessed: June 2018).

Schwegler, F. (2006). Air quality management: a mining perspective. *WIT Transactions on Ecology and the Environment*, 86.

South African National Standards (SANS), 2011. South African National Standard, Ambient Air Quality – Limits for Common Pollutants. SANS 1929:2011. Standards South Africa, Pretoria.

Studio Republic, 2014. *DRDGold Process* [Online Video] Available at: <https://www.youtube.com/watch?v=-dqj10magrk> [Accessed 6 October 2018].

Tailings.info. (2018). *Tailings.info* ▪ *Hydraulic Mining of Tailings*. [online] Available at: <http://www.tailings.info/technical/hydraulic.htm> [Accessed 10 Oct. 2018].

Tshikovha Green and Climate Change Advocates, 2017. Mining And Processing of Gold Mine Dumps on Portion 1 of Farm Modderfontein 76 Ir In The Magisterial District Of Benoni, Ekurhuleni Metropolitan Municipality, Gauteng Province. Final Report.

SAAQIS. (2018). *Air Quality Monitoring*. Retrieved from South African Air Quality Information System: <http://www.saaqis.org.za/>

Tucker, R.F., Viljoen, R.P. and Viljoen, M.J., 2016. A review of the Witwatersrand basin—the world’s greatest goldfield. *Episodes*, 39(2), pp.105-134.

USGS. (2001). *Gold*. Available from: <https://pubs.usgs.gov/gip/gold/>.

USGS. (2018). *National Minerals information Center, Gold Statistics and Information*. Available from: <https://www.usgs.gov/centers/nmic/gold-statistics-and-information>.

Vegter, J.R. (1995). *Groundwater resources of the Republic of South Africa. Sheet1 and 2*. World Health Organisation (WHO).

Viljoen, M.J. and Reimold, W.U., 2002. *An Introduction to South Africa’s Geological Heritage. Mintek in association with the Geological Society of South Africa, Randburg*.

WHO. (2000). *WHO Air Quality Guidelines for Europe, 2nd edition*. WHO Regional Office for Europe. Copenhagen, Denmark: World Health Organization Regional Publications, European Series, No 91.

Winde F, Geipel G, Espina C, Schüz J. Human exposure to uranium in South African gold mining areas using barber-based hair sampling *PLoS One*, Published online 27 June 2019; <https://doi.org/10.1371/journal.pone.0219059>

World Wildlife Fund. (2018). *Highveld grasslands | Ecoregions | WWF*. [online] Available at: <https://www.worldwildlife.org/ecoregions/at1009> [Accessed 11 Oct. 2018].



APPENDIX A:
EIA Project Team CV's

Curriculum Vitae – Bradly Thornton

Chief Executive Officer



Professional Registration

- South African Council for Natural Science Professionals (SACNASP) - Pending

Qualifications

- Management Development Program, University of Stellenbosch Business School Executive Development, 2012
- B.Sc. Hons Environmental Management, RAU, 2004
- B.Sc. Geography & Geology, RAU, 2003

Languages

- English – Fluent
- Afrikaans – Average

Countries Worked in

- South Africa
- Botswana
- Namibia
- Malawi
- Democratic Republic of Congo
- Sierra Leone

Bradly is the CEO of Kongiwe Environmental (Pty) Ltd. He has 13 years' work experience in Environmental Management and Geographic Information Systems (GIS). His roles include the executive management responsibilities of Kongiwe Environmental, project management of client projects, client and business development, marketing and quality assurance and corporate compliance.

His skills include:

- ❖ Proven track record in project management of environmental projects to required quality standards, timeframes and budgets.
- ❖ Executive experience in business management and business development.
- ❖ Exceptional client relationship and managerial skills.
- ❖ Proactive leader and team player, flexible and versatile.
- ❖ 13 Years work experience in Environmental Management and Geographic Information Systems (GIS).

PROJECT EXPERIENCE

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
Environmental Authorisations							
Ergo Mining: Reclamation and Reprocessing of the Valley Silts	2019-current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	Environmental Authorisations and IWULA	Project Manager	Project management of EIA process	R1 381 290.00
Ergo Mining: Reclamation and Reprocessing of the Soweto Cluster	2019-current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	Environmental Authorisations and IWULA	Project Manager	Project management of EIA process	R2 197 440.00
Ergo Mining: Reclamation and Reprocessing of the Marievale Dumps	2019-current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	Environmental Authorisations and IWULA	Project Manager	Project management of EIA process	R 1 508 646.36
Ergo Mining: Reclamation and Reprocessing of the City Deep Dumps	2018-current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	Environmental Authorisations and IWULA	Project Manager	Project management of EIA process	R 1 323 455.55
Ergo Mining: Reclamation and Reprocessing of the Rooikraal Tailings Storage Facility	2018-current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	Environmental Authorisations and IWULA	Project Manager	Project management of EIA process	R 1 194 713.35
Leslie 1 Project	2017-current	Mpumalanga Province, South Africa	Glencore Operations South Africa (Pty) Ltd	Environmental authorisation process for a coal mining project near Leandra	Project Manager	Project management of EIA process	R 2 900 944.60

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
Umsimbithi eMakhazeni Mining Project	2017- current	Mpumalanga, South Africa	Umsimbithi Mining (Pty) Ltd	Environmental Authorisations for the proposed Umsimbithi Belfast Project	Project Director	Project management of EIA process	R4 155 413.00
Lephalale Coal and Power Project	2017- current	Limpopo, South Africa	Dedicoal (Pty) Ltd	Environmental Authorisations for the proposed Lephalale Coal & Power Project	Project Director	Project management of EIA process	R3 549 331.00
EIA for Road Re-Alignment at Tweefontein Phase 2	2015	Mpumalanga, South Africa	Glencore	EIA for Road Re-Alignment at Tweefontein Phase 2	Project Director	Project management of EIA process	Not disclosed
Songwe Hill Rare Earth Project	2014	Malawi	Mkango Resources Ltd.	Songwe Hill Rare Earth Project ESHIA and input for Prefeasibility Report for stock exchange.	Project Manager	Project management of EIA process	Not disclosed
Klipspruit Mine Extensions: Environmental Authorisations	2014	Mpumalanga, South Africa	South 32 (BHP Billiton Energy Coal South Africa)	Klipspruit Mine Extensions: Environmental Authorisations	Project Manager	Project management of EIA process	Not disclosed
EIA for proposed Solar Power Plants	2012	Western & Northern Cape, South Africa	BSG Resources Ltd / Orlight SA (Pty) Ltd.	EIA for proposed Solar Power Plants	Consultant	Supervision of Visual Impact Assessments as specialist study component of the EIA, Input into EIA and GIS	Not disclosed

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
ERGO EMPR upgrade	2008	Gauteng, South Africa	Crown Gold Recoveries / DRD Gold / ERGO Mining	ERGO EMPR upgrade	Project Manager	Project management of EMPR upgrade for Ergo gold processing plant	Not disclosed
EMPR amendment for Mimosa Colliery	2008	Mpumalanga, South Africa	Northern Coal	EMPR amendment for Mimosa Colliery	Project Manager	Project Management of EMPR amendment	Not disclosed
Closure Costing							
Annual Closure Cost Assessment	2013	Mpumalanga, South Africa	Glencore	Annual Closure Cost Assessment	Project Director		Not disclosed
Environmental Control Officer							
Raising of Tzaneen Dam	2016 - 2017	Limpopo Province, South Africa	Lepelle Northern Water Board	Raising of Tzaneen Dam wall to increase the dam's storage capacity	Environmental Control Officer	Environmental Officer duties which include environmental compliance site visits, managing of contractors and their procedures as per the EMP	R1 891 234.14
Auditing							
GOSA 2019 Audits	2019	Mpumalanga, South Africa	Glencore Operations South Africa (Pty) Ltd	External audits of 60 Environmental Authorisations for the Coal operations in Mpumalanga	Project Director	Project Director and Lead Auditor	R1 534 906.80

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
GOSA 2018 Audits	2018	Mpumalanga, South Africa	Glencore Operations South Africa (Pty) Ltd	External audits of 47 Environmental Authorisations for the Coal operations in Mpumalanga	Project Director	Project Director and Lead Auditor	R1 421 210.00
GOSA 2017 Audits	2017	Mpumalanga, South Africa	Glencore Operations South Africa (Pty) Ltd	External audits of 47 Environmental Authorisations for the Coal operations in Mpumalanga	Project Director	Project Director and Lead Auditor	R1 556 720.00
Environmental Audit	2015	Mpumalanga, South Africa	Glencore Operations South Africa (Pty) Ltd	Environmental Audit	Project Director	Project Director and Lead Auditor	Not disclosed
Due Diligence							
Environmental Liability	2014	Mpumalanga, South Africa	Xstract Mining Consultants	Environmental liability statement for Mineral Experts Report in support of demerger of an international mining company.	Project Manager		Not disclosed
GIS							
Acid Mine Drainage project - Witwatersrand	2012	Gauteng, Johannesburg	TCTA	Acid Mine Drainage project - Witwatersrand	GIS Consultant	Supervision of GIS	Not disclosed
Environmental services for Ivanplats mine.	2011	Limpopo, South Africa	Ivanplats	Environmental work for Ivanplats mine.	GIS Consultant	Supervision of GIS on various projects	Not disclosed

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
Nzoro Hydropower Stations	2011	Democratic Republic of Congo	Randgold Resources	Nzoro Hydropower Stations	GIS Consultant	Supervision of GIS.	Not disclosed
Hyperspectral Remote Sensing	2011	Limpopo, South Africa	Xstrata Coal South Africa	Hyperspectral Remote Sensing	Project Manager	Project management of remote sensing project to identify alien vegetation, hydrocarbon spillages and assessment of vegetation health.	Not disclosed
Site Selection: Matla Coal	2010	Mpumalanga, South Africa	Exxaro Resources	Site Selection: Matla Coal	GIS Consultant	GIS: Site selection of suitable location for new brine ponds	Not disclosed
Koidu Mine Expansion	2010	Sierra Leone	Koidu Holdings	EIA for Koidu mine expansion	GIS Consultant	GIS support	Not disclosed
Kibali Mining Project	2010	Democratic Republic of Congo	Randgold Resources	EIA for Kibali Mining Project	GIS Consultant	GIS support	Not disclosed
Biodiversity Land Management Plans	2010	Mpumalanga, South Africa	Xstrata Coal South Africa	Biodiversity Land Management Plans	GIS Consultant	GIS supervision in development of GIS based biodiversity management plans	Not disclosed
Thermal Remote Sensing	2010	Mpumalanga, South Africa	Xstrata Coal South Africa	Thermal Remote Sensing	Project Manager	Project management, thermal remote sensing for detection of spontaneous	Not disclosed

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
						combustion on coal discard dumps	
Khutala Lightning strike risk analysis	2009	Mpumalanga, South Africa	BHP Billiton Energy Coal South Africa	Khutala Lightning strike risk analysis	GIS Consultant	GIS based lightning risk analysis	Not disclosed
Mmamabula Energy Projects	2009	Botswana	CIC Resources	Mmamabula Energy Projects	GIS Consultant	Supervision of GIS and technical inputs	Not disclosed
EIA for Valencia Mine	2008	Namibia	Valencia Uranium	EIA for Valencia Mine	GIS Consultant	GIS and Visual Impact Assessment	Not disclosed

Curriculum Vitae – Michael Hennessy

Associate Legal Consultant



Qualifications

- B.A. (English Literature and Philosophy), University of Natal, 1973
- LL.B., University of Natal, 1975
- B.Com. (Hons.), University of South Africa, 1984

Languages

- English – Fluent
- Afrikaans - Fluent
- Dutch – Conversational

Countries Worked in

- South Africa
- UK (4 years)
- Work experience in Russia, China, Colombia, Japan, South Korea and various European countries

Michael has had more than 35 years' experience in the Resources industry, including coal and oil. He has run his own consultancy focussed on mining title and project development. His particular expertise lies in Mining and Environmental Law, in particular, the application of mining and environmental legislation to new prospecting and mining projects.

His skills include:

- ❖ Applications for Prospecting and Mining Rights;
- ❖ Environmental Authorisations;
- ❖ Legal Opinions on Mining and associated Projects; and
- ❖ Gap analyses and Due Diligences.

PROJECT EXPERIENCE (Since 2011)

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
Prospecting Rights							
Gold tailings retreatment	Various applications between 2011 - 2015	Gauteng Province, South Africa	DRDGold	Applications for prospecting rights on tailings dams	Project Manager	Compilation of all documentation, submission of applications	+/- R2 million
Agnes Gold Mine	2011	Mpumalanga Province, South Africa	Galaxy Mining Resources	Application for two prospecting rights on greenfields areas	Project Manager	Compilation of all documentation, submission of applications	R0.5 million
Temo Coal	2013	Limpopo Province, South Africa	Namane Resources	Application for two prospecting rights on greenfields areas	Project Manager	Compilation of all documentation, submission of applications	R 0.8 million
Platinum	2015	Limpopo Province, South Africa	Anglo Platinum	Application for renewal of three prospecting rights	Project Manager	Compilation of all documentation, submission of applications	R0.5 million
Gold	2014	Gauteng Province, South Africa	DRDGold	Renewal of Prospecting Right	Project support	Submission of renewal application	R0.1 million
Mining Rights							
Platinum project	2011 - 2013	Limpopo Province, South Africa	Plat Reef Resources	Application for mining rights on greenfields area	Project support	Compilation of all documentation, submission of applications	R2.0 million

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
Coal mine development	2011	Limpopo Province, South Africa	Namane Resources	Application for mining rights on Greenfields area	Project Support	Compilation of all documentation, submission of applications	R0.750 million
Coal mine development	2011	Limpopo Province, South Africa	Coal of Africa	Mining work programme	Project support		
Gold mine project	2015	Mpumalanga Province, South Africa	Galaxy Gold	Application for mining rights to re-develop historic gold mine	Project support	Compilation of all documentation, submission of applications	R1.5 million
Coal mine development	2011	Limpopo Province, South Africa	Resgen Resources	Application for mining rights on Greenfields area	Project Support	Compilation of all documentation, submission of applications	R1.0 million
Sand mine	2014	Free State Province, South Africa	Copper Sunset Sand	Application for mining right	Project Manager	Compilation of all documentation, submission of applications	R0.5 million
Chrome and Platinum Project	2015	Limpopo Province, South Africa	VMIC	Application for mining rights on Greenfields area	Project Support	Compilation of all documentation, submission of applications	R2.0 million
Coal mine	2016	Gauteng Province, South Africa	Oakleaf	Application for mining rights on Greenfields area	Project Support	Compilation of all documentation, submission of applications	R1.0 million
Environmental Authorisations							
Ergo Mining: Reclamation and	2018-current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	Environmental Authorisations and IWULA	Project support	Review of Specialist reports and final EIA/EMP	R 1 508 646.36

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
Reprocessing of the Marievale Dumps							
Ergo Mining: Reclamation and Reprocessing of the City Deep Dumps	2018-current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	Environmental Authorisations and IWULA	Project support	Review of Specialist reports and final EIA/EMP	R 1 323 455.55
Ergo Mining: Reclamation and Reprocessing of the Rooikraal Tailings Storage Facility	2018-current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	Environmental Authorisations and IWULA	Project support	Review of Specialist reports and final EIA/EMP	R 1 194 713.35
Leslie 1 Project	2017-current	Mpumalanga Province, South Africa	Glencore Operation (Pty) Ltd	Environmental authorisation process for a coal mining project near Leandra	Project support	Review of Specialist reports and final EIA/EMP	R 2 900 944.60
Umsimbithi eMakhazeni Mining Project	2017-current	Mpumalanga Province, South Africa	Umsimbithi Mining (Pty) Ltd	Environmental authorisation process for a coal mining project near Belfast	Project support	Review of Specialist reports and final EIA/EMP	R4 155 413.00
Lephalale Coal and Power Project	2017-current	Limpopo Province, South Africa	Dedicoal (Pty) Ltd	Environmental authorisation process for the Lephalale Coal and Power Project	Project support	Review of Specialist reports and final EIA/EMP	R3 549 331.00
Agnes Gold mine	2016	Mpumalanga Province, South Africa	Galaxy Gold	Amended EIA/EMP for existing gold mine	Project support	Review of Specialist reports and final EIA/EMP	R1.5 million

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
			Oak Leaf	Full EIA/EMP for new mine	Project support	Review of Specialist reports and final EIA/EMP	R1.5 million
Lead/zinc mine	2015	Northern Cape Province, South Africa	Vedanta	Full EIA/EMP for new mine	Project support	Review of Specialist reports and final EIA/EMP	R1.8 million
Mawetse Gold project	2016	Limpopo Province, South Africa	Mawetse Mining	Full EIA/EMP for new mine	Project Manager	Co-ordinate specialist reports, Review final EMP	R0.5 million
Sand mine	2016	Free State Province, South Africa	Copper Sunset Sand	Full EIA/EMP for extension to mining right area	Project support	Review final EMP	R0.5 million
Legal Opinions							
Rooikat	2013	Northern Cape Province, South Africa	Advisian	Opinion on application of MPRDA for mineral extraction	Project Manager	Draft and submit Legal Opinion on application of MPRDA for mineral extraction	R0.1 million
Waste licence	2016	Free State Province, South Africa	Muva Group	Opinion on application of NEMA and Listed Activities	Project Manager	Draft and submit Legal Opinion on application of NEMA	R0.1 million
Mining claims	2016	Limpopo Province, South Africa	Triangle City	Opinion on application of MPRDA to historic claims and tailings	Project Manager	Draft and submit Legal Opinion	R0.12 million
NEMA amendments	2014	Gauteng Province	Digby Wells	Analysis of 2014 NEMA Regulations	Project Manager	Draft and submit Legal Opinion	-

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
Application of NEMA Regulations to a powerline	2015	Gauteng Province	TCTA	Opinion on whether NEMA Regulations apply to particular power line	Project Manager	Draft and submit Legal Opinion	R0.1 million
Variation of mining right	2015	Limpopo Province South Africa	Resgen Resources	Advice on application of Section 102 of MPRDA	Project Manager	Draft and submit Legal Opinion	R0.1 million
Auditing							
GOSA 2018 Audits	2018	Mpumalanga Province South Africa	Glencore Operations South Africa (Pty) Ltd	External audits of 47 Environmental Authorisations for the Coal operations in Mpumalanga	Project support	Report review	R1 421 210.00
GOSA 2017 Glencore	2017	Mpumalanga Province South Africa	Glencore Operations South Africa (Pty) Ltd	External audits of 47 Environmental Authorisations for the Coal operations in Mpumalanga	Project support	Report review	R1 556 720.00
Coal mines	2014, 2015	Mpumalanga Province South Africa	Total Coal	Audit of compliance with permits and licences	Project support	Report review	R0.5 million
Power line	2016	Mpumalanga Province South Africa	Eskom	Audit compliance with EIA and water use licence	Project support	Compile EIA Report, review consolidated report	R0.1 million
Coal mines	2015, 2016	Mpumalanga Province South Africa	Exxaro	Audit of compliance with	Project support	Report review	R0.5 million

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
				permits and licences			
Coal mines	2014, 2015	Mpumalanga Province South Africa	Glencore	Audit of compliance with permits and licences	Project support	Report review	R0.5 million
Due Diligence							
Mining and environmental authorisations	2017	International project	Advisian	International project	Legal Adviser	Undertake legislative and regulatory review	Not disclosed
Mining and environmental authorisations	2017	International project	Advisian	International project	Legal Adviser	Undertake legislative and regulatory review	Not disclosed
Coal	2014	Limpopo Province, South Africa	Dedicoal	Verification of prospecting rights	Legal Adviser on mining title	Undertake review on validity of prospecting rights	Not disclosed

Curriculum Vitae – Gerlinde Wilreker

Technical Director



Professional Registration

- South African Council for Natural Science Professionals (SACNASP) - 2009

Qualifications

- Diploma Environmental Law, University of Johannesburg, 2005
- M.Sc. Environmental Management, RAU, 2004
- B.Sc. Hons Environmental Management, RAU, 2002
- B.Sc. Earth Sciences, RAU, 2001

Languages

- English – Fluent
- French – Fluent
- German – Fluent
- Afrikaans – Average

Countries Worked in

- South Africa
- Democratic Republic of Congo
- Mauritania

Gerlinde is an Environmental Consultant with over twelve years' work experience, predominantly in the mining industry. Her practical experience in the mining and construction industry has given her a depth of knowledge regarding project processes from pre-feasibility phases through to implementation. She is adept at working in different contexts, and problem-solving with her team to meet client needs. She has particular expertise in relation to Environmental Authorisation Processes in terms of the South African legal regime.

Her skills include:

- ❖ Project Management;
- ❖ Environmental Authorisations;
- ❖ Environmental Auditing;
- ❖ Environmental Control Officer; and
- ❖ Gap analyses and Due Diligences.

PROJECT EXPERIENCE

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
Environmental Authorisations							
Ergo Mining: Reclamation and Reprocessing of the Marievale Dumps	2018-current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	Environmental Authorisations and IWULA	Principal Environmental Consultant and High-Level Project Management	EAP, IWULA	R 1 508 646.36
Ergo Mining: Reclamation and Reprocessing of the City Deep Dumps	2018-current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	Environmental Authorisations and IWULA	Principal Environmental Consultant and High-Level Project Management	EAP, IWULA	R 1 323 455.55
Ergo Mining: Reclamation and Reprocessing of the Rooikraal Tailings Storage Facility	2018-current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	Environmental Authorisations and IWULA	Principal Environmental Consultant and High-Level Project Management	EAP, IWULA	R 1 194 713.35
Leslie 1 Project	2017-current	Mpumalanga Province, South Africa	Glencore Operation (Pty) Ltd	Environmental authorisation process for a coal mining project near Leandra	Project Manager	EAP, Project Manager. Managing specialists undertaking the specialist studies for the Environmental Impact Assessment	R 2 900 944.60
Umsimbithi eMakhazeni Mining Project	2017-current	Mpumalanga Province, South Africa	Umsimbithi Mining (Pty) Ltd	Environmental authorisation process for a coal	Project Manager	EAP, Project Manager. Managing	R4 155 413.00

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
				mining project near Belfast		specialists undertaking the specialist studies for the Environmental Impact Assessment	
Lephalale Coal and Power Project	2017-current	Limpopo Province, South Africa	Dedicoal (Pty) Ltd	Environmental authorisation process for the Lephalale Coal and Power Project	Project Manager	EAP, Project Manager. Managing specialists undertaking the specialist studies for the Environmental Impact Assessment	R3 549 331.00
Exxaro Coal Underground Coal Gasification Project	October 2015 – May 2016:	Limpopo Province, South Africa	Exxaro Coal	Environmental Impact Assessment process for an underground coal gasification project	Project Manager	Project Manager. Managing specialists undertaking the specialist studies for the Environmental Impact Assessment	R5 million
Fumani Gold Mine	2013 -2015	Limpopo Province, South Africa	Corridor Mining Resources	Environmental Impact Assessment process for the proposed Fumani gold mine	Project Manager	Managing consultants undertaking the EIA for the proposed Fumani gold mine	R2 million
Kambove Copper Processing Plant	2013	Democratic Republic of Congo	Gécamines	Environmental, Social and Health Impact study	Project Manager	Managing consultants undertaking the	R 20 million

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
				(ESHIA) for the processing plant and tailings facilities		Environmental, Social and Health Impact study (ESHIA)	
PV Pant Authorisation	2012	KwaZulu Natal Province, South Africa	GX Energie	Basic assessment process for a PV plant.	Environmental Consulting	Assisting with BA compilation and public participation	Not disclosed
Pering Mine	2009 - 2011	Northern Cape Province, South Africa	Minéro	Environmental Impact Assessment process for the proposed Reivilo lead and Zinc mine	Environmental Consulting	Compiling Scoping and EIA reports, public participation	Not disclosed
Exxaro Coal Belfast Project	2008 -2011	Mpumalanga Province, South Africa	Exxaro Coal	Environmental authorisation process for the proposed Belfast Coal Mine	Environmental Consulting	Compiling Scoping and EIA reports, public participation	Not disclosed
Closure Costing							
Ergo Mining: Reclamation and Reprocessing of the Marievale Dumps	2018-current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	Environmental Authorisations and IWULA	Principal Environmental Consultant and High-Level Project Management	Closure and Rehabilitation costing	R50 000.00
Ergo Mining: Reclamation and Reprocessing of the City Deep Dumps	2018-current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	Environmental Authorisations and IWULA	Principal Environmental Consultant and High-Level Project Management	Closure and Rehabilitation costing	R50 000.00

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
Ergo Mining: Reclamation and Reprocessing of the Rooikraal Tailings Storage Facility	2018-current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	Environmental Authorisations and IWULA	Principal Environmental Consultant and High-Level Project Management	Closure and Rehabilitation costing	R50 000.00
Total Coal Mine Closure Application	July 2015 – June 2016	KwaZulu-Natal, South Africa	Total Coal	Mine closure application and Basic Assessment for the closure of the Steincoalspruit Coal Mine	Project Manager	Project Manager, review of mine closure application document and Basic Assessment, client and authority liaison	R 500 000.00
Diesel Storage Facilities	2011	South Africa	Basil Read	EMP and closure costings for the installations of various diesel storage facilities throughout South Africa.	Project Manager	EMP and closure costing	Not disclosed
Environmental Control Officer							
Tzaneen Dam - Environmental Control Officer	2017 – 2018	Tzaneen, Limpopo Province, South Africa	Department of Water & Sanitation	Raising of the Tzaneen dam Wall	Environmental Control Officer	Monthly monitoring of the construction activities and reporting	R1 891 234.14
Black Rock Expansion Project - Environmental Control Officer	2013 – 2015	Northern Cape Province, South Africa	Assmang Black Rock	Black Rock Expansion Project	Environmental Control Officer	Environmental Officer duties which include environmental compliance site	Not disclosed

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
						visits, managing of contractors and their procedures as per client's EMS	
Sishen Ramp-Up Projects – Bucket & Bowl, Life of Mine and various Housing Projects	2011 – 2013	Northern Cape Province, South Africa	Kumba Iron Ore	Bucket & Bowl, Life of Mine and various Housing Projects	Environmental Control Officer	Environmental Officer duties which include environmental compliance site visits, managing of contractors and their procedures as per client's EMS	Not disclosed
Sishen Ramp-Up Projects – Diesel Tanks 5 & 6, Aldag 1 extension, Lakutshona and Sesheng Housing Projects	2011 – 2013	Northern Cape Province, South Africa	Kumba Iron Ore	Diesel Tanks 5 & 6, Aldag 1 extension, Lakutshona and Sesheng Housing Projects	Environmental Control Officer	Environmental Officer duties which include environmental compliance site visits, managing of contractors and their procedures as per client's EMS	Not disclosed
Auditing							
GOSA 2019 Audits	2019	Mpumalanga Province South Africa	Glencore Operations South Africa (Pty) Ltd	External audits of 60 Environmental Authorisations for the Coal operations in Mpumalanga	Environmental auditor	External Audit	R 1 534 906.80

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
GOSA 2018 Audits	2018	Mpumalanga Province South Africa	Glencore Operations South Africa (Pty) Ltd	External audits of 47 Environmental Authorisations for the Coal operations in Mpumalanga	Environmental auditor	External Audit	R1 421 210.00
GOSA 2017 Glencore	2017	Mpumalanga Province South Africa	Glencore Operations South Africa (Pty) Ltd	External audits of 47 Environmental Authorisations for the Coal operations in Mpumalanga	Environmental auditor	External Audit	R1 556 720.00
Cronimet Legal Compliance	2012-2013	Limpopo Province, South Africa	Cronimet	Legal compliance auditing of Cronimet mine	Environmental auditor	Monthly environmental auditing of chrome mine facilities	Not disclosed
PPC Legal Compliance	2005 - 2008	South Africa	PPC	Legal compliance auditing of various quarries across South Africa	Environmental auditor	Monthly environmental auditing of chrome mine facilities	Not disclosed
Due Diligence							
Zonnebloem Complex	2018 – current	Mpumalanga Province South Africa	Glencore Operation (Pty) Ltd	Gap Analysis	Principal Environmental Consultant	Environmental Legal Gap Analysis	R72 540.00
Eastplats Due Diligence	2014	North West Province, South Africa	Eastplats	An environmental legislative overview with an associated environmental site assessment, which in turn assessed the availability and status of the	Environmental Consultant	Compiling environmental due diligence	Not disclosed

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
				various environmental authorizations, permits and licenses required for legislative compliance at the Eastern Plat Asset.			
PTM Waterberg Project Concept Study	2013	Limpop Province, South Africa	Platinum Group Metals	Concept study for Platinum mine in the Waterberg.	Environmental Consultant	Environmental input into the Preliminary Economic Assessment	Not disclosed

Curriculum Vitae – Ashleigh Blackwell

Environmental Consultant



Professional Registration

- Registered South African Council for Natural Science Professionals (Cand.Sci.Nat) – 2018

Qualifications

- B.Sc. Hons Conservation Ecology, 2015

Languages

- English – Fluent
- Afrikaans – Fluent

Countries Worked in

- South Africa

Ashleigh is a registered SACNASP Environmental Consultant with 4 years working experience in the Environmental Sector. Being multiskilled within her role, Ashleigh is responsible for managing the various environmental processes, including licencing, permitting and auditing within Kongwe Environmental. Ashleigh completed her BSc (Hons) in Conservation Ecology and Soil Science at the University of Stellenbosch. She is a registered member of the Soil Science Society of South Africa (SSSSA) and has attended certified workshops and training courses in Environmental Law, Soil Surveyance and Soil Classification, waste management and water use licencing. Her core responsibilities include:

- ❖ Project Management;
- ❖ Environmental Impact Reporting;
- ❖ Project Risk Assessment;
- ❖ Environmental Auditing;
- ❖ Environmental Control Officer;
- ❖ GIS Mapping; and
- ❖ Soils, Land Use and Agricultural Reporting.

PROJECT EXPERIENCE

Project	Project Status / Date	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Approximate Contract Value
Environmental Authorisations (EA's)							
Crown Gold Recoveries (Pty) Ltd: Reclamation of the Soweto Cluster Dumps	2019 - current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	All Environmental Authorisations and IWULA	Project Manager and Peer Review	Project Manager and EAP duties	R 2 197 440,00
Ergo Mining (Pty) Ltd: The Valley Silts Project	2019 - current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	All Environmental Authorisations and IWULA	Project Manager and Peer Review	Project Manager and EAP duties	Not Disclosed
eMakhazeni integrated Water Use Licence	2019 - Current	Mpumalanga Province, South Africa	Umsimbithi Mining (Pty) Ltd	Integrated Water Use Licence Application (IWULA)	Project Manager and Peer Review	Project Manager, Peer review and to undertake the IWULA process	R 400 000,00
Ergo Mining: Reclamation and Reprocessing of the Marievale Dumps	2018- current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	All Environmental Authorisations and IWULA	Project Manager and Peer Review	Project Manager and EAP duties	R 1 508 646.36
Ergo Mining: Reclamation and Reprocessing of the City Deep Dumps	2018- current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	All Environmental Authorisations and IWULA	Project Manager and Peer Review	Project Manager and EAP duties	R 1 323 455.55
Ergo Mining: Reclamation and Reprocessing of the Rooikraal Tailings Storage Facility	2018- current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	All Environmental Authorisations and IWULA	Project Manager and Peer Review	Project Manager and EAP duties	R 1 194 713.35
Umsimbithi eMakhazeni Mining Project	2017-2018	Mpumalanga Province, South Africa	Umsimbithi Mining (Pty) Ltd	Environmental authorisation process for a coal mining project near Belfast	Environmental Consultant	Compile EIA/EMPr, managing specialists undertaking the specialist studies for the Environmental Impact Assessment	R4 155 413.00
Tanganani Bulk Infrastructure Project	2017 - 2018	Johannesburg, Gauteng Province	Gauteng Department of Human Settlements	Environmental Authorisations for the Tanganani Bulk	Environmental Consultant	Compile Basic Assessment Report,	R291 528.00

Project	Project Status / Date	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Approximate Contract Value
				Infrastructure Project in the City of Johannesburg, Gauteng.		public participation, project management	
Olifantshoek Substation and Powerline	2017	Olifantshoek, Northern Cape Province	Eskom	Environmental Impact Assessment process for an underground coal gasification project	Environmental Consultant	Compile Basic Assessment Report, public participation, project management	Not Disclosed
REDIS Pre-processing Waste Tyre Depot	2017	Mpumalanga, KwaZulu-Natal, Nelspruit Provinces, South Africa	The Recycling and Economic Development of South Africa	Environmental Impact Assessment process for the proposed Fumani gold mine	Environmental Consultant	Compile Basic Assessment Report, public participation, project management	R 300 000,00
Scuitdrift Solar Energy Facility	2017	Scuitdrift, Northern Cape Province	Building Energy	Basic assessment process for watercourse crossing and intended road upgrades to the Klawer Wind Energy Facility	Environmental Consultant	Compile Basic Assessment Report, public participation, project management	R 110 900,34
Klawer Watercourse Crossings	2017	Klawer, Western Cape	Building Energy	Basic assessment process for watercourse crossing and intended road upgrades to the Klawer Wind Energy Facility	Environmental Consultant	Compile Basic Assessment Report, public participation, project management	R 72 330,72
Lehae Training Academy and Fire Station	Ongoing	Lehae, Gauteng Province	Delta BEC on behalf of the JDA	Basic Assessment Process	Environmental Consultant	Compile Basic Assessment Report,	R 285 832.11

Project	Project Status / Date	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Approximate Contract Value
						public participation, project management	
Soils Reporting							
Leslie 1 Coal Project	March 2018 - Present	Mpumalanga Province, South Africa	Anglo Operations South Africa (Pty) Ltd	Soil Impact Assessment	GIS Consultant	Soil Impact Assessment	R60 000.00
H2 Energy Power Station	2017	Mpumalanga Province, South Africa	H2 Clean Energy (Pty) Ltd	Soil, Land-Use and Agricultural Potential Reporting	Soils Specialist	Completion of a Soils Scoping report	Not Disclosed
Orkney Solar Farm	2016	North West Province, South Africa	Genesis Orkney Solar (Pty)	Soil, Land-Use and Agricultural Potential Reporting	Soils Specialist	Completion of a Soils Scoping report	Not Disclosed
Richards Bay Gas to Power	2016	Richards Bay, Kwa-Zulu Natal Province	Eskom	Soil and Agricultural Screening Study	Soils Specialist	Completion of a Soils Scoping report	Not Disclosed
Other Applications, Permitting and Licences							
Section 53 Application for the Suurplaat Wind Energy Facility	2016	Northern and Western Cape Provinces, South Africa	Moyeng Energy (Pty) Ltd	Compilation of the Section 53 Application	Environmental Consultant	Compilation of the Section 53 Application, Client Liason and Authority Liason	Not Disclosed
Section 53 Application for the Tshivhaso Coal-Fired Power Station, Limpopo	2016	Lephalale, Limpopo Province	Exxaro	Compilation of the Section 53 Application	Environmental Consultant	Compilation of the Section 53 Application, Client Liason and Authority Liason	Not Disclosed
Section 53 Application Thabametsi Coal water pipeline, Limpopo	2017	Lephalale, Limpopo Province	Exxaro	Compilation of the Section 53 Application	Environmental Consultant	Compilation of the Section 53 Application, Client	Not Disclosed

Project	Project Status / Date	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Approximate Contract Value
						Liason and Authority Liason	
Section 24G Ramification Application for Hossam Soror	Ongoing	Randburg, Gauteng Province	Soror Language Services cc	Compilation of the Section 24 G Application	Environmental Consultant	Compilation of the Section 24 G Application, Client Liason and Authority Liason	Not Disclosed
Due Diligence							
Water Use License Due Dilligence	2016	Gauteng Province	Joburg Property Company	Review of the WUL	Environmental Consultant	Review of the WUL, Identification of conformances and non-conformances, advisory	Not Disclosed
GIS Mapping							
Hopetown 75MW PV facility	2016	Northern Cape Province, Gauteng Province	Not Disclosed	GIS Mapping	Environmental Consultant	Locality Mapping and Site mapping	Not Disclosed
Richards Bay Gas to Power Facility	2016	Richards Bay, Kwa-Zulu Natal Province	Eskom	GIS Mapping	Environmental Consultant	Locality Mapping and Site mapping	Not Disclosed
Skuitdrift Solar Project	2016	Scuitdrift, Northern Cape Province	Building Energy	GIS Mapping	Environmental Consultant	Locality Mapping and Site mapping	Not Disclosed
Orkney Solar Facility Soil and Agricultural Report	2016	North West Province, South Africa	Genesis Orkney Solar (Pty)	GIS Mapping	Environmental Consultant	Locality Mapping and Site mapping	Not Disclosed

Project	Project Status / Date	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Approximate Contract Value
Palese Soil and Agricultural Scoping Report	2016	Mpumalanga Province, South Africa	H2 Clean Energy (Pty) Ltd	GIS Mapping	Environmental Consultant	Locality Mapping and Site mapping	Not Disclosed
Richards Bay Gas to Power Soil and Agricultural Screening Study	2016	Richards Bay, Kwa-Zulu Natal Province	Eskom	GIS Mapping	Environmental Consultant	Locality Mapping and Site mapping	Not Disclosed
Environmental Auditing							
GOSA 2019 External Environmental Audits.	2019	Mpumalanga Province South Africa	Glencore Operations South Africa (Pty) Ltd	External audits of EA's, EMPr's and WUL for Glencore's the Coal operations in Mpumalanga	Lead Environmental Auditor	External Audit	Not Disclosed
GOSA 2019 External Environmental Audits.	2018	Mpumalanga Province South Africa	Glencore Operations South Africa (Pty) Ltd	External audits of 47 Environmental Authorisations for the Coal operations in Mpumalanga	Environmental auditor	External Audit	R1 421 210.00
GOSA 2019 External Environmental Audits.	2017	Mpumalanga Province South Africa	Glencore Operations South Africa (Pty) Ltd	External audits of 47 Environmental Authorisations for the Coal operations in Mpumalanga	Environmental auditor	External Audit	R1 556 720.00

Curriculum Vitae – Nokuthula Ndala

Environmental and GIS Consultant



Professional Registration

-South African Geomatics Council (SAGC) - 2016

Qualifications

- BSc Geoinformatics, University of Pretoria, 2013
- BSc (Hons) Environmental Management, UNISA (currently undertaking)

Languages

- English – Fluent
- IsiNdebele – Fluent
- Setswana – Fluent

Countries Worked in

- South Africa
- Madagascar
- Ivory Coast
- Namibia

Nokuthula is a SAGC registered environmental and GIS consultant with 5 years' experience in the consulting industry. She graduated with a BSc degree in Geoinformatics from University of Pretoria in 2013. Her main focus is providing specialist GIS consulting services that have been primarily for the mining and exploration industries, specifically for environmental management, engineering, locational planning and management objectives.

Her skills include:

- ❖ Visual Impact Assessments;
- ❖ Creating and managing GIS databases;
- ❖ Map Production of IWULA, EIAs, Geophysics studies, specialist reports and assessments;
- ❖ Liaising with data suppliers (locally and other African Countries);
- ❖ Data broking- sourcing of geological and satellite imagery remotely; and
- ❖ Environmental auditing.

PROJECT EXPERIENCE

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
Visual Impact Assessments							
Ergo Mining: Reclamation and Reprocessing of the Marievale Dumps	2018-current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	Ergo Mining: Reclamation and Reprocessing of the Marievale Dumps	GIS Consultant	Visual Impact Assessment	R35 200.00
Ergo Mining: Reclamation and Reprocessing of the City Deep Dumps	2018-current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	Ergo Mining: Reclamation and Reprocessing of the City Deep Dumps	GIS Consultant	Visual Impact Assessment	R38 500.00
Ergo Mining: Reclamation and Reprocessing of the Rooikraal Tailings Storage Facility	2018-current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	Ergo Mining: Reclamation and Reprocessing of the Rooikraal Tailings Storage Facility	GIS Consultant	Visual Impact Assessment	R35 200.00
Leslie 1 Coal Project	March 2018 – September 2018	Mpumalanga Province, South Africa	Anglo Operations South Africa (Pty) Ltd	Visual Impact Assessment	GIS Consultant	Visual Impact Assessment	R 60 000.00
Umsimbithi eMakhazeni Coal Mining Project	September 2017 – May 2018	Mpumalanga Province, South Africa	Umsimbithi Mining (Pty) Ltd	Visual Impact Assessment	GIS Consultant	Visual Impact Assessment	R 60 000.00
Eloff Coal Mine	April 2015 – May 2016:	Mpumalanga Province, South Africa	Eloff Mining Company (Pty) Ltd	Environmental Impact Assessment for the extension of the Eloff mine	GIS Technologist	Site visit and visual impact analysis of the proposed extension.	R98 000.00

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
Reitkuil Mine	2013 -2015	Mpumalanga Province, South Africa	Reitkuil Mine	Environmental Impact Assessment process for the proposed extension of the Reitkuil Mine	GIS Technologist	Receptor identification using Google Earth pro within 10km buffer of the site, identify landscape characteristics of the site, Site visit to validate desktop study results (in-situ data collection)	R120 000.00
Exxaro Coal Belfast Project	2014 -2016	Mpumalanga Province, South Africa	Exxaro Coal	Environmental authorisation process for the proposed Belfast Coal Mine	GIS Technologist	Compiling Scoping and EIA reports, public participation maps	Not disclosed
Closure Costing							
Total Coal Mine Closure Application	July 2015 – June 2016	KwaZulu-Natal, South Africa	Total Coal	Mine closure application and Basic Assessment for the closure of the Steincoalspruit Coal Mine	GIS Technologist	Closure cost infrastructure mapping and calculations.	R 500 000.00
Scorpion Zinc Financial Provision	2013	South Africa	Scorpion Zinc	Closure cost calculations of existing mine in South Africa.	GIS Technologist	EMP and closure costing mapping and infrastructure calculations	Not disclosed

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
Groundwater and Surface Water							
Oumjarane Dewatering	2014 – 2016	Morocco, North Africa	Oumjarane	Groundwater hydrology investigation	GIS Technologist	Mapping Hydrocensus Boreholes. Hydrology map which includes DEM, Maider Basement Catchment delineation. Mapping temperature and conductivity points for the Hydrocensus points of the site	Not disclosed
Exxaro Leeuwpan Groundwater and Surface water Study	2013 – 2016	Mpumalanga Province, South Africa	Exxaro Mine	Groundwater and surface water investigation for the proposed Exxaro Mine expansion	GIS Technologist	Floodline Mapping and sub-catchment mapping	Not disclosed
Site Selection							
Molo Granite	2014-2015	Madagascar, southeast coast of Africa	DRA	Site selection for proposed Granite Mine	GIS Technician	Site selection analysis and specialist mapping	Not disclosed
HCV and HCS Project	Current	Ivory Coast	Montrose Environmental	HCV and HCS Screening of 3 sites	GIS technologist	Aerial Imagery sourcing, Mapping of HCV and HCS assessment results	Not disclosed

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
Contamination							
Transnet Pipelines - Geohydrological and a contaminated land assessment - mapping for 30 Transnet Facilities	2014-2016	South Africa	Transnet	Geohydrological and a contaminated land assessment	GIS Technologist	Created Buffers zones around contaminated sites and mapping the sensitive maps.Database design and maintenance of depot metadata captured for all 30 sites. Merging old version Boreholes with updated borehole data into one database.	Transnet Pipelines - Geohydrological and a contaminated land assessment - mapping for 30 Transnet Facilities
Environmental Auditing							
GOSA 2018 Audits	2018	Mpumalanga Province South Africa	Glencore Operations South Africa (Pty) Ltd	External audits of 47 Environmental Authorisations for the Coal operations in Mpumalanga	Environmental auditor	External Audit	R1 421 210.00
GOSA 2017 Glencore	2017	Mpumalanga Province South Africa	Glencore Operations South Africa (Pty) Ltd	External audits of 47 Environmental Authorisations for the Coal operations in Mpumalanga	Environmental auditor	External Audit	R1 556 720.00

Curriculum Vitae – Sibongile Bambisa

Stakeholder Engagement/Social Consultant



Professional Registration

- International Association for Public Participation Practitioners, Southern Africa (IAP2- Southern Africa)

Qualifications

- Post Graduate Diploma- Social Impact Assessment- University of Johannesburg - current,
- BA Hons. Anthropology, University of Johannesburg, 2009 ;
- BA Health Psychology, University of Johannesburg, 2008

Languages

- English – Fluent
- IsiZulu – Fluent
- SeSotho– Fluent
- SeTswana – Fluent

Countries Worked in

- South Africa

Sibongile Bambisa holds a BA Hons. Anthropology and BA Health Psychology. She is currently pursuing a Post Graduate Diploma in Social Impact Assessment with the University of Johannesburg. Her expertise involves the planning and the execution of the public participation processes for Environmental Impact Assessment projects and other applications. As a Stakeholder Engagement / Social Consultant, her duties include identifying and consulting with Interested and Affected Parties, liaising with organs, dissemination of project information to stakeholders to obtain their comments and conducting Social Impact Assessments.

Her skills include:

- ❖ Stakeholder engagement;
- ❖ Community awareness campaigns;
- ❖ Facilitation of community outreach activities; and
- ❖ Social Impact Assessments.

PROJECT EXPERIENCE

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
Environmental Authorisations							
Ergo Mining: Reclamation and Reprocessing of the Marievale Dumps	2018-current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	Environmental Authorisations and IWULA	Stakeholder Engagement Consultant	Consulting with Interested and Affected Parties, liaising with Organs of State and the co-ordination of public and authority meetings; Compilation of Public Participation reports, information materials i.e. (Background, media advert, site notices and notification letters)	R 1 508 646.36
Ergo Mining: Reclamation and Reprocessing of the City Deep Dumps	2018-current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	Environmental Authorisations and IWULA	Stakeholder Engagement Consultant	Consulting with Interested and Affected Parties, liaising with Organs of State and the co-ordination of public and authority meetings; Compilation of Public Participation	R 1 323 455.55

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
						reports, information materials i.e. (Background, media advert, site notices and notification letters)	
Ergo Mining: Reclamation and Reprocessing of the Rooikraal Tailings Storage Facility	2018-current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	Environmental Authorisations and IWULA	Stakeholder Engagement Consultant	Consulting with Interested and Affected Parties, liaising with Organs of State and the co-ordination of public and authority meetings; Compilation of Public Participation reports, information materials i.e. (Background, media advert, site notices and notification letters)	R 1 194 713.35
Leslie 1 Project	2017-current	Mpumalanga Province, South Africa	Glencore Operation (Pty) Ltd	Environmental authorisation process for a coal mining project near Leandra	Stakeholder Engagement Consultant	Consulting with Interested and Affected Parties, liaising with Organs of State and the co-ordination of public	R 2 900 944.60

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
						and authority meetings; Compilation of Public Participation reports, information materials i.e. (Background, media advert, site notices and notification letters)	
Umsimbithi eMakhazeni Mining Project	2017-current	Mpumalanga Province, South Africa	Umsimbithi Mining (Pty) Ltd	Environmental authorisation process for a coal mining project near Belfast	Stakeholder Engagement Consultant	Consulting with Interested and Affected Parties, liaising with Organs of State and the co-ordination of public and authority meetings; Compilation of Public Participation reports, information materials i.e. (Background, media advert, site notices and notification letters)	R4 155 413.00
KiPower's proposed construction of a	2014-2015	Mpumalanga Province, South Africa	Ki Power (Pty) Ltd	Environmental Impact Assessment and Water Use	Public Participation Practitioner	Consulting with Interested and Affected Parties,	Not disclosed

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
600 Mega Watt IPP plant in Delmas				Licence for the proposed construction of a 600 Mega Watt IPP plant.		liaising with Organs of State and the co-ordination of public and authority meetings; Compilation of Public Participation reports, information materials i.e. (Background, media advert, site notices and notification letters)	
South 32 (Pty) Limited 's proposed extension of Klipfontein opencast operations and associated closure of a section of the D253 road	2015-2016	Mpumalanga Province, South Africa	South 32 (Pty) Limited	Environmental Impact Assessment for the proposed extension of Klipfontein opencast operations	Public Participation Practitioner	Identification and consultation with Interested and Interested Parties; Compilation of Public participation reports and information materials i.e. (Background, media advert, site notices and notification letters)	Not disclosed
Basic Assessment for the development of	2013	Mpumalanga Province	Glencore South Africa	Development of walkways to relocate a dragline for the	Public Participation Practitioner	Identification and consultation with Interested and Interested Parties;	Not disclosed

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
walkways to relocate a dragline				Tweefontein and Impunzi Coal mining operations		Compilation of Public participation reports and information materials i.e. (Background, media advert, site notices and notification letters)	
Environmental Impact Assessment and Waste Management Licence Delmas coal mine	2014-2015	Mpumalanga Province	Delmas Coal	Proposed extension of the underground coal mining area, and rehabilitating and upgrading of the coal discard disposal facility and the existing pollution control dams at Delmas coal mine	Public Participation Practitioner	Consultation with Interested and Affected Parties; Compilation of Public participation reports and information materials i.e. (Background, media advert, site notices and notification letters)	Not disclosed
Inkomati Water Resource Classification Study and Letaba Water Resource Classification Study	2013-2014	Mpumalanga Province and Limpopo Province	Department of Water and Sanitation	Water Resource Classification study for Inkomati Catchment and Letaba	Assistant Public Participation Practitioner	Compilation of the stakeholder database, arranging for public meeting; compilation of minutes	Not disclosed

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
Social Impact Assessments							
Ergo Mining: Reclamation and Reprocessing of the Marievale Dumps	2018-current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	Environmental Authorisations and IWULA	Social Specialist	Social Impact Assessment	R60 000.00
Ergo Mining: Reclamation and Reprocessing of the City Deep Dumps	2018-current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	Environmental Authorisations and IWULA	Social Specialist	Social Impact Assessment	R48 500.00
Ergo Mining: Reclamation and Reprocessing of the Rooikraal Tailings Storage Facility	2018-current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	Environmental Authorisations and IWULA	Social Specialist	Social Impact Assessment	R35 500.00
Leslie 1 Project	2017-current	Mpumalanga Province, South Africa	Glencore Operation (Pty) Ltd	Environmental authorisation process for a coal mining project near Leandra	Social Specialist	Social Impact Assessment	R 144 400.00
Community Awareness							
Water Conservation Awareness Campaign for Orange Farm Residents	2017	Gauteng	Johannesburg Water	Social Facilitation for Water Conservation Awareness Campaign	Social Facilitator	Compilation of the Knowledge, Attitude and Perceptions (KAP) Survey and reports Stakeholder Engagement; Provide training on water conservation	R 2 million

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
						and water demand management strategy	
Water Conservation and Demand Management Strategy for Ba-Phalaborwa and Hoedspruit Local Municipalities	2017	Limpopo Province	Association for Water and Rural Development (AWARD)	Community Awareness programme for Water Conservation and Water Demand Management for Ba-Phalaborwa and Hoedspruit Local Municipalities.	Social Facilitator	Conduct KAP-Surveys; Stakeholder engagement activities Compilation of Social Reports.	R1.7 million
Casa Mia project	2017	Gauteng	Johannesburg Social Housing Agency (JOSHCO)	Social facilitation services for the renewal of Casa Mia building in Berea	Social Facilitator	Source candidates for the Extended Public Works Programme (EPWP); Compile EPWP reports.	R 450 000

Curriculum Vitae – Vanessa Viljoen

Stakeholder Engagement Consultant



Professional Registration

- International Association for Public Participation Practitioners, Southern Africa (IAP2- Southern Africa)

Qualifications

- Matriculated in 1988
- Completed the International Association of Public Participation IAP2 course (all 3 modules) for Public Participation Practitioners

Languages

- English – Fluent
- Afrikaans – Fluent

Countries Worked in

- South Africa
- Democratic Republic of Congo
- Nigeria
- Botswana
- Swaziland

Vanessa Viljoen has 25 years' experience in process management/project co-ordination of Public Participation Projects (now called Stakeholder Engagement Processes). Her expertise involves the planning and the execution of the public participation processes for Environmental Impact Assessment projects and other applications. As a Stakeholder Engagement Consultant, her duties include identifying and consulting with Interested and Affected Parties, liaising with organs, dissemination of project information to stakeholders to obtain their comments. Development of stakeholder databases through networking and referral is also a key focus area. Responsible to coordinate logistics and ensure that group meetings such as Public Meetings, Landowner Meetings and Focus Group Meetings. She has worked both locally in South Africa and internationally in the Democratic Republic of Congo, Nigeria, Botswana and Swaziland.

Her skills include:

- ❖ Stakeholder engagement;
- ❖ Project/logistical co-ordination;
- ❖ Database development;
- ❖ Facilitation of landowner activities.

PROJECT EXPERIENCE

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
Environmental Authorisations							
Ergo Mining: Reclamation and Reprocessing of the Marievale Dumps	2018-current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	Environmental Authorisations and IWULA	Stakeholder Engagement Consultant	Consulting with Interested and Affected Parties, liaising with Organs of State and the co-ordination of public and authority meetings; Compilation of Public Participation reports. Development of stakeholder databases through networking and referral is also a key focus area. Coordinate logistics.	R 1 508 646.36
Ergo Mining: Reclamation and Reprocessing of the City Deep Dumps	2018-current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	Environmental Authorisations and IWULA	Stakeholder Engagement Consultant	Consulting with Interested and Affected Parties, liaising with Organs of State and the co-ordination of public and authority meetings;	R 1 323 455.55

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
						Compilation of Public Participation reports. Development of stakeholder databases through networking and referral is also a key focus area. Coordinate logistics.	
Ergo Mining: Reclamation and Reprocessing of the Rooikraal Tailings Storage Facility	2018-current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	Environmental Authorisations and IWULA	Stakeholder Engagement Consultant	Consulting with Interested and Affected Parties, liaising with Organs of State and the co-ordination of public and authority meetings; Compilation of Public Participation reports. Development of stakeholder databases through networking and referral is also a key focus area. Coordinate logistics.	R 1 194 713.35

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
Leslie 1 Project	2017-current	Mpumalanga Province, South Africa	Glencore Operation (Pty) Ltd	Environmental authorisation process for a coal mining project near Leandra	Stakeholder Engagement Consultant	Consulting with Interested and Affected Parties, liaising with Organs of State and the co-ordination of public and authority meetings; Compilation of Public Participation reports. Development of stakeholder databases through networking and referral is also a key focus area. Coordinate logistics.	R 2 900 944.60
Umsimbithi eMakhazeni Mining Project	2017-current	Mpumalanga Province, South Africa	Umsimbithi Mining (Pty) Ltd	Environmental authorisation process for a coal mining project near Belfast	Stakeholder Engagement Consultant	Consulting with Interested and Affected Parties, liaising with Organs of State and the co-ordination of public and authority meetings; Compilation of Public Participation reports. Development of	R4 155 413.00

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
						stakeholder databases through networking and referral is also a key focus area. Coordinate logistics.	

Curriculum Vitae – Siphesihle Dambuza

Junior Environmental Consultant



Professional Registration

- Candidate South African Council for Natural Science Professionals (SACNASP) - 2018

Qualifications

- B.Sc. Hons Geography and Environmental Science, University of Pretoria, 2017
- B.Sc. Geography, University of Pretoria 2016

Languages

- IsiXhosa – Fluent
- English – Fluent
- IsiZulu – Fluent
- Sesotho – Fluent
- SeTswana – Basic
- Afrikaans - Basic

Countries Worked in

- South Africa

Siphesihle is an Environmental Consultant at Kongiwe Environmental. He has a B.Sc. Honours in Geography and Environmental Science from the University of Pretoria. He is involved in all projects with duties ranging from water use licencing and environmental auditing.

PROJECT EXPERIENCE

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
Environmental Authorisations							
Crown Gold Recoveries (Pty) Ltd: Reclamation of the Soweto Cluster Dumps	2019 - current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	All Environmental Authorisations and IWULA	Junior Environmental Consultant	Integrated Water Use Licence	R 2 197 440,00
Ergo Mining (Pty) Ltd: The Valley Silts Project	2019 - current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	All Environmental Authorisations and IWULA	Junior Environmental Consultant	Integrated Water Use Licence	Not Disclosed
eMakhazeni integrated Water Use Licence	2019 - Current	Mpumalanga Province, South Africa	Umsimbithi Mining (Pty) Ltd	Integrated Water Use Licence Application (IWULA)	Junior Environmental Consultant	Integrated Water Use Licence	R 400 000,00
Ergo Mining: Reclamation and Reprocessing of the Marievale Dumps	2019-current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	Environmental Authorisations and IWULA	Junior Environmental Consultant	Scoping Report and Integrated Water Use Licence	R 1 508 646.36
Ergo Mining: Reclamation and Reprocessing of the City Deep Dumps	2018-current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	Environmental Authorisations and IWULA	Junior Environmental Consultant	Scoping Report and Integrated Water Use Licence	R 1 323 455.55
Leslie 1 Project	2017-current	Mpumalanga Province, South Africa	Glencore Operation (Pty) Ltd	Environmental authorisation process for a coal mining project near Leandra	Environmental Intern	Assisting with Public Participation, GIS	R 2 900 944.60

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
Umsimbithi eMakhazeni Mining Project	2017-current	Mpumalanga Province, South Africa	Umsimbithi Mining (Pty) Ltd	Environmental authorisation process for a coal mining project near Belfast	Environmental Intern	Assisting with Public Participation, GIS	R4 155 413.00
Lephalale Coal and Power Project	2017-current	Limpopo Province, South Africa	Dedicoal (Pty) Ltd	Environmental authorisation process for the Lephalale Coal and Power Project	Environmental Intern	Assisting with Public Participation and GIS	R3 549 331.00
Auditing							
Sibanye Stillwater 2019 External Environmental Auditing	2019	Gauteng Province South Africa	Sibanye Stillwater (Pty) Ltd	External Audits for 2 EA's, 11 EMPr's for Sibanye Gold operations in Gauteng.	Junior Environmental Auditor	External Audit	Not Disclosed
GOSA 2019 External Environmental Audits.	2019	Mpumalanga Province South Africa	Glencore Operations South Africa (Pty) Ltd	External audits of EA's, EMPr's and WUL for Glencore's the Coal operations in Mpumalanga	Lead Environmental Auditor	External Audit	Not Disclosed
GOSA 2018 Audits	2018	Mpumalanga Province South Africa	Glencore Operations South Africa (Pty) Ltd	External audits of 47 Environmental Authorisations for the Coal operations in Mpumalanga	Junior Environmental Consultant	External Audit	R1 421 210.00

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
GOSA 2017 Glencore	2017	Mpumalanga Province South Africa	Glencore Operations South Africa (Pty) Ltd	External audits of 47 Environmental Authorisations for the Coal operations in Mpumalanga	Environmental Intern	External Audit	R1 556 720.00
Risk Assessments							
Matlwang Agric Cooperative Fish Farm	2018	North-West Province South Africa	Matlwang Agric Cooperative	Risk Assessment as part of a permit for Tilapia farming.	Environmental Consultant	Report writing, client liaison	Not disclosed
Environmental Monitoring							
Leslie 1 Project	2018-current	Mpumalanga Province, South Africa	Glencore Operation (Pty) Ltd	Environmental authorisation process for a coal mining project near Leandra	Environmental Intern	Dust monitoring and reporting	R 2 900 944.60
Umsimbithi eMakhazeni Mining Project	2017-2018	Mpumalanga Province, South Africa	Umsimbithi Mining (Pty) Ltd	Environmental authorisation process for a coal mining project near Belfast	Environmental Intern	Dust monitoring and reporting	R4 155 413.00

Curriculum Vitae – Foord Ceronio

Environmental Consultant



Professional Registration

- Candidate South African Council for Natural Science Professionals (SACNASP) - 2019

Qualifications

- M.Sc. Environmental Management, University of Johannesburg, 2018
- B.Sc. Hons Geography, University of Johannesburg, 2016
- B.Sc. Life and Environmental Science, University of Johannesburg, 2015

Languages

- English – Fluent
- Afrikaans – Fluent

Countries Worked in

- South Africa

Foord is an Environmental Consultant at Kongiwe Environmental. He has completed an M.Sc. in environmental management and has previous field and data collection experience with environmental noise. He is assisting on all major projects with duties ranging from research and reporting to field visits to stakeholder engagement.

Foord has experience in the mining industry. His responsibilities range from Environmental impact reporting, air quality monitoring, Visual Impact Assessments, Closure costing, environmental auditing, legal permitting and licensing and to public participation.

PROJECT EXPERIENCE

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
Environmental Authorisations (EA's)							
Crown Gold Recoveries (Pty) Ltd: Reclamation of the Soweto Cluster Dump	2019-current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	Environmental Authorisation and IWULA	Environmental Consultant	Scoping report	R 2 197 440,00
Ergo Mining: Reclamation of Valley Silts	2019-current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	Environmental Authorisation and IWULA	Environmental Consultant	Scoping report	
Visual Impact Assessment							
Ergo Mining: Reclamation and Reprocessing of the Marievale Dumps	2018-current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	Environmental Authorisations and IWULA	Environmental Intern	Visual Impact Assessment	R35 200.00
Ergo Mining: Reclamation and Reprocessing of the City Deep Dumps	2018-current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	Environmental Authorisations and IWULA	Environmental Intern	Visual Impact Assessment	R38 500.00
Ergo Mining: Reclamation and Reprocessing of the Rooikraal Tailings Storage Facility	2018-current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	Environmental Authorisations and IWULA	Environmental Intern	Visual Impact Assessment	R35 200.00
Environmental Auditing							
Sibanye 2019 External Audits	2019	Gauteng Province South Africa	Sibanye-Stillwater (Pty) Ltd	External audits of EMPr's for the	Environmental Consultant	External Audit	Not Disclosed

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
				operations in Gauteng			
Glencore 2019 External Audits	2019	Mpumalanga Province South Africa	Glencore Operations South Africa (Pty) Ltd	External audits of Environmental Authorisations, EMPr's and WULs for the Coal operations in Mpumalanga	Environmental Consultant	External Audit	Not Disclosed
Glencore 2018 External Audits	2018	Mpumalanga Province South Africa	Glencore Operations South Africa (Pty) Ltd	External audits of Environmental Authorisations for the Coal operations in Mpumalanga	Environmental Intern	External Audit	R1 421 210.00
Environmental Monitoring							
Leslie 1 Project	2017-current	Mpumalanga Province, South Africa	Glencore Operation (Pty) Ltd	Environmental authorisation process for a coal mining project near Leandra	Environmental Intern	Dust monitoring and reporting	R 2 900 944.60
Umsimbithi eMakhazeni Mining Project	2017-current	Mpumalanga Province, South Africa	Umsimbithi Mining (Pty) Ltd	Environmental authorisation process for a coal mining project near Belfast	Environmental Intern	Dust monitoring and reporting	R4 155 413.00
Closure Costing							
Ergo Mining: Reclamation and	2018-current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	Environmental Authorisations and IWULA	Environmental Intern	Financial Provision and Rehabilitation Plan	R50 000.00

Project	Dates	Locations	Client	Project Description	Positions Held	Activities performed by the proposed candidate	Contract Value
Reprocessing of the Rooikraal TSF							
Ergo Mining: Reclamation and Reprocessing of the City Deep Dumps	2018-current	Gauteng, South Africa	DRDGOLD (Pty) Ltd	Environmental Authorisations and IWULA	Environmental Intern	Financial Provision and Rehabilitation Plan	R49 500.00

APPENDIX B:

A3 Maps

- ❖ **Locality Map**
- ❖ **Site Layout Plan**
- ❖ **Gauteng C-Plan**
- ❖ **Sensitivity Map**



Legend

Towns

- Major Town
- Secondary Town
- Other Town
- Settlement

Gauteng Conservation Plan

- Ecological Support Area
- Important Area
- Irreplaceable Area
- Protected Area

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Geographic Coordinate System:
WGS 84 Geographic

Gauteng C-Plan

0 0,5 1 2 Kilometers

Legend









- Proposed Pipeline Route to Marievale
- Perennial River
- Non-Perennial River
- District Municipality
- Quaternary_Catchments

Project: Marievale | Client: Ergo Mining (Pty) Ltd |
 Drawn By: NK Ndala | Date: 10 October 2019 | Ref: DRDG3#005_Marievale |
 DataSource: NGI Aerial Photograph, Imagery date: 2019 |
 Projection: Geographic | Datum: WGS84 | © 2019 Kongiwe Environmental (Pty) Ltd.
 www.kongiwe.co.za

Reclamation of the Marievale Dumps: Proposed Pipeline Alternatives

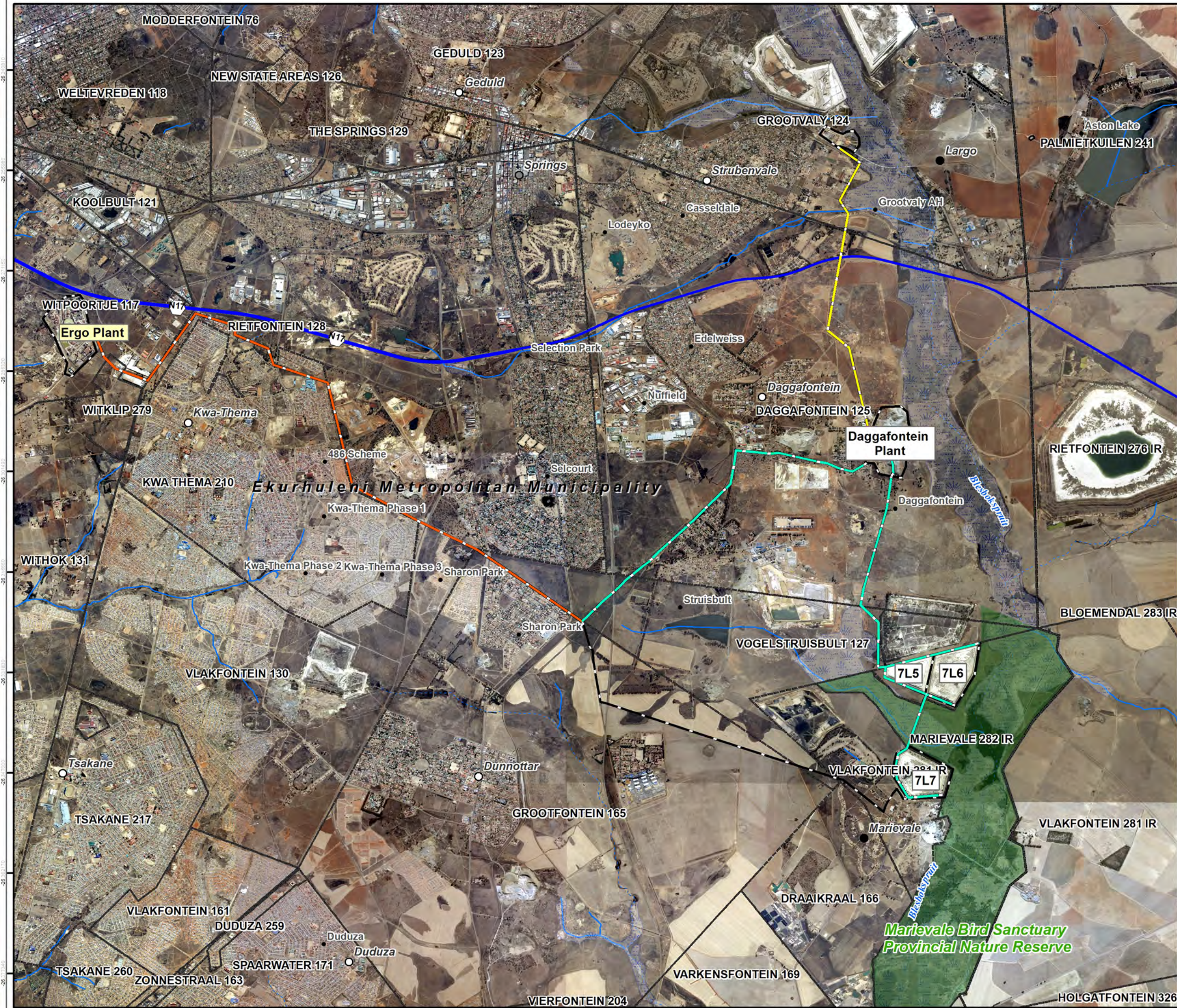
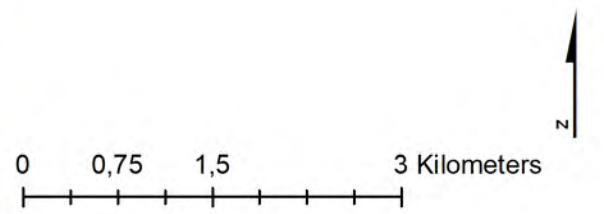
1:60 000

Legend

- Proposed Infrastructure**
-  Proposed Pipeline to Daggafontein
 -  Proposed Pipeline to TCTA
 -  Proposed 7L7 Pipeline to Ergo Plant
 -  Proposed Pipeline Route to Marievale
 -  Parent Farm
 -  District Municipality
 -  Formal Protected Areas
 -  Mine Dumps Outlines



Project Name : Marievale Reclamation Project
 CoordinateSystem : WGS84 Decimal Degrass
 Date :10 October 2019





Legend

Towns

- Major Town (Black circle)
- Secondary Town (Grey circle)
- Other Town (White circle)
- Settlement (Black dot)

Wetland (HGM_Unit)

- Seep (Light brown)
- Bench, Depression (Dark brown)
- Bench, Flat (Light brown)
- Plain, Depression (Pink)
- Plain, Flat (Red)
- Plain, Floodplain wetland (Yellow)
- Plain, Unchannelled valley-bottom wetland (Light yellow)
- Slope, Depression (Orange)
- Slope, Seep (Light orange)
- Slope, Valleyhead seep (Light green)
- Valley floor, Channelled valley-bottom wetland (Blue)
- Valley floor, Depression (Light blue)
- Valley floor, Floodplain wetland (Light blue)
- Valley floor, Unchannelled valley-bottom wetland (Light blue)

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Geographic Coordinate System:
WGS 84 Geographic

Sensitivity Map

0 0,5 1 2 Kilometers

Legend

- Proposed Pipeline Route to Marievale (Black dashed line)
- Perennial River (Blue line)
- Non-Perennial River (Dotted blue line)
- District Municipality (Black dashed outline)
- Formal Protected Areas (Green outline)
- Quaternary_Catchments (Blue outline)

Project: Marievale | Client: Ergo Mining (Pty) Ltd |
 Drawn By: NK Ndala | Date: 10 October 2019 | Ref: DRDG3#005_Marievale |
 DataSource: NGI Aerial Photograph, Imagery date: 2019 |
 Projection: Geographic | Datum: WGS84 | © 2019 Kongiwe Environmental (Pty) Ltd.
 www.kongiwe.co.za

APPENDIX C:

Public Participation Information

- ❖ **Appendix C1 – Stakeholder Database**
- ❖ **Appendix C2 – Land Claims Letters**
- ❖ **Appendix C3 – Background Information Document**
- ❖ **Appendix C4 – Newspaper Advert**
- ❖ **Appendix C5 – Site Notice Report and Map (To be included in Final Scoping Report)**
- ❖ **Appendix C6 – Announcement Notification**
- ❖ **Appendix C7 – Stakeholder Correspondence (To be included in Final Scoping Report)**

Environmental Authorisation and an Integrated Water Use Licence Application for the Reclamation of the Marievale Tailings Storage Facilities, Ekurhuleni Metropolitan Municipality - Gauteng Province

Master Stakeholder Database

I&AP Sector	Organisation	Mr/Ms	First Name	Last Name	Position	Province
Agricultural Union	AFGRI SA	Mr	Botha	Ernst	Afgri-Attorney	Gauteng Province
Agricultural Union	AFGRI SA	Ms	Nadia	Hetzel	Legal Representative (Afgri)	Gauteng Province
Agricultural Union	Agri South Africa (National)	Mr	Janse	Rabie	Head of Natural Resources	Gauteng Province
Agricultural Union	TAU SA Central Region	Mrs	Lynette	Du Plessis	TAU SA Central Region	Gauteng Province
Agricultural Union	TAU SA Northern Region	Ms	Wilma	Prinsloo	Regional Secretary	Gauteng Province
Agricultural Union	Transvaal Agricultural Union of South Africa (TAUSA)	Mr	Louis	Meintjies	President	Gauteng Province
Business & commerce	Andrew Barker Development Consultant	Mr	Andrew	Barker	Development Consultant	Gauteng Province
Business & commerce	Chamber of Mines	Mr	Nikisi	Lesufi	Senior Executive	Gauteng Province
Business & commerce	Chamber of Mines	Ms	Stephinah	Mudau	Head: Environmental Advisor	Gauteng Province
Business & commerce	Eskom	Ms	Lungile	Motsisi	Tx - Land Management	Gauteng Province
Business & commerce	Eskom	Ms	Ziyanda	Mdoda	Tx - AME	Gauteng Province
Business & commerce	Eskom	Mr	Sbu	Nkalanga	Land & Rights Officer	Gauteng Province

I&AP Sector	Organisation	Mr/Ms	First Name	Last Name	Position	Province
Business & commerce	Eskom	Mr	Wikus	Snyman	L & R Investigations	Gauteng Province
Business & commerce	Eskom	Mr	Jan	Mitchell	Land Development Benoni	Gauteng Province
Business & commerce	Eskom	Mr	Godfrey	Phala	Land & Rights: Land Development	Gauteng Province
Business & commerce	Eskom	Ms	Nosipho	Mashazi	Admin Support	Gauteng Province
Business & commerce	Eskom	Mr	Jason	Kasper	Land and Rights Manager	Gauteng Province
Business & commerce	Eskom	Ms	Priscilla	Mogomotsi	Senior Advisor Land & Rights Land Development	Gauteng Province
Business & commerce	Eskom Transmission Land and Rights (National)	Mr	John	Geeringh	Senior Consultant Environmental Management Group Capital Division: Land Development and Management	Gauteng Province
Business & commerce	Klipwas	Mr	Dennis	Jane		Gauteng Province
Business & commerce	Transnet Freight Rail	Mr	Vhonani	Mulondo	Engineering Technician	Gauteng Province
Business & commerce	Transnet Freight Rail	Ms	Mamothena	Mothupi	Engineering Technician	Gauteng Province
Business & commerce	Transnet Freight Rail	Mr	Joseph	Molautsi	Chief Admin officer	Gauteng Province
Business & commerce	Transnet Freight Rail	Ms	Tshvlofelo	Nyamwega	Engineering Technician	
Business & commerce	Transnet Ltd	Ms	Cynthia	Nong	Gauteng Manager	Gauteng Province

I&AP Sector	Organisation	Mr/Ms	First Name	Last Name	Position	Province
Business & commerce	Transnet Ltd	Ms	Pumelela	Ndyawe	Environmental Manager	Gauteng Province
Directly Affected Landowner	Randex					
Environmental NGO's	African Wattle Crane Programme	Ms	Kerryn	Morrison	Manager	Gauteng Province
Environmental NGO's	Benchmarks Foundation	Mr	David	van Wyk	Member	Gauteng Province
Environmental NGO's	Benchmarks Foundation (BMF)	Dr	Johan	Capel		Gauteng Province
Environmental NGO's	Birdlife South Africa	Mr	Jonathan	Booth	Advocacy Officer Policy & Advocacy Programme	Gauteng Province
Environmental NGO's	Birdlife South Africa (BLSA)	Mr	Simon	Gear	Policy & Advocacy Manager	Gauteng Province
Environmental NGO's	Centre for Environmental Rights (CER)	Ms	Robyn	Hugo	Programme Head: Pollution & Climate Change	Gauteng Province
Environmental NGO's	Council of Geosciences	Mr	Henk	Coetzee		Gauteng Province
Environmental NGO's	Earthlife Africa	Ms	Judith	Taylor	Member Board	Gauteng Province
Environmental NGO's	Endangered Wildlife Trust (EWT)	Ms	Emily	Taylor	Urban Conservation Project Coordinator	Gauteng Province
Environmental NGO's	Federation for Sustainable Environment (FSE)	Ms	Mariette	Liefferink	Chief Executive Officer	Gauteng Province
Environmental NGO's	Groundwork	Mr	Bobby	Peek		Gauteng Province
Environmental NGO's	Johannesburg Heritage Foundation	Ms	Flo	Bird		Gauteng Province

I&AP Sector	Organisation	Mr/Ms	First Name	Last Name	Position	Province
Environmental NGO's	Johannesburg Mining Forum of South Africa				The Chairman	Gauteng Province
Environmental NGO's	Klip River Catchment Forum	Mr	Mogale	Matseba	Chairperson	Gauteng Province
Environmental NGO's	Legal Resources Centre (LRC)	Mr	Lucien	Limacher		Gauteng Province
Environmental NGO's	Legal Resources Centre (LRC)	Ms	Lauren	Nel		Gauteng Province
Environmental NGO's	South African Human Rights Commission	Ms	Janet	Love		Gauteng Province
Environmental NGO's	South African Human Rights Commission	Prof	Tracy-Lynn	Humby		Gauteng Province
Environmental NGO's	South African Human Rights Commission	Mr	Buang	Jones	Provincial Manager	Gauteng Province
Environmental NGO's	South African National Biodiversity Institute (SANBI)					Gauteng Province
Environmental NGO's	Wildlife and Environmental Society of South Africa (WESSA)	Mr	John	Wesson	Manager: Conservation Specialist	Gauteng Province
Environmental NGO's	South African National Biodiversity Institute (SANBI)					Gauteng Province
Environmental NGO's	Johannesburg Heritage Foundation	Ms	Flo	Bird		Gauteng Province
Farmers Association	National African Farmers' Union (NAFU)	Mr	Motsepe	Matlala	President	Gauteng Province
Labour Union	Congress of South Africa Trade Union (COSATU)	Mr	Sizwe	Pamla	National Spokesman	Gauteng Province
Labour Union	National Union of Metal Workers of South Africa (NUMSA)	Mr	Woody	Aroun		Gauteng Province

I&AP Sector	Organisation	Mr/Ms	First Name	Last Name	Position	Province
Labour Union	National Union of Mine Workers (NUM)	Mr	Tafa	Moya	National Co-Ordinator	Gauteng Province
Labour Union	National Union of Mine Workers (NUM)	Mr	Thenji	Phoko	NUM National	Gauteng Province
Libraries	Dunnottar Public Library	Mr	Shelton	Mmisi	Liberian	Gauteng Province
Libraries	Kwa-Thema Public Library	Ms	Portia	Mosetlhe	Liberian	Gauteng Province
Mining & Industry	Impala Platinum Limited – Springs	Ms	Carina	Burger	Safety & Environmental Manager	Gauteng Province
Municipality	City of Ekurhuleni Metropolitan Municipality	Ms	Regina	Gosebo	Senior Admin	Gauteng Province
Municipality	City of Ekurhuleni Metropolitan Municipality	Ms	Refiloe	Selahle	Gender Officer	Gauteng Province
Municipality	City of Ekurhuleni Metropolitan Municipality	Mr	Thabo	Mphuthi	Customer Relations Officer	Gauteng Province
Municipality	City of Ekurhuleni Metropolitan Municipality	Mrs	Adri	Venter	Municipal Managers PA	Gauteng Province
Municipality	City of Ekurhuleni Metropolitan Municipality	Ms	Rebotile	Motau	CRM Manager Brakpan	Gauteng Province
Municipality	City of Ekurhuleni Metropolitan Municipality	Mr	Dudu	Twala	Area Manager: Brakpan CCA: City Planning	Gauteng Province
Municipality	City of Ekurhuleni Metropolitan Municipality	Mr	Christopher	Munyai	Brakpan Economic Development	Gauteng Province
Municipality	City of Ekurhuleni Metropolitan Municipality	Ms	Dorcus	Modiba		Gauteng Province
Municipality	City of Ekurhuleni Metropolitan Municipality	Mr	Vincent	Nkosi		Gauteng Province

I&AP Sector	Organisation	Mr/Ms	First Name	Last Name	Position	Province
Municipality	City of Ekurhuleni Metropolitan Municipality	Mr	Nomonde	Jacobs	-	Gauteng Province
Municipality	City of Ekurhuleni Metropolitan Municipality	Mr	Thabo	Mphuthi		Gauteng Province
Municipality	City of Ekurhuleni Metropolitan Municipality	Ms	Pheta P.	Mokoena	Waste Manager: EMM	Gauteng Province
Municipality	City of Ekurhuleni Metropolitan Municipality	Mr	Mauchly	Makhanthisa		Gauteng Province
Municipality	City of Ekurhuleni Metropolitan Municipality	Mr	Johan	Crafford	City Planning: Chief Building Inspector	Gauteng Province
Municipality	City of Ekurhuleni Metropolitan Municipality	Mr	Vusi	Mashile	-	Gauteng Province
Municipality	City of Ekurhuleni Metropolitan Municipality	Ms	Goodness Nokulunga	Nhlapo	Divisional Head: Operations Customer Relations Management	Gauteng Province
Municipality	City of Ekurhuleni Metropolitan Municipality	Mr	Moses	Gafane	Brakpan Health & Social Department	Gauteng Province
Municipality	City of Ekurhuleni Metropolitan Municipality	Ms	Lillian	Kwakwa	Environmental Assessment Practitioner	Gauteng Province
Municipality	City of Ekurhuleni Metropolitan Municipality	Ms	Rebotile	Motau	CRM Manager Brakpan	Gauteng Province
Municipality	City of Ekurhuleni Metropolitan Municipality	Mr	Mzwandile	Masina	Mayor	Gauteng Province
Municipality	City of Ekurhuleni Metropolitan Municipality	Dr	Imogen	Mashazi	Municipal Manager	Gauteng Province
Municipality	City of Ekurhuleni Metropolitan Municipality	Mr	Katlego	Mokwena	IDP Manager	Gauteng Province
Municipality	City of Ekurhuleni Metropolitan Municipality	Mr	Sthembiso	Garane	LED Manager: (HOD: Economic Development)	Gauteng Province

I&AP Sector	Organisation	Mr/Ms	First Name	Last Name	Position	Province
Municipality	City of Ekurhuleni Metropolitan Municipality	Mr	Pieter	Rudolph	DEMS:ES - SDM:EP	Gauteng Province
Municipality	City of Ekurhuleni Metropolitan Municipality	Mr	Petrus	Brits	DEMS:ES - SDM: CODES	Gauteng Province
Municipality	City of Ekurhuleni Metropolitan Municipality	Cllr	Shadow	Shabangu	Ward Councillor: Ward 74	Gauteng Province
Municipality	City of Ekurhuleni Metropolitan Municipality	Cllr	Simelane	Thulani	Ward Councillor: Ward 76	Gauteng Province
Municipality	City of Ekurhuleni Metropolitan Municipality	Cllr	Dean	Stone	Ward Councillor: Ward 75	Gauteng Province
Municipality	City of Ekurhuleni Metropolitan Municipality	Cllr	Wollaston	Labuschagne	Ward Councillor: Ward 88	Gauteng Province
Municipality	City of Ekurhuleni Metropolitan Municipality: Department of Environmental Resource and Waste Management	Ms	Anél	Hietbrink	Environmental Assessment Practitioner & Waste Management	Gauteng Province
Municipality	City of Ekurhuleni Metropolitan Municipality: Health	Mr	Jerry	Chaka	Executive Director: Health	Gauteng Province
National Government	Department of Agriculture, Forestry and Fisheries (DAFF)	Ms	Portia	Khumalo	ROC - Environmental	Gauteng Province
National Government	Department of Agriculture, Forestry and Fisheries (DAFF)	Ms	Mashudu	Mukwevho	Dir: Land Use & Soil Management	Gauteng Province
National Government	Department of Agriculture, Forestry and Fisheries (DAFF)	Ms	Mulalo	Sundani	Environmental Impact Management	Gauteng Province
National Government	Department of Agriculture, Forestry and Fisheries (DAFF)	Ms	Portia	Khumalo	ROC - Environmental	Gauteng Province
National Government	Department of Agriculture, Forestry and Fisheries (DAFF)	Ms	Mashudu	Marubini	Deputy Director	Gauteng Province

I&AP Sector	Organisation	Mr/Ms	First Name	Last Name	Position	Province
National Government	Department of Agriculture, Forestry and Fisheries (DAFF)	Mr	Themba	Dlamini	Gauteng Regional Office	Gauteng Province
National Government	Department of Agriculture, Forestry and Fisheries (DAFF)	Ms	Mulalo	Sundani	Environmental Impact Management	Gauteng Province
National Government	Department of Environmental Affairs (DEA)	Mr	Obed	Baloyi	Environmental Impact Evaluation	Gauteng Province
National Government	Department of Environmental Affairs (DEA)	Mr	Lucas	Mahlangu	Control Environmental Officer: Waste Licensing	Gauteng Province
National Government	Department of Environmental Affairs (DEA)	Ms	Pumeza	Skepe	Deputy Director	Gauteng Province
National Government	Department of Environmental Affairs (DEA)	Dr	Mpho	Tshitangoni	Chief Director	Gauteng Province
National Government	Department of Mineral Resources (DMR)	Ms	Mashudu	Maduka	Assistant Director	Gauteng Province
National Government	Department of Mineral Resources (DMR)	Mr	Musa	Mangobe	Gauteng Environment	Gauteng Province
National Government	Department of Mineral Resources (DMR)	Ms	Nkosinathi	Mahlaba	Ergo Project Case Officer	Gauteng Province
National Government	Department of Mineral Resources (DMR)	Mr	Rudzani	Mabogo	Head of Environment: Assistant Director	Gauteng Province
National Government	Department of Mineral Resources (DMR)	Mr	Jimmy	Sekgale	Assistant Director	Gauteng Province
National Government	Department of Mineral Resources (DMR)	Mr	Joel	Raphela	DDG	Gauteng Province
National Government	Department of Mineral Resources (DMR)	Mr	Andre	Cronje	Chief Director	Gauteng Province
National Government	Department of Mineral Resources (DMR)	Ms	Suzan	Malebe	Regional Manager	Gauteng Province

I&AP Sector	Organisation	Mr/Ms	First Name	Last Name	Position	Province
National Government	Department of Mineral Resources (DMR)	Mr	Dimakatso	Ledwaba	Acting Regional Manager	Gauteng Province
National Government	Department of Mineral Resources (DMR)	Ms	Moleseng	Tlaila	Assistant Director	Gauteng Province
National Government	Department of Public Works (DPW)	Ms	Jeanette	Monare	Regional Manager	Gauteng Province
National Government	Department of Rural Development and land Reform (DRDLR)	Mr	Harry	Maphutha	Regional Land Claims Commissioner	Gauteng Province
National Government	Department of Rural Development and Land Reform (DRDLR)	Mr	Solomon	Maruma	Land Claims Gauteng Regional Officer	Gauteng Province
National Government	Department of Rural Development and Land Reform (DRDLR)	Ms	Cindy	Benyane	Land Claims Commissioner: Gauteng Regional Office	Gauteng Province
National Government	Department of Water and Sanitation (DWS)	Mr	Marius	Keet	Acting Provincial Head	Gauteng Province
National Government	Department of Water and Sanitation (DWS)	Mr	Victor	Nkuna	Environmental Officer	Gauteng Province
National Government	Department of Water and Sanitation (DWS)	Mr	Bashan	Govender	Water Quality Manager (National)	Gauteng Province
National Government	Department of Water and Sanitation (DWS)	Mr	Londolani	Mutshakwa	National	Gauteng Province
National Government	Department of Water and Sanitation (DWS)	Mr	Divan	Van Niekerk	National	Gauteng Province
National Government	Department of Water and Sanitation (DWS)	Mr	Ayanda	Mtetwa	National	Gauteng Province
National Government	Department of Water and Sanitation (DWS)	Mr	Desmond	Mutshaine	Geochemistry	Gauteng Province
National Government	Department of Water and Sanitation (DWS)	Mr	Kevin Koketso	Aphane	GT	Gauteng Province

I&AP Sector	Organisation	Mr/Ms	First Name	Last Name	Position	Province
National Government	Department of Water and Sanitation (DWS)	Ms	Malalo	Sidogi	Environmental Officer	Gauteng Province
National Government	Department of Water and Sanitation (DWS)	Mr	Andrew	Mbedzi	Instream	Gauteng Province
National Government	Department of Water and Sanitation (DWS)	Mr	Phillimon	Khwinana	Control Environmental Officer and Blesbokspruit to Forum Chairman	Gauteng Province
National Government	Gauteng Department of Agriculture and Rural Development (GDARD)	Mr	Loyiso	Mkwana	Chief Director	Gauteng Province
National Government	Gauteng Department of Agriculture and Rural Development (GDARD)	Mr	Jacob	Legadima	Director - Air Quality Management	Gauteng Province
National Government	Gauteng Department of Agriculture and Rural Development (GDARD)	Mr	Eric	Mulibana	Air Quality	Gauteng Province
National Government	Gauteng Department of Agriculture and Rural Development (GDARD)	Mr	Marcelle	Johnson	Mining and Energy Unit: Air Quality	Gauteng Province
National Government	Gauteng Department of Agriculture and Rural Development (GDARD)	Mr	Dan	Motaung	Deputy Director: EIA	Gauteng Province
National Government	National Department of Health	Ms	Belinda	Makhafola	Directorate: Environmental Health	Gauteng Province
National Government	National Nuclear Regulator (NNR)	Mr	Patle	Mohajane	Programme Manager: NORM	Gauteng Province
National Government	National Nuclear Regulator (NNR)	Mr	Elmond	Lekota	Senior Analyst: NORM	Gauteng Province
National Government	National Nuclear Regulator (NNR)	Ms	Malebo	Makgale	Manager: Assessments: NORM	Gauteng Province
National Government	National Nuclear Regulator (NNR)	Ms	Veronica	Ditsi		Gauteng Province
Nature Reserve	Marievale Bird Sanctuary Provincial Nature Reserve	Mr	Rhulani	Maluleke	Manager	Gauteng Province

I&AP Sector	Organisation	Mr/Ms	First Name	Last Name	Position	Province
Nature Reserve	Suikerbosrand Nature Reserve	Mr	Mpere	Mokoka	Manager	Gauteng Province
Nature Reserve	Suikerbosrand Nature Reserve	Mr	Talfryn	Harris	Chairperson	Gauteng Province
Provincial Government	Department of Health Johannesburg District	Ms	Crystal	Rosenburg	Environmental Health Practitioner	Gauteng Province
Provincial Government	Department of Health Johannesburg District	Ms	Vonani	Nkuna	Environmental Health Practitioner	Gauteng Province
Provincial Government	Department of Health: Gauteng	Ms	Mary	Madaure	Acting Environmental Manager	Gauteng Province
Provincial Government	Department of Water and Sanitation (DWS)	Ms	Barbara	Kalembo	Gauteng Regional Environmental Officer	Gauteng Province
Provincial Government	Department of Water and Sanitation (DWS)	Ms	Faith Fulufhelo	Khosa	Gauteng Regional Representative	Gauteng Province
Provincial Government	Department of Water and Sanitation (DWS)	Mr	Khathutshelo	Mudau	Gauteng Regional Representative	Gauteng Province
Provincial Government	Department of Water and Sanitation (DWS)	Mr	Mabona (Rodney)	Lesiba	Gauteng Regional Representative	Gauteng Province
Provincial Government	Gauteng Department of Agriculture and Rural Development (GDARD)	Mr	Tendani	Rambuda		Gauteng Province
Provincial Government	Gauteng Department of Agriculture and Rural Development (GDARD)	Mr	Mokutu	Nketu		Gauteng Province
Provincial Government	Gauteng Department of Agriculture and Rural Development (GDARD)	Mr	Erick	Moletsane		Gauteng Province
Provincial Government	Gauteng Department of Agriculture and Rural Development (GDARD)	Mr	Tjatja	Mosia		Gauteng Province
Provincial Government	Gauteng Department of Agriculture and Rural Development (GDARD)	Mr	Steven	Mukhola		Gauteng Province

I&AP Sector	Organisation	Mr/Ms	First Name	Last Name	Position	Province
Provincial Government	Gauteng Department of Labour					Gauteng Province
Provincial Government	Johannesburg Roads Agency (JRA)	Mr	Andre	Nel	Operations Manager	Gauteng Province
Provincial Government	South African Heritage Resources Agency					Gauteng Province
Provincial Government	South African Heritage Resources Agency	Mr	Philip	Hine	Heritage Officer	Gauteng Province
Water Bodies -Institution	Johannesburg Water (Pty) Ltd	Mr	William	Bedser	Engineer	Gauteng Province
Water Bodies -Institution	Randwater	Mr	Marc	de Fontein	Senior Water Quality Advisor & Blesbokspruit to Forum Member	Gauteng Province
Water Bodies -Institution	Water Research Commission	Dr	Schafic	Adams		Gauteng Province

Date: Thursday, 17 July 2019

Attention: Mr Solomon Maruma

Gauteng Department of Rural Development and Land Reform (DRDLR)

Office of the Regional Land Claims Commissioner: Gauteng Province

Email: solomon.maruma@drdlr.gov.za

**Environmental Authorisation and an Integrated Water Use Licence Application for the
 Reclamation of the Marievale Tailings Storage Facilities, Ekurhuleni Metropolitan Municipality -
 Gauteng Province**

LAND CLAIMS ENQUIRY

Kongiwe Environmental (Pty) Ltd (Kongiwe) has been appointed as an independent Environmental Assessment Practitioner to undertake an Environmental Impact Assessment (EIA) process for Ergo Mining (Pty) Ltd (Ergo). Ergo Mining (Pty) Limited (hereafter Ergo), intends to reclaim and reprocess gold residues from the Marievale tailings storage facilities (TSFs) Nos. 7L5, 7L6 and 7L7, through its subsidiary Ergo. These TSFs are historical mineral deposits (slimes dams), situated 6 km north-east of Nigel and about 10 km south-east of Springs, in the Ekurhuleni Metropolitan Municipality (EMM), and were created prior to the promulgation of the Mineral and Petroleum Resources Development Act, 2002 (Act No 28 of 2002) (MPRDA) and are accordingly not regulated by the MPRDA.

The project area is made up of 50 farm portions all falling within the City of Johannesburg Metropolitan Municipality. The affected farms are listed in **Error! Reference source not found.** below.

Table 1: Directly Affected property details

Farm Name	Farm ID	Farm Portion
VOGELSTRUISBULT	127 IR	0 (RE)
VOGELSTRUISBULT	127 IR	3
DAGGAFONTEIN 125 IR	125 IR	RE/154
MARIEVALE	282 IR	282
VLAKFONTEIN	281 IR	0 (RE)
VLAKFONTEIN	281 IR	9
GROOTFONTEIN	165 IR	52 (RE)
GROOTFONTEIN	165 IR	85

Kongiwe Environmental (Pty) Ltd.

Reg No 2016 / 135562 / 07

Directors: MJ Hennessy, BJ Thornton (CEO), GI Wilreker

Tel: +27 (10) 140 6508 | Email: info@kongiwe.co.za

150 Bryanston Drive, Bryanston, Sandton, 2191, South Africa.

PostNet Suite no 163, Private Bag X21, Bryanston, 2021, South Africa.

www.kongiwe.co.za

Farm Name	Farm ID	Farm Portion
GROOTFONTEIN	165 IR	82
GROOTFONTEIN	165 IR	99
GROOTFONTEIN	165 IR	0 (RE)
GROOTFONTEIN	165 IR	10
GROOTFONTEIN	165 IR	35
VLAKFONTEIN	130 IR	10
VLAKFONTEIN	130 IR	85
VLAKFONTEIN	130 IR	92
VLAKFONTEIN	130 IR	96
RIETFONTEIN	128 IR	81 (RE)
RIETFONTEIN	128 IR	0 (RE)
KWA THEMA	210 IR	35
KWA THEMA	210 IR	27
KWA THEMA	210 IR	28
KWA THEMA	210 IR	29
WITPOORTJE	117 IR	150
WITPOORTJE	117 IR	1558
WITKLIP (VULCANIA)	279 IR	0 (RE)
WITPOORTJE	117 IR	RE/1
DAGGAFONTEIN 125 IR	125 IR	1 (RE)
DAGGAFONTEIN 125 IR	125 IR	123
DAGGAFONTEIN 125 IR	125 IR	125
DAGGAFONTEIN 125 IR	125 IR	199
DAGGAFONTEIN 125 IR	125 IR	122
DAGGAFONTEIN 125 IR	125 IR	1 (RE)
DAGGAFONTEIN 125 IR	125 IR	196

Farm Name	Farm ID	Farm Portion
DAGGAFONTEIN 125 IR	125 IR	197
DAGGAFONTEIN 125 IR	125 IR	127 (RE)
DAGGAFONTEIN 125 IR	125 IR	93 (RE)
DAGGAFONTEIN 125 IR	125 IR	182
DAGGAFONTEIN 125 IR	125 IR	180
DAGGAFONTEIN 125 IR	125 IR	181
DAGGAFONTEIN 125 IR	125 IR	146
DAGGAFONTEIN 125 IR	125 IR	151 (RE)
DAGGAFONTEIN 125 IR	125 IR	126
DAGGAFONTEIN 125 IR	125 IR	159
DAGGAFONTEIN 125 IR	125 IR	104
DAGGAFONTEIN 125 IR	125 IR	113 (RE)
DAGGAFONTEIN 125 IR	125 IR	122
DAGGAFONTEIN 125 IR	125 IR	128
DAGGAFONTEIN 125 IR	125 IR	117 (RE)
GROOTVALY 124 IR	124 IR	1 (RE)

Kongiwe would like to enquire if there are any land claims on any of the farms listed above. Please could you revert to us as a matter of urgency.

Kind regards,



Sibongile Bambisa
Stakeholder Engagement Consultant
Kongiwe Environmental (Pty) Ltd

Tel: +27 (012) 003 6627 | Cell: +27 (72) 468 9584 | Email: stakeholders@kongiwe.co.za

Environmental Authorisation and an Integrated Water Use Licence Application for the Reclamation of the Marievale Tailings Storage Facilities, Ekurhuleni Metropolitan Municipality - Gauteng Province

Background Information Document

October 2019

PURPOSE OF THE DOCUMENT

This Background Information Document aims to provide you with important information regarding:

- ❖ Ergo Mining Operations Proprietary Limited (Ergo)'s intention to reprocess and reclaim gold residues of the Marievale (7/L/5; 7/L/6 and 7/L/7);
- ❖ The Environmental Impact Assessment and the Public Participation Process to be undertaken in support of the proposed project;
- ❖ An Integrated Water Use Licence Application process;
- ❖ How you can register as an Interested and Affected Party (I&APs) and be kept informed about the project developments;
- ❖ The public review and comment period for the Draft Scoping Report; and
- ❖ An invitation to an open day.

PROJECT BACKGROUND AND CONTEXT

Ergo Mining (Pty) Limited (hereafter Ergo), intends to reclaim and reprocess gold residues from the Marievale tailings storage facilities (TSFs) Nos. 7L5, 7L6 and 7L7, through its subsidiary Ergo. These TSFs are historical mineral deposits (slimes dams), situated 6 km north-east of Nigel and about 10 km south-east of Springs, in the Ekurhuleni Metropolitan Municipality (EMM), and were created prior to the promulgation of the Mineral and Petroleum Resources Development Act, 2002 (Act No 28 of 2002) (MPRDA) and are accordingly not regulated by the MPRDA.

Surface gold retreatment is a largely mechanised process with a risk profile that is significantly lower than that of conventional mining. The slimes dams will be reclaimed by hydraulic mining. During Hydraulic mining, the used process water mixes with the unconsolidated material of the slimes dams, resulting in what is known as a 'slurry'. This slurry will be conveyed to the Ergo Processing Plant (hereafter Ergo Plant) for reprocessing using a newly constructed pipeline. Final deposition of reprocessed slurry will be on the licenced Brakpan/Withok TSF.

LOCALITY

The combined spatial extent of the four dumps is approximately 140 Ha. In terms of regional locality, the dumps are situated approximately 6 km north-east of Nigel and about 10 km south-east of Springs, in the

Ekurhuleni Metropolitan Municipality (EMM). The three dumps are positioned as follows:

- ❖ Site 1: This site consists of two dumps. Dumps 7L5 and 7L6. Dumps 7L5 and 7L6 fall within Ward 88, covering just over 80 Ha.
- ❖ Site 2: Dump 7L7 is located approximately 1 km south of Site 1, also in Ward 88 and covers roughly 60 Ha.

The area is predominantly surrounded by other mine dumps, active mining operations, agricultural lands, scattered settlements, bare ground and several water bodies.

Table 1: Directly Affected property details

FARM NAME	FARM ID	FARM PORTION	INFRASTRUCTURE
Vogelstruisbult	127 IR	0 (RE)	Proposed Pipeline to Daggafontein
Vogelstruisbult	127 IR	3	Proposed Pipeline from 7L5 and 7L6 to Daggafontein
Daggafontein	125 IR	1 (RE)	Proposed Pipeline to TCTA
Daggafontein	125 IR	93 (RE)	Proposed Pipeline to TCTA
Daggafontein	125 IR	108	Proposed Pipeline from Daggafontein to Ergo Plant
Daggafontein	125 IR	112	Proposed Pipeline from Daggafontein to Ergo Plant
Daggafontein	125 IR	113 (RE)	Proposed Pipeline to TCTA
Daggafontein	125 IR	117 (RE)	Proposed Pipeline to TCTA
Daggafontein	125 IR	122	Proposed Pipeline from 7L5 and 7L6 to Daggafontein
Daggafontein	125 IR	123	Proposed Pipeline to TCTA
Daggafontein	125 IR	125	Proposed Pipeline from 7L5 and 7L6 to Daggafontein
Daggafontein	125 IR	126	Proposed Pipeline to TCTA
Daggafontein	125 IR	127 (RE)	Proposed Pipeline to TCTA

FARM NAME	FARM ID	FARM PORTION	INFRASTRUCTURE
Daggafontein	125 IR	128	Proposed Pipeline to TCTA
Daggafontein	125 IR	146	Proposed Pipeline to TCTA
Daggafontein	125 IR	151 (RE)	Proposed Pipeline to TCTA
Daggafontein	125 IR	154 (RE)	Proposed Pipeline to Daggafontein
Daggafontein	125 IR	159	Proposed Pipeline to TCTA
Daggafontein	125 IR	180	Proposed Pipeline to TCTA
Daggafontein	125 IR	181	Proposed Pipeline to TCTA
Daggafontein	125 IR	182	Proposed Pipeline to TCTA
Daggafontein	125 IR	196	Proposed Pipeline to TCTA
Daggafontein	125 IR	197	Proposed Pipeline to TCTA
Daggafontein	125 IR	199	Proposed Pipeline from 7L5 and 7L6 to Daggafontein
Grootvaly	124 IR	1 (RE)	Proposed Pipeline to TCTA
Marievale	282 IR	282	7L7 and Proposed Pipeline
Vlakfontein	281 IR	0 (RE)	7L7 and Proposed Pipeline
Vlakfontein	281 IR	9	Proposed Pipeline from 7L7 to Ergo Plan
Grootfontein	165 IR	0 (RE)	Proposed Pipeline from 7L7 to Ergo Plan
Grootfontein	165 IR	10	Proposed Pipeline from 7L7 to Ergo Plan
Grootfontein	165 IR	35	Proposed Pipeline from 7L7 to Ergo Plan
Grootfontein	165 IR	52 (RE)	Proposed Pipeline from 7L7 to Ergo Plan
Grootfontein	165 IR	82	Proposed Pipeline from 7L7 to Ergo Plan

FARM NAME	FARM ID	FARM PORTION	INFRASTRUCTURE
Grootfontein	165 IR	85	Proposed Pipeline from 7L7 to Ergo Plan
Grootfontein	165 IR	99	Proposed Pipeline from 7L7 to Ergo Plan

Table 2: Indirectly Affected property details

FARM NAME	FARM ID	FARM PORTION	INFRASTRUCTURE
Vogelstruisbult	127 IR	1	Proposed Pipeline from Daggafontein to Ergo Plant
Vogelstruisbult	127 IR	2	Proposed Pipeline from Daggafontein to Ergo Plant
Vogelstruisbult	127 IR	5	Proposed Pipeline from Daggafontein to Ergo Plant
Vogelstruisbult	127 IR	6	Proposed Pipeline from Daggafontein to Ergo Plant
Vogelstruisbult	127 IR	7	Proposed Pipeline from Daggafontein to Ergo Plant
Vogelstruisbult	127 IR	8	Proposed Pipeline from Daggafontein to Ergo Plant
Vogelstruisbult	127 IR	9	Proposed Pipeline from Daggafontein to Ergo Plant
Vogelstruisbult	127 IR	10	Proposed Pipeline from Daggafontein to Ergo Plant
Daggafontein	125 IR	104	Proposed Pipeline to TCTA
Daggafontein	125 IR	108	Proposed Pipeline from Daggafontein to Ergo Plant
Daggafontein	125 IR	110	Proposed Pipeline from Daggafontein to Ergo Plant
Daggafontein	125 IR	114	Proposed Pipeline from Daggafontein to Ergo Plant
Daggafontein	125 IR	133	Proposed Pipeline to TCTA
Daggafontein	125 IR	137	Proposed Pipeline from Daggafontein to Ergo Plant
Daggafontein	125 IR	184	Proposed Pipeline to TCTA
Daggafontein	125 IR	198	Proposed Pipeline to TCTA

FARM NAME	FARM ID	FARM PORTION	INFRASTRUCTURE
Draaikraal	166 IR	2	Proposed Pipeline
Grootfontein	165 IR	7	Proposed Pipeline from 7L7 to Ergo Plan
Grootfontein	165 IR	29	Proposed Pipeline from 7L7 to Ergo Plan
Grootfontein	165 IR	81	Proposed Pipeline from 7L7 to Ergo Plan
Rietfontein	128 IR	0 (RE)	Proposed Pipeline
Rietfontein	128 IR	46	Proposed Pipeline
Rietfontein	128 IR	96 (RE)	Proposed Pipeline
Rietfontein	128 IR	135 (RE)	Proposed Pipeline to Daggafontein
Rietfontein	128 IR	137	Proposed Pipeline
Rietfontein	128 IR	167	Proposed Pipeline
Witpoortje	117 IR	1 (RE)	Proposed Pipeline
Witpoortje	117 IR	91	Proposed Pipeline
Witpoortje	117 IR	92	Proposed Pipeline
Witpoortje	117 IR	108	Proposed Pipeline
Witpoortje	117 IR	155	Proposed Pipeline
Witpoortje	117 IR	442	Proposed Pipeline

PROJECT DESCRIPTION

Ergo Mining (Pty) Limited (hereafter Ergo), intends to reclaim and reprocess gold residues from the Marievale tailings storage facilities (TSFs) Nos. 7L5, 7L6 and 7L7. These TSFs are historical mineral deposits (slimes dams), situated 6 km north-east of Nigel and about 10 km south-east of Springs, in the Ekurhuleni Metropolitan Municipality (EMM), and were created prior to the promulgation of the Mineral and Petroleum Resources Development Act, 2002 (Act No 28 of 2002) (MPRDA) and are accordingly not regulated by the MPRDA.

Surface gold retreatment is a largely mechanised process with a risk profile that is significantly lower than that of conventional mining. The slimes dams will be reclaimed by hydraulic mining. During Hydraulic mining, the used process water mixes with the unconsolidated material of the slimes dams, resulting in what is known as a 'slurry'. This slurry will be conveyed to the Ergo Processing Plant (hereafter Ergo Plant) for reprocessing using a newly constructed pipeline. Final deposition of unprocessed slurry will be on the licenced Brakpan/Withok TSF.

The Proposed Project will investigate two pipeline routes to convey slurry from the TSFs to the Ergo Plant for reprocessing; and return process water to the project site for reclamation.

PIPELINE ALTERNATIVES

First alternative: The pipeline route is approximately 25 km long and consists of two separate 500 mm diameter slurry and return water pipeline pairings. The first pair would be a 7 km extension from the project site to the Daggafontein Plant; while the second pair would be a 17 km extension from the Daggafontein Plant to the Ergo Plant.

Second alternative: The pipeline route would be a 19 km, 500 mm diameter slurry and return water pipeline pairing that extends from the proposed project site to the Ergo Plant.

ACCESS

Major routes around the mine TSFs are the N17 which runs parallel to and north of the TSFs and the R51 which runs west of and perpendicular to the TSFs. As far as possible, existing access roads will be utilised, and where this is not possible, these will be constructed as a two-by-two roadway, operating in both directions. Where access roads are to be constructed, these will be 4m wide gravel road with storm water earth channels and mitre drains to protect the road structure from flood damage. Intersections will be properly designed to provide safe entry and exit in and out of the mining area. Approvals from the provincial roads' authorities will be obtained where necessary.

WATER SUPPLY

Potable water will be purchased from Rand Water or the municipality, with a contingency for portable JoJo tanks or connection to existing water pipeline infrastructure. In terms of process water, the water cycle operates as a closed circuit, meaning that limited make-up water will be required for the reclamation of the Marievale TSFs. Water required for the reclamation activities will be sourced from the existing central water storage facility located in Germiston and conveyed through existing and proposed process water pipelines to the project site for reuse in a closed-circuit system.

INFRASTRUCTURE

The following infrastructure will be utilised on site:

- ❖ Overland slurry pipelines of 500 mm in diameter;
- ❖ Overland return water pipelines of 500 mm in diameter;
- ❖ Reclamation pump stations, which include:
 - Slurry storage tank;
 - Linear screen
 - Water tank;
 - Motor control centre; and

- ❖ Water infrastructure, stormwater systems and spillage handling systems;
- ❖ Electricity reticulation;
- ❖ Administration buildings, including change houses and ablution facilities;
- ❖ Access roads, routed from existing entry points; and
- ❖ Construction contractors' yards (temporary facilities)

LIFE OF MINE

The life of mine for the Proposed Project is expected to be approximately 20 years. An estimated amount of 500 000 tons/month ramping up to 1.2 million tons/month of slurry is expected to be pumped from the Marievale TSFs to the Ergo Plant for beneficiation.

REHABILITATION

Once reclamation is completed, the area will then be assessed for contamination (particularly in terms of radiation), contaminated soils will be removed, and the land levelled to its original functioning topography levels and revegetated. Following reclamation and rehabilitation, it is anticipated that the land will be levelled and vegetated to fit the surrounding environment.

LEGISLATIVE FRAMEWORK

Prior to proceeding with the reclamation process, the applicant is required to obtain various licences and an Environmental Authorisation from the relevant Competent Authorities. The required licences and the environmental authorisation will be undertaken in accordance with the following legislation:

- ❖ Application for an Environmental Authorisation for listed activities triggered in Listing Notices **GN R327, GN R325 and GN R324** in terms of the Environmental Impact Assessment (EIA) Regulations, 2017, as promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA);
- ❖ Application for listed waste activities in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008), as amended (NEM:WA). ***The Competent Authority responsible for assessing the abovementioned applications is the Department of Mineral Resources and Energy- (DMRE)- Gauteng Region.***

- ❖ An Integrated Water Use Licence Application (IWULA) will be undertaken in accordance with the National Water Act, 1998 (Act No.36 of 1998) (NWA). ***The Department of Human Settlements, Water and Sanitation will be the Competent Authority to assess the IWULA for the proposed project.***

Please refer to Table 2 below for a list of activities to be authorised under the NEMA, NEM:WA and NWA.

Table 2: List of Activities to be authorised in accordance with NEMA, NEM:WA and NWA

Applicable listing notice in terms of NEMA	Waste management authorisation in terms of NEM:WA	Water Use Licence Authorisation in terms of the NWA
GNR 324: Activity: 2; 4 and 14	GNR 921	21(c) & (i)
GNR 325: Activity 6; and 7	None	None
GNR 327 – 10; 12; 13; 9 and 19	None	

SCOPING AND ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

Kongiwe Environmental (Pty) Ltd has been appointed as an independent Environmental Assessment Practitioner to conduct the EIA process for the proposed project. In accordance with the provisions of the EIA 2014 Regulations (as amended), the EIA process for the proposed project will be carried out in the following phases:

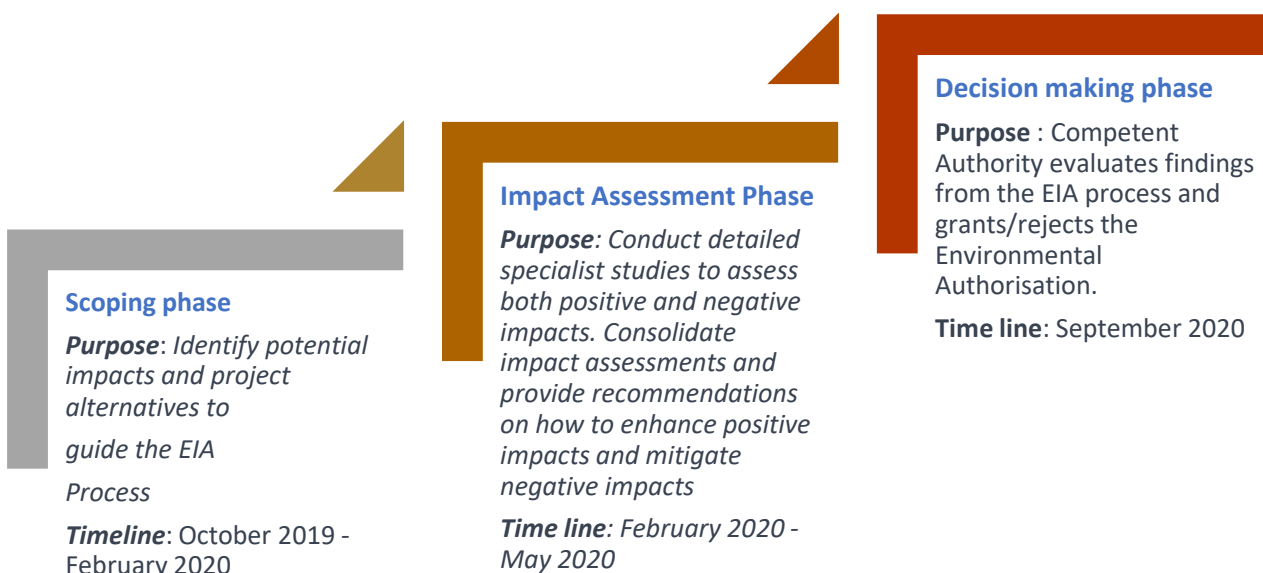


Figure 1: EIA process and the associated timeline

INTEGRATED WATER USE LICENCE

An Integrated Water Use Licence Application will be conducted for water uses associated with Section 21 of the NWA. The IWULA process will be undertaken concurrently with the EIA process for the proposed Marievale TSFs reclamation project.

SPECIALIST STUDIES

Various specialist studies will be undertaken as part of the EIA process to assess the potential impacts associated with the proposed project. Specialist studies to be undertaken include:

- ❖ Biodiversity and Wetlands;
- ❖ Surface Water;
- ❖ Groundwater;
- ❖ Air quality;
- ❖ Social;
- ❖ Heritage and Archaeology; and
- ❖ Noise.

PUBLIC PARTICIPATION PROCESS

The public participation process will form part of the Integrated Environmental Authorisation, Waste Management Licence Application and the IWULA process. The public participation process offers stakeholders a fair opportunity to be informed about the proposed project, to raise issues of concern and to make suggestions for enhanced project benefits. The project team will consider relevant issues and suggestions during the EIA and IWULA (at a later stage) process.

AVAILABILITY OF THE SCOPING REPORT FOR PUBLIC REVIEW AND COMMENT

The Draft Scoping Report for the Marievale project will be made available for public review and comment for a period of 30 days, from **23 October 2019 – 21 November 2019**. The report can be accessed at the following locations:

Location	Physical Address	Contact person
Hard copies		
Dunnottar Public Library	47 Rhodes Avenue, Dunnottar	Mr Shelton Mmisi (Librarian) (011) 999 9118
Kwa-Thema Public Library	7019 Nkosi Street, Kwa-Themba, Springs	Ms Portia Mosele (Librarian) (011) 999 8494
Electronic copies		
Kongiwe Environmental website	www.kongiwe.co.za/public_documents	Sibongile Bambisa / Vanessa Viljoen
For a CD copy please contact the stakeholder engagement team (Sibongile Bambisa/ Vanessa Viljoen), Tel: (012) 003 6627, Email: stakeholders@kongiwe.co.za		

A technical report in support of the IWULA process will be made available for public review and comment for a period of 60 days. Information regarding the availability of the IWULA report and how stakeholders can provide their comments will be communicated to all stakeholders at a later stage.

INVITATION TO AN OPEN DAY

Interested and Affected Parties are invited to attend an open day which will be held on **Saturday, 09 November 2019 at the Grootvaly Blesbokspruit Wetland Reserve in Welgadacht Road in Springs from 10H00 - 15H00**. The purpose of the open day is to discuss the proposed project, contents of the Scoping Report and also to provide I&APs with an opportunity to raise their concerns/comments and interact with the project team.

HOW TO BECOME INVOLVED

Any person affected by or who may be interested in the proposed project is asked to register as an Interested and Affected Party (I&AP) by contacting the stakeholder engagement team. **Contact person: Sibongile Bambisa/Vanessa Viljoen Tel: (010) 140 6508, Email: stakeholders@kongiwe.co.za**

Our team welcomes your participation and looks forward to your involvement throughout this process.

COMMENTS AND QUERIES:

Should you have any comments/queries, please contact the stakeholder engagement team.

Contact persons: Sibongile Bambisa/Vanessa Viljoen








Tel: 010 140 6508

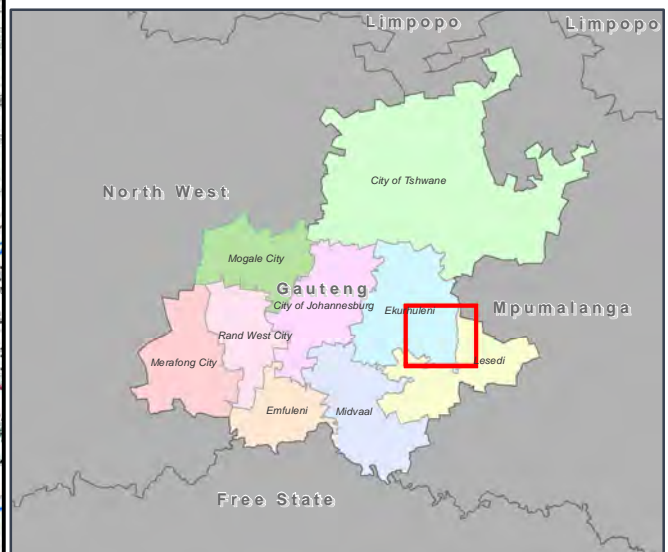
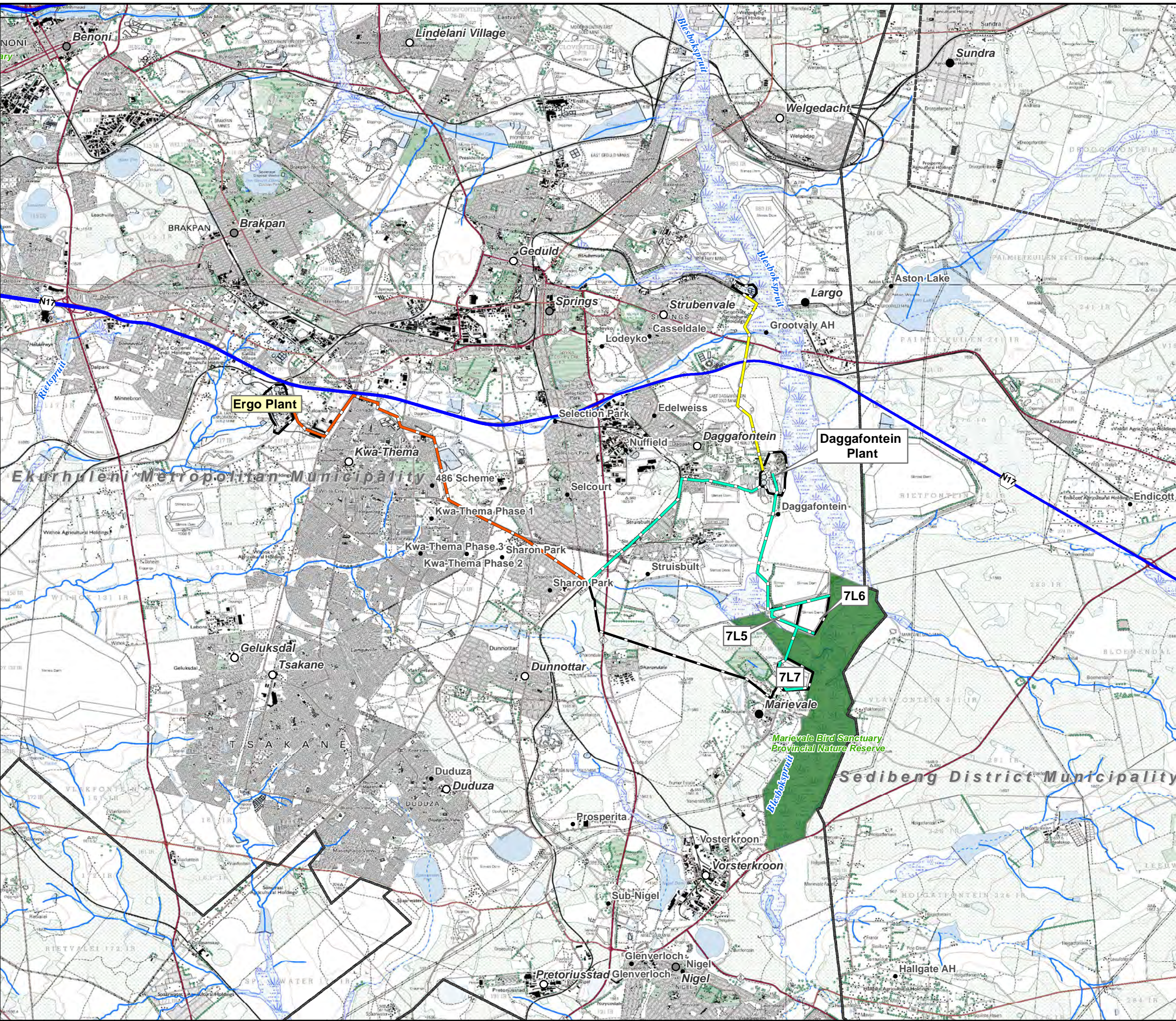
Email: stakeholders@kongiwe.co.za

Reclamation of the Marievale Dumps: Locality Map

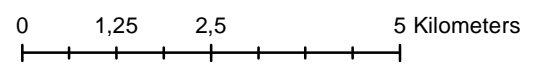
1:100 000

Legend

- Proposed Infrastructure**
-  Proposed Pipeline from Daggafontein to Ergo Plant
 -  Proposed Pipeline to TCTA
 -  Proposed 7L7 Pipeline to Ergo Plant
 -  Proposed Pipeline Route to Marievale
 -  District Municipality
 -  Formal Protected Areas
 -  Mine Dumps Outlines



Project Name : Marievale Reclamation Project
 CoordinateSystem : WGS84 Decimal Degrass
 Date : 10 October 2019 v3



Environmental Authorisation and an Integrated Water Use Licence Application for the Reclamation of the Marievale Tailings Storage Facilities, Ekurhuleni Metropolitan Municipality - Gauteng Province Stakeholder Registration and Reply Form

Please return a completed reply form to the Stakeholder Engagement team:

Sibongile Bambisa / Vanessa Viljoen

Phone: 012 003 6627 or E-mail: stakeholders@kongiwe.co.za

Postal Address: PostNet Suite no 163, Private Bag X21, Bryanston, 2021

Please provide your complete contact details:

If you are a landowner or you are occupying land, please indicate property details

Landowner	Property								
Land occupier	Property				Property owner				
Title		Mr	Mrs	Ms	Dr	Prof	Other		
First Name									
Surname									
Organisation/Farm/ Business/ Village. Etc.									
Position in organisation									
Contact Numbers	Cell phone				Fax			Tel	
Email address									
Postal address									
Please indicate your preferred method of communication		Email		SMS		Post		Fax	

I intend attending the Open Day

Saturday, 09 November, starting at 10:00 and ending at 15:00 at Grootvaly Blesbokspruit Wetland Reserve in Welgadacht Road in Springs.	Yes	No
---	-----	----

To assist us with the specialist studies please answer the questions below. Should you require any assistance with filling in the questions please contact the abovementioned persons from the stakeholder engagement team.

1. How do you think the project might affect / impact you?

2. How do you think these effects/impacts can be managed, avoided and / or fixed should they happen?

3. What is the land currently being used for?

4. Where are these land uses taking place?

**5. Are there any natural environmental/ ecological aspects which we need to be aware of?
(water, heritage sites, grave sites, special plants or animals)**

6. Where are these aspects found?

7. Do you think the project could affect / impact any structures you might have? (e.g. houses, buildings, roads, dams)

8. If so, how can these effects/ impacts be managed, avoided or fixed should they happen?

Any other comments

Please provide contact details of any other stakeholders we should consult.

Title	Mr	Mrs	Ms	Dr	Prof	Other	
First name							
Surname							
Organisation/ Property / Business							
Cell phone							
Email							
Title	Mr	Mrs	Ms	Dr	Prof	Other	
First name							
Surname							
Organisation/ Farm / Business							
Cell phone							
Email							

Signature:		Date:	
------------	--	-------	--



Environmental Authorisation and an Integrated Water Use Licence Application for the Reclamation of the Marievale Tailings Storage Facilities, Ekurhuleni Metropolitan Municipality - Gauteng Province

Applicant: Ergo Mining Operations Proprietary Limited (Ergo)

Project Name: Marievale TSF Reclamation Project

Notice is hereby given that Ergo Mining (Pty) Limited (hereafter Ergo), intends to reclaim and reprocess gold residues from the Marievale tailings storage facilities (TSFs): 7L5, 7L6 and 7L7. These TSFs are historical mineral deposits (slimes dams) which were created prior to the promulgation of the Mineral and Petroleum Resources Development Act, 2002 (Act No 28 of 2002) (MPRDA) and are accordingly not regulated by the MPRDA. The combined spatial extent of the TSFs is approximately 140 Ha. The TSFs are located within City of Ekurhuleni Metropolitan Municipality (EMM) and are adjacent to the towns of Nigel and Springs in the Gauteng province.

The TSFs are positioned as follows:

- Site 1: This site consists of a cluster of 7L5 and 7L6 and fall within Ward 88, covering just over 80 Hectares (Ha);
- Site 2: TSF 7L7 is located approximately 1 km south of Site 1, also in Ward 88 and covers roughly 60 Ha.

In terms of the environmental legislation, Ergo is required to obtain the necessary licences and an Environmental Authorisation prior to proceeding with the reclamation process. The required licences and the Environmental Authorisation will be undertaken in accordance with the following legislation:

- **Application for an Environmental Authorisation** for listed activities triggered in Listing Notices **GNR R983 (Activity 24) ; GNR R984 (Activity 6) and GNR 985 (Activity 4)** in terms of the Environmental Impact Assessment (EIA) Regulations, 2017, as promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA);
- **Application for listed waste activities** in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008), as amended (NEM: WA) for listed activities under **GNR 921– B (2)**.
- **An Integrated Water Use Licence Application (IWULA)** will be undertaken at a later stage in accordance with the National Water Act, 1998 (Act No.36 of 1998) (NWA) for water uses in terms of **Section 21(c) & (i)**.

AVAILABILITY OF THE DRAFT SCOPING REPORT FOR PUBLIC REVIEW AND COMMENT

The Draft Scoping Report for the Marievale TSF's reclamation and reprocessing project will be made available for public review and comment for a period of 30 days, from **Wednesday, 23 October 2019 to Thursday, 21 November 2019**. The report can be accessed at the following locations:

Location	Physical Address	Contact Person
Hard copies		
Dunnottar Public Library	47 Rhodes Avenue, Dunnottar	Mr Shelton Mmisi (Librarian) (011) 999-9118
Kwa-Thema Public Library	7019 Nkosi Street, Kwa-Themba, Springs	Ms Portia Moseithe (Librarian)
(011) 999 8494		
Kongiwe Environmental website	www.kongiwe.co.za/ public documents	Sibongile Bambisa/ Vanessa Viljoen)
For a CD copy please contact the stakeholder engagement team (Sibongile Bambisa / Vanessa Viljoen), Tel: (012) 003 6627, Email: stakeholders@kongiwe.co.za		

INVITATION TO AN OPEN DAY

Interested and Affected Parties are invited to attend an open day which will be held on **Saturday, 09 November 2019, starting at 10H00 and ending at 15H00 at the Grootvaly Blesbokspruit Wetland Reserve in Welgadacht Road in Springs**. The purpose of the meeting is to discuss the proposed project, contents of the Scoping Report, to provide I&APs with an opportunity to raise their concerns/ comments and to interact with the project team.

To register as an I&AP please contact:

Kongiwe Environmental

Contact person: Sibongile Bambisa / Vanessa Viljoen, **Tel:** 012 0036627,

Email: stakeholders@kongiwe.co.za

Please ensure you submit your comments before Thursday, 21 November 2019.

Vanessa Viljoen

From: Kongiwe Stakeholder Engagement <stakeholders@kongiwe.co.za>
Sent: Wednesday, 16 October 2019 15:31
To: vviljoen@kongiwe.co.za
Subject: Environmental Authorisation and an Integrated Water Use Licence Application for the Reclamation of the Marievale Tailings Storage Facilities, Ekurhuleni Metropolitan Municipality
Attachments: Ergo_BID_Marievale_15102019_Combined_Final.pdf

Dear Stakeholders

This email serves to inform you that Ergo Mining (Pty) Limited (hereafter Ergo), intends to reclaim and reprocess gold residues from the Marievale tailings storage facilities (TSFs): 7L5, 7L6 and 7L7. These TSFs are historical mineral deposits (slimes dams) which were created prior to the promulgation of the Mineral and Petroleum Resources Development Act, 2002 (Act No 28 of 2002) (MPRDA) and are accordingly not regulated by the MPRDA. The combined spatial extent of the TSFs is approximately 140 Ha. The TSFs are located within City of Ekurhuleni Metropolitan Municipality (EMM) and are adjacent to the towns of Nigel and Springs in the Gauteng province.

AVAILABILITY OF THE SCOPING REPORT FOR PUBLIC REVIEW AND COMMENT

The Draft Scoping Report will be made available for public review and comment for a period of 30 days, from **Wednesday, 23 October 2019 to Thursday, 21 November 2019.**

INVITATION TO AN OPEN DAY

Interested and Affected Parties (I&APs) are invited to attend an Open Day which will be held on **Saturday, 09 November 2019, starting at 10H00 and ending at 15H00 at the Grootvaly Blesbokspruit Wetland Reserve in Welgadacht Road in Springs.** The purpose of the open day is to discuss the proposed project, contents of the Scoping Report and also to provide I&APs with an opportunity to raise their concerns/comments.

Any person affected by or who may be interested in the proposed project is asked to register as an I&AP by completing the attached reply sheet or by contacting the stakeholder engagement team. **Contact person: Sibongile Bambisa/Vanessa Viljoen, Email: stakeholders@kongiwe.co.za, Tel: (012) 003 6627.**

For more information, please refer to the attached Background Information Document.

Kind Regards,



The Stakeholder Engagement Team | Kongiwe Environmental (Pty) Ltd.

Tel: +27 (12) 003 6627 | Fax: +27 (86) 476 6438 | Email: stakeholders@kongiwe.co.za

Spaces, Byls Bridge Office Park, Building 14, Block B, Corner of Olievenhoutbosch & Jean Ave, Centurion, 0157, South Africa.

PostNet Suite no 163, Private Bag X21, Bryanston, 2021, South Africa.

www.kongiwe.co.za

Disclaimer: The provisions of Section 11 of the Electronic Communications and Transactions Act 25 of 2002 apply to this email notice and make it enforceable and binding on the recipient/addressee. This email message (including attachments) contains information which may be confidential and/or legally privileged. Unless you are the intended recipient, you may not use, copy or disclose to anyone the message or any information contained in the message or from any attachments that were sent with this email, and if you have received this email message in error, please advise the sender by email, and delete the message. Unauthorised disclosure and/or use of information contained in this email may result in civil and criminal liability. Everything in this e-mail and attachments relating to the official business of Kongiwe Environmental (Pty) Ltd is proprietary to the company. Caution should be observed in placing any reliance upon any information contained in this e-mail, which is not intended to be a representation or inducement to make any decision in relation to Kongiwe Environmental (Pty) Ltd. Any decision taken based on the information provided in this e-mail, should only be made after consultation with appropriate legal, regulatory, tax, technical, business, investment, financial, and accounting advisors. The e-mail address of the sender may not be used, copied, sold, disclosed or incorporated into any database or mailing list for spamming and/or other marketing purposes without the prior consent of Kongiwe Environmental (Pty) Ltd. Unless the intention to contract has been expressed in this message, this message cannot be regarded as a solicitation to contract, nor be seen as an offer or acceptance of contractual agreement. Neither the sender of the e-mail, nor Kongiwe Environmental (Pty) Ltd shall be liable to any party for any direct, indirect or consequential damages, including, without limitation, loss of profit, interruption of business or loss of information, data or software or otherwise. No warranties are created or implied that an employee of Kongiwe Environmental (Pty) Ltd and/or a contractor of Kongiwe Environmental (Pty) Ltd is authorised to create and send this e-mail.



APPENDIX D:
Site Photographs



7L3 Zinc Tailings Storage Facility Reclamation Project, located approximately 1 km north-west from Site 1 of the Proposed Project site.

Latitude: 26°19'14.79"S

Longitude: 28°29'1.62"E



Blesbok Shooting Range, also located approximately 1 km north-west of the Proposed Project site.

Latitude: 26°19'15.01"S

Longitude: 28°29'39.45"E



Vlakfontein Quarry Mine, located approximately 1 km south-west from Site 2 of the Proposed Project.

Latitude: 26°20'20.54"S

Longitude: 28°29'4.12"



Powerlines near the Proposed Project Site. Just north of dump 7L5 and 7L6.

Latitude: 26°19'45.17"S

Longitude: 28°30'9.69"E



Dump 7L5 (left) and 7L6 (right).

Latitude: 26°19'43.69"S

Longitude: 28°30'10.38"E



Dump 7L7.

Latitude: 26°20'48.28"S

Longitude: 28°29'50.61"E



APPENDIX E:
Environmental Screening Tool

**SCREENING REPORT FOR AN ENVIRONMENTAL AUTHORIZATION OR
FOR A PART TWO AMENDMENT OF AN ENVIRONMENTAL AUTHORISATION
AS REQUIRED BY THE 2014 EIA REGULATIONS – PROPOSED SITE
ENVIRONMENTAL SENSITIVITY**

EIA Reference number:

Project name: Marievale Reclamation Project

Project title: Marievale Reclamation Project

Date screening report generated: 11/10/2019 11:34:22

Applicant: Ergo Mining Pty Ltd

Compiler: Sphesihle Dambuza

Compiler signature:

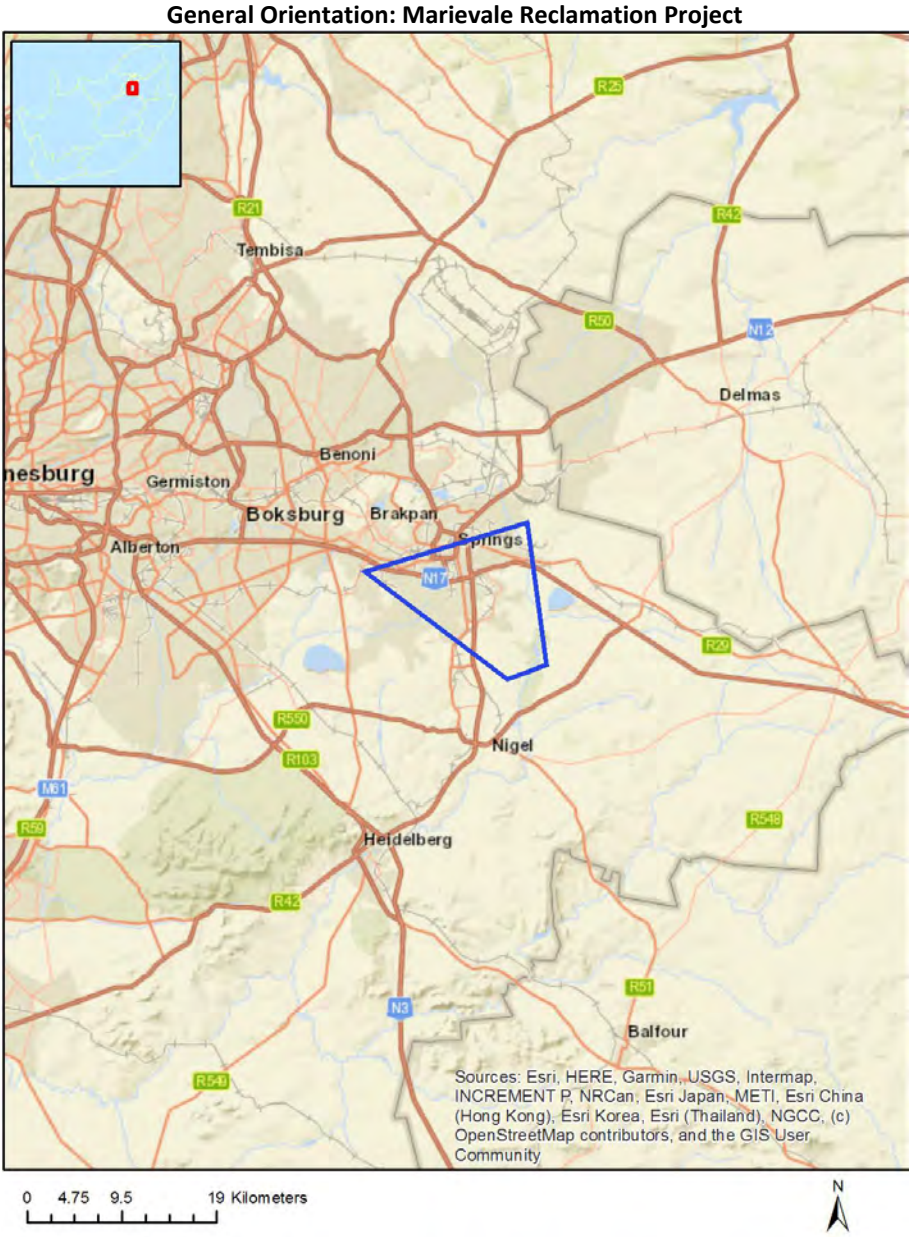
.....

Table of Contents

- Proposed Project Location 3
 - Orientation map 1: General location 3
- Map of proposed site and relevant area(s) 4
 - Cadastral details of the proposed site 4
 - Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area 21
 - Environmental Management Frameworks relevant to the application 21
- Environmental screening results and assessment outcomes 22
 - Relevant development incentives, restrictions, exclusions or prohibitions 22
- Map indicating proposed development footprint within applicable development incentive, restriction, exclusion or prohibition zones 24
 - Proposed Development Area Environmental Sensitivity 24
 - Specialist assessments identified 25
- Results of the environmental sensitivity of the proposed area 27
 - MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY 27
 - MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY 28
 - MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY 29
 - MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY 30
 - MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY 31
 - MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY 32
 - MAP OF RELATIVE DEFENCE THEME SENSITIVITY 33
 - MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY 34

Proposed Project Location

Orientation map 1: General location



Map of proposed site and relevant area(s)



Cadastral details of the proposed site

Property details:

No	Farm Name	Farm/ Erf No	Portion	Latitude	Longitude	Property Type
1	NUFFIELD	64	0	26°17'9.76S	28°27'17.68E	Erven
2	DAGGAFONTEIN	267	0	26°17'30.03S	28°28'30.47E	Erven
3	DAGGAFONTEIN	269	0	26°17'30.08S	28°28'28.17E	Erven
4	DAGGAFONTEIN	268	0	26°17'30.08S	28°28'29.32E	Erven
5	DAGGAFONTEIN	275	0	26°17'30.14S	28°28'21.45E	Erven
6	SHARON PARK	1027	4	26°19'15.47S	28°25'59.42E	Erven
7	DAGGAFONTEIN	276	1	26°17'30.12S	28°28'20.28E	Erven
8	DAGGAFONTEIN	276	0	26°17'30.11S	28°28'19.66E	Erven
9	STRUBENVALE	736	0	26°14'56.33S	28°28'42.92E	Erven
10	GOLDEN SPRINGS	33	0	26°17'45.89S	28°25'56.76E	Erven
11	STRUBENVALE	736	1	26°14'57.07S	28°28'42.94E	Erven
12	SHARON PARK	457	0	26°19'33.2S	28°26'50.74E	Erven
13	NUFFIELD	62	0	26°17'17.71S	28°27'51.27E	Erven
14	SEL COURT	3808	0	26°18'54.81S	28°25'54.27E	Erven
15	NUFFIELD	156	3	26°16'41.62S	28°27'30.06E	Erven
16	NUFFIELD	88	0	26°17'16.95S	28°27'40.43E	Erven
17	DAGGAFONTEIN	272	0	26°17'30.12S	28°28'24.89E	Erven
18	LODEYKO	85	1	26°15'29.2S	28°27'19.17E	Erven
19	SHARON PARK	470	1	26°19'46.17S	28°26'38.78E	Erven
20	SHARON PARK	458	0	26°19'34.17S	28°26'49.67E	Erven
21	DAGGAFONTEIN	279	0	26°17'32.66S	28°28'28.38E	Erven
22	DAGGAFONTEIN	273	0	26°17'30.11S	28°28'23.9E	Erven
23	DAGGAFONTEIN	274	0	26°17'30.16S	28°28'22.81E	Erven
24	DAGGAFONTEIN	277	0	26°17'30.21S	28°28'18.99E	Erven
25	SHARON PARK	1027	3	26°19'15.62S	28°25'59.78E	Erven
26	NUFFIELD	88	3	26°17'17.6S	28°27'45.03E	Erven
27	SEL COURT	4344	0	26°18'11.64S	28°26'44.46E	Erven
28	SHARON PARK	469	0	26°19'44.61S	28°26'38.8E	Erven

29	SEL COURT	3809	0	26°18'54.99S	28°25'54.7E	Erven
30	SPRINGS	1850	0	26°15'28.78S	28°25'44.39E	Erven
31	NUFFIELD	113	3	26°17'27.72S	28°27'46.23E	Erven
32	NUFFIELD	113	2	26°17'25.09S	28°27'57.65E	Erven
33	NUFFIELD	156	1	26°16'43.36S	28°27'27.37E	Erven
34	SHARON PARK	1027	1	26°19'16.11S	28°25'59.08E	Erven
35	SHARON PARK	1024	1	26°19'16.7S	28°26'1.71E	Erven
36	SHARON PARK	738	0	26°19'56.07S	28°26'27.21E	Erven
37	SHARON PARK	1024	2	26°19'16.7S	28°26'2.19E	Erven
38	VULCANIA	130	15	26°16'10.57S	28°23'11.18E	Erven
39	NUFFIELD	132	0	26°17'18.2S	28°27'48.34E	Erven
40	SELECTION PARK	1587	0	26°15'42.74S	28°26'55.93E	Erven
41	SHARON PARK	469	1	26°19'45.34S	28°26'39.62E	Erven
42	SHARON PARK	470	0	26°19'45.45S	28°26'37.74E	Erven
43	NUFFIELD	64	1	26°17'10.03S	28°27'20.68E	Erven
44	SHARON PARK	457	1	26°19'34.14S	28°26'51.63E	Erven
45	NUFFIELD	156	2	26°16'42.21S	28°27'28.68E	Erven
46	DAGGAFONTEIN	271	0	26°17'30.07S	28°28'26.03E	Erven
47	DAGGAFONTEIN	278	0	26°17'30.31S	28°28'17.98E	Erven
48	NUFFIELD	88	2	26°17'17.08S	28°27'43.1E	Erven
49	SHARON PARK	458	1	26°19'35.02S	28°26'50.77E	Erven
50	SEL COURT	3810	0	26°18'55.19S	28°25'55.11E	Erven
51	SHARON PARK	1027	2	26°19'16.26S	28°25'59.57E	Erven
52	DAGGAFONTEIN	270	0	26°17'30.1S	28°28'27.08E	Erven
53	NUFFIELD	88	1	26°17'16.88S	28°27'41.98E	Erven
54	POLLAK PARK	337	2	26°15'57.65S	28°25'17.45E	Erven
55	CASSELDALE	7	0	26°15'21.97S	28°27'29.54E	Erven
56	CASSELDALE	8	0	26°15'17.19S	28°27'30.95E	Erven
57	CASSELDALE	295	0	26°15'32.68S	28°28'0.2E	Erven
58	CASSELDALE	296	0	26°15'34.59S	28°27'59.34E	Erven
59	CASSELDALE	425	0	26°15'44.9S	28°28'11.37E	Erven
60	CASSELDALE	427	0	26°15'43.85S	28°28'9.85E	Erven
61	CASSELDALE	558	0	26°15'47.91S	28°28'13.82E	Erven
62	CASSELDALE	559	0	26°15'48.2S	28°28'14.61E	Erven
63	CASSELDALE	4	0	26°15'24.24S	28°27'29.97E	Erven
64	CASSELDALE	11	0	26°15'17.98S	28°27'33.35E	Erven
65	CASSELDALE	36	0	26°15'37.7S	28°27'50.86E	Erven
66	CASSELDALE	37	0	26°15'38.48S	28°27'50.5E	Erven
67	CASSELDALE	87	0	26°15'44.08S	28°27'38.11E	Erven
68	CASSELDALE	89	0	26°15'42.65S	28°27'37.47E	Erven
69	CASSELDALE	747	0	26°16'17.12S	28°27'56.23E	Erven
70	CASSELDALE	128	0	26°15'53.71S	28°27'42.46E	Erven
71	CASSELDALE	153	0	26°15'49.03S	28°27'45.76E	Erven
72	CASSELDALE	154	0	26°15'47.63S	28°27'46.85E	Erven
73	CASSELDALE	49	0	26°15'33.1S	28°27'32.98E	Erven
74	CASSELDALE	52	0	26°15'35.34S	28°27'35.23E	Erven
75	CASSELDALE	208	0	26°15'50.65S	28°27'50.05E	Erven
76	CASSELDALE	334	0	26°15'41.41S	28°27'56.25E	Erven
77	CASSELDALE	464	0	26°15'35.45S	28°28'7.81E	Erven
78	CASSELDALE	519	0	26°15'40.83S	28°28'20.46E	Erven
79	CASSELDALE	523	0	26°15'40.22S	28°28'17.11E	Erven
80	CASSELDALE	27	0	26°15'32.1S	28°27'53.51E	Erven
81	CASSELDALE	31	0	26°15'34.94S	28°27'52.22E	Erven
82	CASSELDALE	44	0	26°15'34.8S	28°27'37.49E	Erven
83	CASSELDALE	47	0	26°15'33.84S	28°27'34.9E	Erven
84	CASSELDALE	707	0	26°16'3.43S	28°28'13.21E	Erven
85	CASSELDALE	104	0	26°15'42.08S	28°27'39.05E	Erven
86	CASSELDALE	107	0	26°15'44.21S	28°27'40.01E	Erven
87	CASSELDALE	744	0	26°16'17.12S	28°27'52.96E	Erven
88	CASSELDALE	130	0	26°15'52.29S	28°27'41.81E	Erven

89	CASSELDALE	133	0	26°15'50.15S	28°27'40.85E	Erven
90	CASSELDALE	175	0	26°15'42.08S	28°27'42.86E	Erven
91	CASSELDALE	180	0	26°15'39.83S	28°27'41.72E	Erven
92	CASSELDALE	191	0	26°15'50.77S	28°27'48.15E	Erven
93	CASSELDALE	194	0	26°15'52.9S	28°27'47.19E	Erven
94	CASSELDALE	238	0	26°15'38.55S	28°27'55.62E	Erven
95	CASSELDALE	240	0	26°15'37.16S	28°27'56.73E	Erven
96	CASSELDALE	862	0	26°15'45.57S	28°28'39.64E	Erven
97	CASSELDALE	255	0	26°15'31.08S	28°27'58.94E	Erven
98	CASSELDALE	300	0	26°15'35.75S	28°28'2.49E	Erven
99	CASSELDALE	303	0	26°15'36.39S	28°28'5.3E	Erven
100	CASSELDALE	311	0	26°15'36.58S	28°28'0.27E	Erven
101	CASSELDALE	314	0	26°15'38S	28°27'57.79E	Erven
102	CASSELDALE	186	0	26°15'41.82S	28°27'46.65E	Erven
103	CASSELDALE	187	0	26°15'42.11S	28°27'47.44E	Erven
104	CASSELDALE	213	0	26°15'46.54S	28°27'50.07E	Erven
105	CASSELDALE	218	0	26°15'48.66S	28°27'50.95E	Erven
106	CASSELDALE	244	0	26°15'32.04S	28°27'56.66E	Erven
107	CASSELDALE	245	0	26°15'32.81S	28°27'56.31E	Erven
108	CASSELDALE	276	0	26°15'28.57S	28°28'4.28E	Erven
109	CASSELDALE	277	0	26°15'28.86S	28°28'5.07E	Erven
110	CASSELDALE	305	0	26°15'38.4S	28°28'5.11E	Erven
111	CASSELDALE	309	0	26°15'37.17S	28°28'1.84E	Erven
112	CASSELDALE	937	0	26°15'57.06S	28°28'6.29E	Erven
113	CASSELDALE	938	0	26°15'58.46S	28°28'5.66E	Erven
114	CASSELDALE	366	0	26°15'48.33S	28°27'53.1E	Erven
115	CASSELDALE	368	0	26°15'48.9S	28°27'54.68E	Erven
116	CASSELDALE	388	0	26°15'53.41S	28°28'2.45E	Erven
117	CASSELDALE	393	0	26°15'54.86S	28°28'6.39E	Erven
118	CASSELDALE	430	0	26°15'42.75S	28°28'6.59E	Erven
119	CASSELDALE	434	0	26°15'42.15S	28°28'8.84E	Erven
120	CASSELDALE	1053	0	26°16'2.1S	28°27'48.25E	Erven
121	CASSELDALE	1055	0	26°16'2.63S	28°27'49.95E	Erven
122	CASSELDALE	485	0	26°15'34.2S	28°28'15.03E	Erven
123	CASSELDALE	491	0	26°15'32.52S	28°28'10.22E	Erven
124	CASSELDALE	531	0	26°15'45.22S	28°28'20.97E	Erven
125	CASSELDALE	532	0	26°15'46.36S	28°28'20E	Erven
126	CASSELDALE	564	0	26°15'49.69S	28°28'18.67E	Erven
127	CASSELDALE	566	0	26°15'50.77S	28°28'17.13E	Erven
128	CASSELDALE	1218	0	26°15'53.47S	28°27'38.67E	Erven
129	CASSELDALE	1223	0	26°15'39.01S	28°27'31.75E	Erven
130	POLLAK PARK	337	1	26°15'58.02S	28°25'15.9E	Erven
131	CASSELDALE	207	0	26°15'51.35S	28°27'49.73E	Erven
132	CASSELDALE	290	0	26°15'34.14S	28°28'4.14E	Erven
133	CASSELDALE	332	0	26°15'39.7S	28°27'57.93E	Erven
134	CASSELDALE	377	0	26°15'52.67S	28°27'59.67E	Erven
135	CASSELDALE	463	0	26°15'35.84S	28°28'8.74E	Erven
136	CASSELDALE	509	0	26°15'37.04S	28°28'19.42E	Erven
137	CASSELDALE	520	0	26°15'40.21S	28°28'19.94E	Erven
138	CASSELDALE	553	0	26°15'44.51S	28°28'13.58E	Erven
139	CASSELDALE	17	0	26°15'25.48S	28°27'55.13E	Erven
140	CASSELDALE	29	0	26°15'33.52S	28°27'52.86E	Erven
141	CASSELDALE	45	0	26°15'34.48S	28°27'36.63E	Erven
142	CASSELDALE	75	0	26°15'39.47S	28°27'33.32E	Erven
143	CASSELDALE	94	0	26°15'39.08S	28°27'35.8E	Erven
144	CASSELDALE	105	0	26°15'42.79S	28°27'39.37E	Erven
145	CASSELDALE	135	0	26°15'48.73S	28°27'40.21E	Erven
146	CASSELDALE	147	0	26°15'51.7S	28°27'43.39E	Erven
147	CASSELDALE	159	0	26°15'46.04S	28°27'42.89E	Erven
148	CASSELDALE	181	0	26°15'40.37S	28°27'42.71E	Erven

149	CASSELDALE	192	0	26°15'51.48S	28°27'47.83E	Erven
150	CASSELDALE	819	0	26°15'40.44S	28°28'39.04E	Erven
151	CASSELDALE	227	0	26°15'37.97S	28°27'54.05E	Erven
152	CASSELDALE	239	0	26°15'37.77S	28°27'55.98E	Erven
153	CASSELDALE	861	0	26°15'44.8S	28°28'40.84E	Erven
154	CASSELDALE	271	0	26°15'27.12S	28°28'0.34E	Erven
155	CASSELDALE	282	0	26°15'31.85S	28°28'2.42E	Erven
156	CASSELDALE	298	0	26°15'35.16S	28°28'0.92E	Erven
157	CASSELDALE	317	0	26°15'38.86S	28°28'0.15E	Erven
158	CASSELDALE	328	0	26°15'40.87S	28°28'1.09E	Erven
159	CASSELDALE	338	0	26°15'42.57S	28°27'59.39E	Erven
160	CASSELDALE	361	0	26°15'47.58S	28°27'57.11E	Erven
161	CASSELDALE	373	0	26°15'50.35S	28°27'58.62E	Erven
162	CASSELDALE	381	0	26°15'51.19S	28°27'56.4E	Erven
163	CASSELDALE	400	0	26°15'52.28S	28°28'3.87E	Erven
164	CASSELDALE	439	0	26°15'40.17S	28°28'9.94E	Erven
165	CASSELDALE	458	0	26°15'37.55S	28°28'12.86E	Erven
166	CASSELDALE	467	0	26°15'34.42S	28°28'9.39E	Erven
167	CASSELDALE	478	0	26°15'39.19S	28°28'16.25E	Erven
168	CASSELDALE	500	0	26°15'32.17S	28°28'14.06E	Erven
169	CASSELDALE	526	0	26°15'42.06S	28°28'18.64E	Erven
170	CASSELDALE	537	0	26°15'42.97S	28°28'17.28E	Erven
171	CASSELDALE	1188	0	26°15'47.93S	28°27'58.78E	Erven
172	CASSELDALE	571	0	26°15'49.33S	28°28'13.18E	Erven
173	CASSELDALE	583	0	26°15'54.64S	28°28'16.41E	Erven
174	CASSELDALE	593	0	26°15'54.49S	28°28'9.91E	Erven
175	CASSELDALE	606	0	26°15'56.48S	28°28'10.85E	Erven
176	CASSELDALE	617	0	26°15'52.86S	28°28'20.53E	Erven
177	CASSELDALE	637	0	26°15'49.8S	28°28'25.08E	Erven
178	CASSELDALE	649	0	26°15'44.1S	28°28'23.35E	Erven
179	CASSELDALE	661	0	26°15'50.04S	28°28'30.66E	Erven
180	CASSELDALE	684	0	26°15'52.49S	28°28'32.6E	Erven
181	CASSELDALE	695	0	26°15'58.31S	28°28'26.12E	Erven
182	CASSELDALE	713	0	26°16'7.11S	28°28'7.76E	Erven
183	CASSELDALE	720	0	26°16'7.3S	28°28'10.76E	Erven
184	CASSELDALE	731	0	26°16'9.45S	28°28'9.71E	Erven
185	CASSELDALE	748	0	26°16'16.51S	28°27'57.14E	Erven
186	CASSELDALE	761	0	26°16'16.2S	28°27'59.73E	Erven
187	CASSELDALE	250	0	26°15'34.93S	28°27'57.19E	Erven
188	CASSELDALE	466	0	26°15'33.65S	28°28'8.41E	Erven
189	CASSELDALE	511	0	26°15'38.69S	28°28'20.79E	Erven
190	CASSELDALE	514	0	26°15'40.53S	28°28'22.32E	Erven
191	CASSELDALE	353	0	26°15'45.87S	28°27'56.97E	Erven
192	CASSELDALE	357	0	26°15'47.56S	28°27'59.52E	Erven
193	CASSELDALE	371	0	26°15'49.77S	28°27'57.04E	Erven
194	CASSELDALE	375	0	26°15'50.78S	28°28'0.53E	Erven
195	CASSELDALE	1013	0	26°15'59.76S	28°27'52.67E	Erven
196	CASSELDALE	441	0	26°15'39.74S	28°28'8.81E	Erven
197	CASSELDALE	444	0	26°15'37.98S	28°28'7.44E	Erven
198	CASSELDALE	480	0	26°15'37.35S	28°28'17.57E	Erven
199	CASSELDALE	483	0	26°15'35.51S	28°28'16.04E	Erven
200	CASSELDALE	493	0	26°15'31.83S	28°28'8.52E	Erven
201	CASSELDALE	499	0	26°15'31.89S	28°28'13.26E	Erven
202	CASSELDALE	504	0	26°15'33.98S	28°28'16.88E	Erven
203	CASSELDALE	1182	0	26°15'57.33S	28°27'40.1E	Erven
204	CASSELDALE	1187	0	26°15'50.74S	28°28'8.21E	Erven
205	CASSELDALE	1190	0	26°15'48.14S	28°27'58.17E	Erven
206	CASSELDALE	569	0	26°15'49.91S	28°28'14.76E	Erven
207	CASSELDALE	573	0	26°15'48.74S	28°28'11.61E	Erven
208	CASSELDALE	604	0	26°15'57.06S	28°28'12.43E	Erven

209	CASSELDALE	607	0	26°15'56.2S	28°28'10.06E	Erven
210	CASSELDALE	619	0	26°15'50.04S	28°28'20.54E	Erven
211	CASSELDALE	622	0	26°15'51.94S	28°28'21.9E	Erven
212	CASSELDALE	663	0	26°15'50.98S	28°28'29.25E	Erven
213	CASSELDALE	669	0	26°15'53.74S	28°28'25.16E	Erven
214	CASSELDALE	681	0	26°15'52.36S	28°28'29.69E	Erven
215	CASSELDALE	685	0	26°15'53.08S	28°28'31.71E	Erven
216	CASSELDALE	730	0	26°16'8.84S	28°28'10.62E	Erven
217	CASSELDALE	733	0	26°16'10.68S	28°28'7.9E	Erven
218	CASSELDALE	741	0	26°16'15.08S	28°27'55.96E	Erven
219	CASSELDALE	750	0	26°16'15.28S	28°27'58.95E	Erven
220	CASSELDALE	782	0	26°15'36.1S	28°28'21.79E	Erven
221	CASSELDALE	787	0	26°15'37.18S	28°28'24.37E	Erven
222	CASSELDALE	798	0	26°15'37.77S	28°28'31.05E	Erven
223	CASSELDALE	801	0	26°15'38.04S	28°28'31.85E	Erven
224	CASSELDALE	844	0	26°15'48.45S	28°28'40.62E	Erven
225	CASSELDALE	848	0	26°15'50.9S	28°28'36.98E	Erven
226	CASSELDALE	903	0	26°15'43.9S	28°28'33.08E	Erven
227	CASSELDALE	911	0	26°15'45.54S	28°28'31.49E	Erven
228	CASSELDALE	914	0	26°15'44.41S	28°28'28.72E	Erven
229	CASSELDALE	956	0	26°16'0.12S	28°28'10.12E	Erven
230	CASSELDALE	959	0	26°15'59.25S	28°28'7.76E	Erven
231	CASSELDALE	962	0	26°16'0.73S	28°28'14.72E	Erven
232	CASSELDALE	971	0	26°15'56.74S	28°27'54.96E	Erven
233	CASSELDALE	1012	0	26°15'59.47S	28°27'51.89E	Erven
234	CASSELDALE	1023	0	26°16'0.89S	28°27'51.24E	Erven
235	CASSELDALE	1027	0	26°16'1.6S	28°27'57.87E	Erven
236	CASSELDALE	1069	0	26°16'2.71S	28°27'46.28E	Erven
237	CASSELDALE	1072	0	26°16'0.5S	28°27'45.41E	Erven
238	CASSELDALE	1085	0	26°16'8.02S	28°28'0.08E	Erven
239	CASSELDALE	1088	0	26°16'7.15S	28°27'57.71E	Erven
240	CASSELDALE	1124	0	26°16'15S	28°27'48.86E	Erven
241	CASSELDALE	1128	0	26°16'0.06S	28°28'1.72E	Erven
242	CASSELDALE	1196	0	26°15'41.98S	28°27'33.23E	Erven
243	CASSELDALE	1199	0	26°15'50.18S	28°28'8.94E	Erven
244	DAGGAFONTEIN	13	0	26°16'56.59S	28°28'35.34E	Erven
245	DAGGAFONTEIN	17	0	26°16'58.44S	28°28'37.93E	Erven
246	DAGGAFONTEIN	28	0	26°16'59.81S	28°28'36.72E	Erven
247	DAGGAFONTEIN	32	0	26°16'57.95S	28°28'34.15E	Erven
248	SEL COURT	702	0	26°18'25.64S	28°26'7.13E	Erven
249	CASSELDALE	139	1	26°15'46.03S	28°27'40.82E	Erven
250	DAGGAFONTEIN	54	0	26°17'3.95S	28°28'25.19E	Erven
251	DAGGAFONTEIN	58	0	26°17'5.8S	28°28'27.78E	Erven
252	DAGGAFONTEIN	61	0	26°17'7.34S	28°28'29.92E	Erven
253	DAGGAFONTEIN	70	0	26°17'4.8S	28°29'1.95E	Erven
254	DAGGAFONTEIN	75	0	26°17'4.83S	28°29'6.86E	Erven
255	DAGGAFONTEIN	121	0	26°17'10.82S	28°28'59.25E	Erven
256	DAGGAFONTEIN	124	0	26°17'10.83S	28°29'2.41E	Erven
257	DAGGAFONTEIN	135	0	26°17'12.56S	28°28'55.02E	Erven
258	DAGGAFONTEIN	138	0	26°17'12.54S	28°28'51.86E	Erven
259	DAGGAFONTEIN	175	0	26°17'18.89S	28°28'55.08E	Erven
260	DAGGAFONTEIN	179	0	26°17'24.46S	28°28'49.59E	Erven
261	DAGGAFONTEIN	190	0	26°17'19.35S	28°28'19.38E	Erven
262	DAGGAFONTEIN	193	0	26°17'18.98S	28°28'28.58E	Erven
263	DAGGAFONTEIN	229	0	26°17'23.56S	28°28'32.16E	Erven
264	DAGGAFONTEIN	232	0	26°17'26.11S	28°28'29.79E	Erven
265	DAGGAFONTEIN	241	0	26°17'26.23S	28°28'21.58E	Erven
266	DAGGAFONTEIN	245	0	26°17'26.23S	28°28'16.92E	Erven
267	DAGGAFONTEIN	291	0	26°17'29.81S	28°28'39.15E	Erven
268	DAGGAFONTEIN	294	0	26°17'29.81S	28°28'40.8E	Erven

269	DAGGAFONTEIN	306	0	26°17'27.91S	28°28'46.96E	Erven
270	DAGGAFONTEIN	308	0	26°17'26.72S	28°28'46.95E	Erven
271	DAGGAFONTEIN	350	0	26°18'0.11S	28°29'20.64E	Erven
272	DAGGAFONTEIN	353	0	26°18'0.46S	28°29'25.5E	Erven
273	DAGGAFONTEIN	366	0	26°18'4.81S	28°29'33.1E	Erven
274	DAGGAFONTEIN	369	0	26°18'3.25S	28°29'34.9E	Erven
275	DAGGAFONTEIN	411	0	26°17'53.03S	28°29'28.09E	Erven
276	DAGGAFONTEIN	414	0	26°17'56.9S	28°29'30.28E	Erven
277	DAGGAFONTEIN	421	0	26°18'4.36S	28°29'28.23E	Erven
278	DAGGAFONTEIN	423	0	26°18'1.96S	28°29'28.13E	Erven
279	DAGGAFONTEIN	426	0	26°17'57.5S	28°29'28.13E	Erven
280	DAGGAFONTEIN	521	0	26°17'40.77S	28°28'37.15E	Erven
281	DAGGAFONTEIN	523	0	26°17'40.77S	28°28'35.27E	Erven
282	DAGGAFONTEIN	527	0	26°17'39.21S	28°28'36.22E	Erven
283	DAGGAFONTEIN	533	0	26°17'39.12S	28°28'41.72E	Erven
284	DAGGAFONTEIN	536	0	26°17'42.77S	28°28'41.26E	Erven
285	DAGGAFONTEIN	577	0	26°17'43.92S	28°28'26.55E	Erven
286	DAGGAFONTEIN	580	0	26°17'42.25S	28°28'29.12E	Erven
287	DAGGAFONTEIN	595	0	26°17'51.56S	28°28'44.71E	Erven
288	DAGGAFONTEIN	600	0	26°17'48.55S	28°28'33.02E	Erven
289	DAGGAFONTEIN	87	0	26°17'6.8S	28°29'2.02E	Erven
290	CASSELDALE	164	0	26°15'45.35S	28°27'45.13E	Erven
291	CASSELDALE	167	0	26°15'46.22S	28°27'47.48E	Erven
292	CASSELDALE	588	0	26°15'53.17S	28°28'12.34E	Erven
293	CASSELDALE	591	0	26°15'52.29S	28°28'9.99E	Erven
294	CASSELDALE	19	0	26°15'26.1S	28°27'56.66E	Erven
295	CASSELDALE	22	0	26°15'28.55S	28°27'55.12E	Erven
296	CASSELDALE	709	0	26°16'4.65S	28°28'11.39E	Erven
297	CASSELDALE	54	0	26°15'35.98S	28°27'36.95E	Erven
298	CASSELDALE	99	0	26°15'38.47S	28°27'37.61E	Erven
299	CASSELDALE	102	0	26°15'40.66S	28°27'38.41E	Erven
300	CASSELDALE	138	0	26°15'46.6S	28°27'39.26E	Erven
301	CASSELDALE	142	0	26°15'48.15S	28°27'41.79E	Erven
302	CASSELDALE	170	0	26°15'43.53S	28°27'46.8E	Erven
303	CASSELDALE	174	0	26°15'42.37S	28°27'43.65E	Erven
304	CASSELDALE	196	0	26°15'54.44S	28°27'46.63E	Erven
305	CASSELDALE	199	0	26°15'56.67S	28°27'45.53E	Erven
306	CASSELDALE	202	0	26°15'54.9S	28°27'48.12E	Erven
307	CASSELDALE	228	0	26°15'38.75S	28°27'53.69E	Erven
308	CASSELDALE	232	0	26°15'41.87S	28°27'52.28E	Erven
309	CASSELDALE	258	0	26°15'30.87S	28°28'6E	Erven
310	CASSELDALE	262	0	26°15'29.7S	28°28'2.84E	Erven
311	CASSELDALE	287	0	26°15'33.52S	28°28'5.8E	Erven
312	CASSELDALE	898	0	26°15'42.57S	28°28'29.08E	Erven
313	CASSELDALE	320	0	26°15'39.74S	28°28'2.51E	Erven
314	CASSELDALE	323	0	26°15'40.83S	28°28'4.35E	Erven
315	CASSELDALE	349	0	26°15'42.81S	28°27'55.6E	Erven
316	CASSELDALE	352	0	26°15'45.58S	28°27'56.18E	Erven
317	CASSELDALE	978	0	26°15'58.16S	28°27'54.32E	Erven
318	CASSELDALE	380	0	26°15'51.48S	28°27'57.19E	Erven
319	CASSELDALE	401	0	26°15'51.99S	28°28'3.08E	Erven
320	CASSELDALE	405	0	26°15'51.24S	28°28'7.09E	Erven
321	CASSELDALE	411	0	26°15'50.06S	28°28'7.61E	Erven
322	CASSELDALE	446	0	26°15'38.03S	28°28'8.67E	Erven
323	CASSELDALE	449	0	26°15'38.82S	28°28'11.1E	Erven
324	CASSELDALE	472	0	26°15'35.77S	28°28'13.31E	Erven
325	CASSELDALE	475	0	26°15'37.35S	28°28'14.73E	Erven
326	CASSELDALE	505	0	26°15'34.59S	28°28'17.39E	Erven
327	CASSELDALE	1095	0	26°16'10.55S	28°28'0.17E	Erven
328	CASSELDALE	546	0	26°15'45.43S	28°28'16.48E	Erven

329	CASSELDALE	1143	0	26°15'30.12S	28°27'27.32E	Erven
330	CASSELDALE	579	0	26°15'52.32S	28°28'14.56E	Erven
331	CASSELDALE	581	0	26°15'52.89S	28°28'16.14E	Erven
332	CASSELDALE	598	0	26°15'55.93S	28°28'13.86E	Erven
333	CASSELDALE	601	0	26°15'57.96S	28°28'14.9E	Erven
334	CASSELDALE	624	0	26°15'53.17S	28°28'22.91E	Erven
335	CASSELDALE	630	0	26°15'48.88S	28°28'22.19E	Erven
336	CASSELDALE	633	0	26°15'47.34S	28°28'23.03E	Erven
337	CASSELDALE	654	0	26°15'45.2S	28°28'26.2E	Erven
338	CASSELDALE	657	0	26°15'47.04S	28°28'27.74E	Erven
339	CASSELDALE	687	0	26°15'54.31S	28°28'29.89E	Erven
340	CASSELDALE	691	0	26°15'56.76S	28°28'26.26E	Erven
341	CASSELDALE	721	0	26°16'6.69S	28°28'11.67E	Erven
342	CASSELDALE	725	0	26°16'5.77S	28°28'15.16E	Erven
343	CASSELDALE	755	0	26°16'12.21S	28°28'3.49E	Erven
344	CASSELDALE	758	0	26°16'14.36S	28°28'2.45E	Erven
345	CASSELDALE	781	0	26°15'34.94S	28°28'22.57E	Erven
346	CASSELDALE	806	0	26°15'38.84S	28°28'34.24E	Erven
347	CASSELDALE	809	0	26°15'40.55S	28°28'34.45E	Erven
348	CASSELDALE	835	0	26°15'42.99S	28°28'46.69E	Erven
349	CASSELDALE	838	0	26°15'43.25S	28°28'47.49E	Erven
350	CASSELDALE	111	0	26°15'48.92S	28°27'37.56E	Erven
351	CASSELDALE	249	0	26°15'35.7S	28°27'56.84E	Erven
352	CASSELDALE	252	0	26°15'33.39S	28°27'57.89E	Erven
353	CASSELDALE	512	0	26°15'39.3S	28°28'21.3E	Erven
354	CASSELDALE	515	0	26°15'41.25S	28°28'22.7E	Erven
355	CASSELDALE	590	0	26°15'52.59S	28°28'10.77E	Erven
356	CASSELDALE	21	0	26°15'27.84S	28°27'55.44E	Erven
357	CASSELDALE	24	0	26°15'29.97S	28°27'54.47E	Erven
358	CASSELDALE	710	0	26°16'5.27S	28°28'10.49E	Erven
359	CASSELDALE	55	0	26°15'36.3S	28°27'37.82E	Erven
360	CASSELDALE	97	0	26°15'37.72S	28°27'36.09E	Erven
361	CASSELDALE	100	0	26°15'39.23S	28°27'37.77E	Erven
362	CASSELDALE	137	0	26°15'47.31S	28°27'39.57E	Erven
363	CASSELDALE	140	0	26°15'46.73S	28°27'41.15E	Erven
364	CASSELDALE	169	0	26°15'43.82S	28°27'47.59E	Erven
365	CASSELDALE	9	0	26°15'17.45S	28°27'31.75E	Erven
366	CASSELDALE	50	0	26°15'34.59S	28°27'33.52E	Erven
367	CASSELDALE	166	0	26°15'45.92S	28°27'46.71E	Erven
368	CASSELDALE	293	0	26°15'33.27S	28°28'1.77E	Erven
369	CASSELDALE	335	0	26°15'41.69S	28°27'57.03E	Erven
370	CASSELDALE	517	0	26°15'42.06S	28°28'21.48E	Erven
371	CASSELDALE	549	0	26°15'47.46S	28°28'18.35E	Erven
372	CASSELDALE	561	0	26°15'48.77S	28°28'16.19E	Erven
373	CASSELDALE	14	0	26°15'18.78S	28°27'35.74E	Erven
374	CASSELDALE	26	0	26°15'31.39S	28°27'53.83E	Erven
375	CASSELDALE	705	0	26°16'1.72S	28°28'15.74E	Erven
376	CASSELDALE	69	0	26°15'35.19S	28°27'31.42E	Erven
377	CASSELDALE	91	0	26°15'41.23S	28°27'36.83E	Erven
378	CASSELDALE	743	0	26°16'16.35S	28°27'54.07E	Erven
379	CASSELDALE	132	0	26°15'50.87S	28°27'41.17E	Erven
380	CASSELDALE	143	0	26°15'48.87S	28°27'42.11E	Erven
381	CASSELDALE	162	0	26°15'44.77S	28°27'43.55E	Erven
382	CASSELDALE	178	0	26°15'40.43S	28°27'40.66E	Erven
383	CASSELDALE	189	0	26°15'42.69S	28°27'49.01E	Erven
384	CASSELDALE	822	0	26°15'40.92S	28°28'40.82E	Erven
385	CASSELDALE	221	0	26°15'46.36S	28°27'52E	Erven
386	CASSELDALE	236	0	26°15'40.11S	28°27'54.91E	Erven
387	CASSELDALE	253	0	26°15'32.62S	28°27'58.24E	Erven
388	CASSELDALE	267	0	26°15'28.26S	28°27'58.91E	Erven

389	CASSELDALE	279	0	26°15'29.57S	28°28'6.84E	Erven
390	CASSELDALE	286	0	26°15'32.79S	28°28'6.01E	Erven
391	CASSELDALE	301	0	26°15'36.04S	28°28'3.28E	Erven
392	CASSELDALE	313	0	26°15'36S	28°27'58.7E	Erven
393	CASSELDALE	325	0	26°15'41.74S	28°28'3.45E	Erven
394	CASSELDALE	172	0	26°15'42.96S	28°27'45.23E	Erven
395	CASSELDALE	197	0	26°15'55.78S	28°27'45.4E	Erven
396	CASSELDALE	201	0	26°15'55.67S	28°27'47.4E	Erven
397	CASSELDALE	230	0	26°15'40.31S	28°27'52.98E	Erven
398	CASSELDALE	233	0	26°15'42.45S	28°27'53.84E	Erven
399	CASSELDALE	260	0	26°15'30.29S	28°28'4.42E	Erven
400	CASSELDALE	264	0	26°15'29.12S	28°28'1.27E	Erven
401	CASSELDALE	896	0	26°15'42.02S	28°28'27.22E	Erven
402	CASSELDALE	900	0	26°15'43.1S	28°28'30.68E	Erven
403	CASSELDALE	319	0	26°15'39.45S	28°28'1.73E	Erven
404	CASSELDALE	322	0	26°15'40.1S	28°28'4.55E	Erven
405	CASSELDALE	347	0	26°15'43.4S	28°27'57.17E	Erven
406	CASSELDALE	350	0	26°15'45.01S	28°27'54.61E	Erven
407	CASSELDALE	976	0	26°15'58.74S	28°27'55.9E	Erven
408	CASSELDALE	379	0	26°15'51.77S	28°27'57.97E	Erven
409	CASSELDALE	404	0	26°15'51.53S	28°28'7.88E	Erven
410	CASSELDALE	408	0	26°15'50.23S	28°28'5.08E	Erven
411	CASSELDALE	448	0	26°15'38.61S	28°28'10.25E	Erven
412	CASSELDALE	451	0	26°15'40.11S	28°28'12.06E	Erven
413	CASSELDALE	473	0	26°15'36.13S	28°28'13.85E	Erven
414	CASSELDALE	477	0	26°15'38.58S	28°28'15.75E	Erven
415	CASSELDALE	1093	0	26°16'9.63S	28°28'1.53E	Erven
416	CASSELDALE	1096	0	26°16'11.01S	28°27'59.48E	Erven
417	CASSELDALE	544	0	26°15'44.2S	28°28'15.47E	Erven
418	CASSELDALE	1132	0	26°16'8.16S	28°28'2.62E	Erven
419	CASSELDALE	577	0	26°15'51.75S	28°28'12.98E	Erven
420	CASSELDALE	580	0	26°15'52.6S	28°28'15.35E	Erven
421	CASSELDALE	596	0	26°15'55.35S	28°28'12.28E	Erven
422	CASSELDALE	600	0	26°15'56.55S	28°28'15.54E	Erven
423	CASSELDALE	611	0	26°15'55.6S	28°28'17.97E	Erven
424	CASSELDALE	612	0	26°15'54.07S	28°28'18.75E	Erven
425	CASSELDALE	642	0	26°15'48.57S	28°28'26.89E	Erven
426	CASSELDALE	644	0	26°15'47.34S	28°28'25.87E	Erven
427	CASSELDALE	671	0	26°15'54.66S	28°28'23.79E	Erven
428	CASSELDALE	676	0	26°15'55.43S	28°28'25.15E	Erven
429	CASSELDALE	678	0	26°15'54.2S	28°28'26.97E	Erven
430	CASSELDALE	700	0	26°15'55.24S	28°28'30.66E	Erven
431	CASSELDALE	702	0	26°15'54.01S	28°28'32.48E	Erven
432	CASSELDALE	736	0	26°16'12.01S	28°28'0.5E	Erven
433	CASSELDALE	738	0	26°16'13.24S	28°27'58.68E	Erven
434	CASSELDALE	775	0	26°16'19.25S	28°27'51.54E	Erven
435	CASSELDALE	777	1	26°16'9.91S	28°28'3.6E	Erven
436	CASSELDALE	790	0	26°15'37.45S	28°28'25.17E	Erven
437	CASSELDALE	791	0	26°15'37.76S	28°28'26.38E	Erven
438	CASSELDALE	824	0	26°15'42.83S	28°28'41.31E	Erven
439	CASSELDALE	825	0	26°15'43.09S	28°28'42.11E	Erven
440	CASSELDALE	854	0	26°15'49.36S	28°28'37.12E	Erven
441	CASSELDALE	856	0	26°15'48.13S	28°28'38.94E	Erven
442	CASSELDALE	877	0	26°15'45.63S	28°28'37.07E	Erven
443	CASSELDALE	878	0	26°15'45.17S	28°28'37.75E	Erven
444	CASSELDALE	883	0	26°15'43S	28°28'35.26E	Erven
445	CASSELDALE	906	0	26°15'44.57S	28°28'35.59E	Erven
446	CASSELDALE	908	0	26°15'45.81S	28°28'32.29E	Erven
447	CASSELDALE	964	0	26°16'1.61S	28°28'13.19E	Erven
448	CASSELDALE	969	0	26°15'56.15S	28°27'53.39E	Erven

449	CASSELDALE	991	0	26°16'2.79S	28°28'7.14E	Erven
450	CASSELDALE	993	0	26°16'2.2S	28°28'5.56E	Erven
451	CASSELDALE	1018	0	26°16'2.4S	28°27'55.34E	Erven
452	DAGGAFONTEIN	356	0	26°18'3.75S	28°29'25.5E	Erven
453	DAGGAFONTEIN	1	0	26°16'54.18S	28°28'36.02E	Erven
454	DAGGAFONTEIN	5	0	26°16'56.67S	28°28'39.48E	Erven
455	EDELWEISS	750	0	26°17'12.09S	28°28'1.75E	Erven
456	EDELWEISS	754	0	26°17'11.22S	28°28'6.11E	Erven
457	CASSELDALE	768	0	26°15'51.64S	28°27'51.6E	Erven
458	CASSELDALE	777	6	26°16'10.31S	28°28'6.29E	Erven
459	CASSELDALE	784	0	26°15'35.21S	28°28'23.37E	Erven
460	CASSELDALE	796	0	26°15'38.95S	28°28'29.66E	Erven
461	CASSELDALE	803	0	26°15'39.75S	28°28'32.06E	Erven
462	CASSELDALE	815	0	26°15'39.9S	28°28'37.44E	Erven
463	CASSELDALE	830	0	26°15'42.19S	28°28'44.3E	Erven
464	CASSELDALE	849	0	26°15'51.52S	28°28'36.08E	Erven
465	CASSELDALE	872	0	26°15'47.93S	28°28'33.67E	Erven
466	CASSELDALE	890	0	26°15'41.14S	28°28'29.67E	Erven
467	CASSELDALE	901	0	26°15'43.37S	28°28'31.48E	Erven
468	CASSELDALE	913	0	26°15'45.01S	28°28'29.9E	Erven
469	CASSELDALE	932	0	26°15'55.6S	28°28'2.36E	Erven
470	CASSELDALE	946	0	26°15'57.55S	28°28'7.62E	Erven
471	CASSELDALE	957	0	26°15'59.83S	28°28'9.33E	Erven
472	CASSELDALE	986	0	26°16'1.08S	28°28'6.99E	Erven
473	CASSELDALE	999	0	26°16'5.18S	28°28'8.12E	Erven
474	CASSELDALE	1025	0	26°16'0.31S	28°27'49.66E	Erven
475	CASSELDALE	1036	0	26°16'4.2S	28°28'4.96E	Erven
476	CASSELDALE	1059	0	26°16'3.79S	28°27'53.1E	Erven
477	CASSELDALE	1070	0	26°16'1.92S	28°27'46.05E	Erven
478	CASSELDALE	1083	0	26°16'7.04S	28°28'2.36E	Erven
479	CASSELDALE	1100	0	26°16'12.85S	28°27'56.76E	Erven
480	CASSELDALE	1111	0	26°16'5.92S	28°27'44.83E	Erven
481	CASSELDALE	1123	0	26°16'14.32S	28°27'48.44E	Erven
482	CASSELDALE	1201	0	26°15'32.57S	28°28'15.2E	Erven
483	DAGGAFONTEIN	15	0	26°16'57.51S	28°28'36.64E	Erven
484	DAGGAFONTEIN	33	0	26°16'57.3S	28°28'33.27E	Erven
485	DAGGAFONTEIN	45	0	26°17'4.04S	28°28'32.89E	Erven
486	CASSELDALE	842	0	26°15'47.22S	28°28'42.44E	Erven
487	CASSELDALE	864	0	26°15'46.8S	28°28'37.83E	Erven
488	CASSELDALE	867	0	26°15'48.64S	28°28'35.1E	Erven
489	CASSELDALE	892	0	26°15'40.6S	28°28'28.08E	Erven
490	CASSELDALE	895	0	26°15'41.19S	28°28'26.07E	Erven
491	CASSELDALE	919	0	26°15'53.72S	28°27'57.26E	Erven
492	CASSELDALE	922	0	26°15'55.77S	28°27'58.35E	Erven
493	CASSELDALE	951	0	26°15'59S	28°28'11.55E	Erven
494	CASSELDALE	954	0	26°16'0.61S	28°28'11.78E	Erven
495	CASSELDALE	981	0	26°15'57.29S	28°27'51.95E	Erven
496	CASSELDALE	1007	0	26°16'8.88S	28°28'2.67E	Erven
497	CASSELDALE	1010	0	26°15'58.89S	28°27'50.31E	Erven
498	CASSELDALE	1028	0	26°16'1.87S	28°27'58.66E	Erven
499	CASSELDALE	1031	0	26°16'2.75S	28°28'1.02E	Erven
500	CASSELDALE	1034	0	26°16'3.62S	28°28'3.39E	Erven
501	CASSELDALE	1061	0	26°16'5.09S	28°27'52.52E	Erven
502	CASSELDALE	1064	0	26°16'4.34S	28°27'50.09E	Erven
503	CASSELDALE	1090	0	26°16'6.57S	28°27'56.14E	Erven
504	CASSELDALE	1116	0	26°16'9.68S	28°27'45.38E	Erven
505	CASSELDALE	1119	0	26°16'11.67S	28°27'46.76E	Erven
506	CASSELDALE	1205	0	26°15'27.46S	28°27'27.06E	Erven
507	CASSELDALE	1210	0	26°15'45.21S	28°27'34.98E	Erven
508	CASSELDALE	1244	0	26°15'40.14S	28°27'59.12E	Erven

509	CASSELDALE	1247	0	26°15'31.32S	28°28'11.69E	Erven
510	DAGGAFONTEIN	11	0	26°17'0.33S	28°28'44.31E	Erven
511	DAGGAFONTEIN	37	0	26°17'1.54S	28°28'32.55E	Erven
512	DAGGAFONTEIN	40	0	26°17'3.23S	28°28'34.87E	Erven
513	CASSELDALE	1020	0	26°16'1.76S	28°27'53.6E	Erven
514	CASSELDALE	1042	0	26°16'4.46S	28°28'1.17E	Erven
515	CASSELDALE	1047	0	26°16'3S	28°27'57.23E	Erven
516	CASSELDALE	1075	0	26°16'4.91S	28°27'55.85E	Erven
517	CASSELDALE	1077	0	26°16'5.44S	28°27'57.56E	Erven
518	CASSELDALE	1105	0	26°16'15.15S	28°27'53.36E	Erven
519	CASSELDALE	1107	0	26°16'2.57S	28°27'43.89E	Erven
520	CASSELDALE	1229	0	26°15'37.66S	28°27'47.86E	Erven
521	CASSELDALE	1194	0	26°15'38.1S	28°27'42.95E	Erven
522	DAGGAFONTEIN	20	0	26°17'0.06S	28°28'40.18E	Erven
523	DAGGAFONTEIN	21	0	26°17'0.62S	28°28'40.95E	Erven
524	DAGGAFONTEIN	27	0	26°17'0.26S	28°28'37.36E	Erven
525	SEL COURT	702	1	26°18'24.59S	28°26'6.84E	Erven
526	DAGGAFONTEIN	65	0	26°17'4.78S	28°28'56.71E	Erven
527	DAGGAFONTEIN	67	0	26°17'4.54S	28°28'58.81E	Erven
528	DAGGAFONTEIN	92	0	26°17'6.82S	28°29'7.25E	Erven
529	DAGGAFONTEIN	105	0	26°17'8.49S	28°28'55.8E	Erven
530	DAGGAFONTEIN	106	0	26°17'8.49S	28°28'54.75E	Erven
531	DAGGAFONTEIN	156	0	26°17'14.83S	28°28'58.63E	Erven
532	DAGGAFONTEIN	158	0	26°17'14.75S	28°29'1.11E	Erven
533	DAGGAFONTEIN	186	0	26°17'31.39S	28°28'50.44E	Erven
534	DAGGAFONTEIN	187	0	26°17'32.35S	28°28'52.31E	Erven
535	DAGGAFONTEIN	207	0	26°17'21.99S	28°28'19.84E	Erven
536	DAGGAFONTEIN	208	0	26°17'22.01S	28°28'18.85E	Erven
537	STRUBENVALE	366	3	26°15'12.48S	28°28'18.72E	Erven
538	DAGGAFONTEIN	10	0	26°16'59.54S	28°28'43.48E	Erven
539	DAGGAFONTEIN	50	0	26°17'2.09S	28°28'22.61E	Erven
540	DAGGAFONTEIN	53	0	26°17'3.49S	28°28'24.55E	Erven
541	DAGGAFONTEIN	79	0	26°17'6.77S	28°28'53.72E	Erven
542	DAGGAFONTEIN	82	0	26°17'6.78S	28°28'56.84E	Erven
543	DAGGAFONTEIN	116	0	26°17'10.8S	28°28'53.97E	Erven
544	DAGGAFONTEIN	119	0	26°17'10.81S	28°28'57.14E	Erven
545	DAGGAFONTEIN	140	0	26°17'12.54S	28°28'49.75E	Erven
546	DAGGAFONTEIN	143	0	26°17'14.64S	28°28'44.63E	Erven
547	DAGGAFONTEIN	146	0	26°17'14.79S	28°28'48.03E	Erven
548	DAGGAFONTEIN	167	0	26°17'16.57S	28°28'50.68E	Erven
549	DAGGAFONTEIN	171	0	26°17'17.05S	28°28'47.56E	Erven
550	DAGGAFONTEIN	195	0	26°17'21.91S	28°28'32.15E	Erven
551	DAGGAFONTEIN	198	0	26°17'21.93S	28°28'28.74E	Erven
552	DAGGAFONTEIN	221	0	26°17'23.65S	28°28'23.82E	Erven
553	DAGGAFONTEIN	224	0	26°17'23.62S	28°28'26.79E	Erven
554	DAGGAFONTEIN	249	0	26°17'27.95S	28°28'15.96E	Erven
555	DAGGAFONTEIN	253	0	26°17'27.92S	28°28'20.17E	Erven
556	DAGGAFONTEIN	286	0	26°17'30.07S	28°28'35.84E	Erven
557	DAGGAFONTEIN	290	0	26°17'29.81S	28°28'38.6E	Erven
558	DAGGAFONTEIN	313	0	26°17'23.32S	28°28'46.93E	Erven
559	DAGGAFONTEIN	341	0	26°17'46.9S	28°29'18.24E	Erven
560	DAGGAFONTEIN	345	0	26°17'55.4S	28°29'21.18E	Erven
561	CASSELDALE	292	0	26°15'33.56S	28°28'2.56E	Erven
562	CASSELDALE	507	0	26°15'35.82S	28°28'18.41E	Erven
563	CASSELDALE	547	0	26°15'46.29S	28°28'16.6E	Erven
564	CASSELDALE	552	0	26°15'45.13S	28°28'14.09E	Erven
565	CASSELDALE	563	0	26°15'49.35S	28°28'17.77E	Erven
566	CASSELDALE	13	0	26°15'18.51S	28°27'34.95E	Erven
567	CASSELDALE	16	0	26°15'25.19S	28°27'54.34E	Erven
568	CASSELDALE	60	0	26°15'29.55S	28°27'28.9E	Erven

569	CASSELDALE	72	0	26°15'37.33S	28°27'32.38E	Erven
570	CASSELDALE	92	0	26°15'40.52S	28°27'36.51E	Erven
571	CASSELDALE	95	0	26°15'38.23S	28°27'35.28E	Erven
572	CASSELDALE	145	0	26°15'50.29S	28°27'42.75E	Erven
573	CASSELDALE	148	0	26°15'52.42S	28°27'43.71E	Erven
574	CASSELDALE	157	0	26°15'46.77S	28°27'44.49E	Erven
575	CASSELDALE	161	0	26°15'43.86S	28°27'42.11E	Erven
576	CASSELDALE	777	9	26°16'11.25S	28°28'7.07E	Erven
577	CASSELDALE	820	0	26°15'40.7S	28°28'39.83E	Erven
578	CASSELDALE	211	0	26°15'45S	28°27'50.77E	Erven
579	CASSELDALE	220	0	26°15'47.12S	28°27'51.65E	Erven
580	CASSELDALE	225	0	26°15'36.41S	28°27'54.76E	Erven
581	CASSELDALE	266	0	26°15'28.54S	28°27'59.69E	Erven
582	CASSELDALE	269	0	26°15'26.59S	28°27'58.87E	Erven
583	CASSELDALE	281	0	26°15'31.56S	28°28'1.63E	Erven
584	CASSELDALE	284	0	26°15'32.43S	28°28'3.99E	Erven
585	CASSELDALE	327	0	26°15'41.16S	28°28'1.87E	Erven
586	CASSELDALE	933	0	26°15'55.89S	28°28'3.15E	Erven
587	CASSELDALE	341	0	26°15'43.77S	28°28'1.91E	Erven
588	CASSELDALE	345	0	26°15'43.99S	28°27'58.75E	Erven
589	CASSELDALE	383	0	26°15'50.61S	28°27'54.82E	Erven
590	CASSELDALE	935	0	26°15'56.48S	28°28'4.73E	Erven
591	CASSELDALE	343	0	26°15'44.45S	28°28'0.36E	Erven
592	CASSELDALE	355	0	26°15'46.29S	28°27'58.66E	Erven
593	CASSELDALE	369	0	26°15'49.18S	28°27'55.46E	Erven
594	CASSELDALE	975	0	26°15'59.09S	28°27'56.84E	Erven
595	CASSELDALE	385	0	26°15'50.03S	28°27'53.25E	Erven
596	CASSELDALE	396	0	26°15'53.43S	28°28'7.03E	Erven
597	CASSELDALE	429	0	26°15'43.33S	28°28'7.74E	Erven
598	CASSELDALE	443	0	26°15'38.78S	28°28'7.2E	Erven
599	CASSELDALE	455	0	26°15'39.49S	28°28'14.39E	Erven
600	CASSELDALE	470	0	26°15'35.29S	28°28'11.75E	Erven
601	CASSELDALE	482	0	26°15'36.12S	28°28'16.54E	Erven
602	CASSELDALE	494	0	26°15'30.35S	28°28'9E	Erven
603	CASSELDALE	529	0	26°15'43.9S	28°28'20.17E	Erven
604	CASSELDALE	541	0	26°15'42.37S	28°28'13.93E	Erven
605	CASSELDALE	1185	0	26°15'43.3S	28°28'0.86E	Erven
606	CASSELDALE	574	0	26°15'50.89S	28°28'10.62E	Erven
607	CASSELDALE	586	0	26°15'53.74S	28°28'13.92E	Erven
608	CASSELDALE	1230	0	26°16'19.23S	28°27'54.28E	Erven
609	CASSELDALE	609	0	26°15'55.61S	28°28'8.49E	Erven
610	CASSELDALE	620	0	26°15'50.72S	28°28'20.88E	Erven
611	CASSELDALE	634	0	26°15'47.96S	28°28'23.55E	Erven
612	CASSELDALE	652	0	26°15'43.97S	28°28'25.19E	Erven
613	CASSELDALE	664	0	26°15'51.44S	28°28'28.57E	Erven
614	CASSELDALE	679	0	26°15'53.59S	28°28'27.87E	Erven
615	CASSELDALE	699	0	26°15'55.85S	28°28'29.75E	Erven
616	CASSELDALE	717	0	26°16'9.14S	28°28'8.04E	Erven
617	CASSELDALE	728	0	26°16'7.61S	28°28'12.44E	Erven
618	CASSELDALE	752	0	26°16'14.05S	28°28'0.77E	Erven
619	CASSELDALE	764	0	26°16'18.04S	28°27'57E	Erven
620	CASSELDALE	777	3	26°16'8.89S	28°28'5.11E	Erven
621	CASSELDALE	789	0	26°15'36.01S	28°28'25.76E	Erven
622	CASSELDALE	800	0	26°15'39.48S	28°28'31.26E	Erven
623	CASSELDALE	811	0	26°15'39.37S	28°28'35.84E	Erven
624	CASSELDALE	833	0	26°15'44.16S	28°28'45.3E	Erven
625	CASSELDALE	846	0	26°15'49.68S	28°28'38.8E	Erven
626	CASSELDALE	857	0	26°15'47.52S	28°28'39.85E	Erven
627	CASSELDALE	875	0	26°15'46.55S	28°28'35.71E	Erven
628	CASSELDALE	887	0	26°15'41.93S	28°28'32.07E	Erven

629	CASSELDALE	916	0	26°15'52.85S	28°27'54.89E	Erven
630	CASSELDALE	927	0	26°15'54.27S	28°27'54.25E	Erven
631	CASSELDALE	942	0	26°15'57.31S	28°28'2.51E	Erven
632	CASSELDALE	961	0	26°16'0.23S	28°28'15.64E	Erven
633	CASSELDALE	973	0	26°15'57.32S	28°27'56.54E	Erven
634	CASSELDALE	983	0	26°15'56.7S	28°27'50.38E	Erven
635	CASSELDALE	1002	0	26°16'6.56S	28°28'6.07E	Erven
636	CASSELDALE	1022	0	26°16'1.18S	28°27'52.02E	Erven
637	CASSELDALE	1039	0	26°16'5.33S	28°28'3.53E	Erven
638	CASSELDALE	1051	0	26°16'0.64S	28°27'47.31E	Erven
639	CASSELDALE	1067	0	26°16'3.47S	28°27'47.73E	Erven
640	CASSELDALE	1086	0	26°16'7.73S	28°27'59.29E	Erven
641	CASSELDALE	1108	0	26°16'3.85S	28°27'44.04E	Erven
642	CASSELDALE	1126	0	26°16'16.46S	28°27'49.77E	Erven
643	CASSELDALE	1198	0	26°15'35.61S	28°28'24.57E	Erven
644	CASSELDALE	1212	0	26°15'47.78S	28°27'36.13E	Erven
645	CASSELDALE	1234	0	26°15'34.22S	28°27'30.48E	Erven
646	DAGGAFONTEIN	18	0	26°16'58.95S	28°28'38.64E	Erven
647	CASSELDALE	386	0	26°15'49.73S	28°27'52.47E	Erven
648	CASSELDALE	395	0	26°15'53.72S	28°28'7.81E	Erven
649	CASSELDALE	398	0	26°15'52.86S	28°28'5.45E	Erven
650	CASSELDALE	453	0	26°15'41.34S	28°28'13.08E	Erven
651	CASSELDALE	456	0	26°15'38.88S	28°28'13.88E	Erven
652	CASSELDALE	1057	0	26°16'3.21S	28°27'51.52E	Erven
653	CASSELDALE	468	0	26°15'34.72S	28°28'10.18E	Erven
654	CASSELDALE	525	0	26°15'41.44S	28°28'18.13E	Erven
655	CASSELDALE	527	0	26°15'42.67S	28°28'19.15E	Erven
656	CASSELDALE	539	0	26°15'41.75S	28°28'16.26E	Erven
657	CASSELDALE	542	0	26°15'42.97S	28°28'14.44E	Erven
658	CASSELDALE	585	0	26°15'54.03S	28°28'14.71E	Erven
659	CASSELDALE	1216	0	26°15'52.05S	28°27'38.04E	Erven
660	CASSELDALE	1226	0	26°15'48.7S	28°28'0.1E	Erven
661	CASSELDALE	1232	0	26°15'25.09S	28°27'26.78E	Erven
662	CASSELDALE	595	0	26°15'55.06S	28°28'11.49E	Erven
663	CASSELDALE	635	0	26°15'48.57S	28°28'24.06E	Erven
664	CASSELDALE	639	0	26°15'51.03S	28°28'26.09E	Erven
665	CASSELDALE	647	0	26°15'45.5S	28°28'24.34E	Erven
666	CASSELDALE	650	0	26°15'42.54S	28°28'24.12E	Erven
667	CASSELDALE	694	0	26°15'58.91S	28°28'25.21E	Erven
668	CASSELDALE	697	0	26°15'57.08S	28°28'27.93E	Erven
669	CASSELDALE	715	0	26°16'8.33S	28°28'5.95E	Erven
670	CASSELDALE	718	0	26°16'8.53S	28°28'8.94E	Erven
671	CASSELDALE	763	0	26°16'17.43S	28°27'57.91E	Erven
672	CASSELDALE	767	0	26°15'52.89S	28°27'51.68E	Erven
673	CASSELDALE	777	4	26°16'11.34S	28°28'4.79E	Erven
674	CASSELDALE	777	8	26°16'11.75S	28°28'6.31E	Erven
675	CASSELDALE	139	0	26°15'46.16S	28°27'40.17E	Erven
676	DAGGAFONTEIN	59	0	26°17'6.26S	28°28'28.42E	Erven
677	DAGGAFONTEIN	72	0	26°17'4.82S	28°29'3.96E	Erven
678	DAGGAFONTEIN	84	0	26°17'6.79S	28°28'58.94E	Erven
679	DAGGAFONTEIN	111	0	26°17'11S	28°28'48.4E	Erven
680	DAGGAFONTEIN	122	0	26°17'10.82S	28°29'0.3E	Erven
681	DAGGAFONTEIN	133	0	26°17'12.56S	28°28'57.13E	Erven
682	DAGGAFONTEIN	151	0	26°17'14.81S	28°28'53.29E	Erven
683	DAGGAFONTEIN	164	0	26°17'16.58S	28°28'54.12E	Erven
684	DAGGAFONTEIN	174	0	26°17'18.89S	28°28'53.44E	Erven
685	DAGGAFONTEIN	181	0	26°17'24.39S	28°28'52.54E	Erven
686	DAGGAFONTEIN	192	0	26°17'19.11S	28°28'25.39E	Erven
687	DAGGAFONTEIN	202	0	26°17'21.95S	28°28'24.79E	Erven
688	DAGGAFONTEIN	213	0	26°17'23.74S	28°28'15.91E	Erven

689	DAGGAFONTEIN	219	0	26°17'23.66S	28°28'21.83E	Erven
690	DAGGAFONTEIN	231	0	26°17'26.1S	28°28'30.78E	Erven
691	DAGGAFONTEIN	243	0	26°17'26.21S	28°28'18.91E	Erven
692	DAGGAFONTEIN	254	0	26°17'27.9S	28°28'21.65E	Erven
693	DAGGAFONTEIN	264	0	26°17'27.81S	28°28'32.21E	Erven
694	DAGGAFONTEIN	281	0	26°17'33.68S	28°28'33.3E	Erven
695	DAGGAFONTEIN	293	0	26°17'29.81S	28°28'40.24E	Erven
696	DAGGAFONTEIN	310	0	26°17'25.53S	28°28'46.96E	Erven
697	DAGGAFONTEIN	323	0	26°17'18.85S	28°28'38.52E	Erven
698	DAGGAFONTEIN	334	0	26°17'16.93S	28°28'38.28E	Erven
699	DAGGAFONTEIN	368	0	26°18'3.92S	28°29'34.42E	Erven
700	DAGGAFONTEIN	348	0	26°17'57.85S	28°29'21.19E	Erven
701	DAGGAFONTEIN	371	0	26°18'3.74S	28°29'35.64E	Erven
702	DAGGAFONTEIN	374	0	26°18'5.81S	28°29'35.49E	Erven
703	DAGGAFONTEIN	403	0	26°17'57.07S	28°29'25.31E	Erven
704	DAGGAFONTEIN	406	0	26°17'57.07S	28°29'23.35E	Erven
705	DAGGAFONTEIN	427	0	26°17'56.01S	28°29'28.13E	Erven
706	DAGGAFONTEIN	518	0	26°17'40.76S	28°28'39.91E	Erven
707	DAGGAFONTEIN	520	0	26°17'40.76S	28°28'38.07E	Erven
708	DAGGAFONTEIN	541	0	26°17'44.36S	28°28'38.63E	Erven
709	DAGGAFONTEIN	545	0	26°17'44.34S	28°28'35.34E	Erven
710	DAGGAFONTEIN	571	0	26°17'46.7S	28°28'28.8E	Erven
711	DAGGAFONTEIN	574	0	26°17'46.93S	28°28'26.97E	Erven
712	DAGGAFONTEIN	601	0	26°17'48.55S	28°28'31.5E	Erven
713	DAGGAFONTEIN	605	0	26°17'51.43S	28°28'30.39E	Erven
714	CASSELDAL	625	0	26°15'51.94S	28°28'24.74E	Erven
715	CASSELDAL	631	0	26°15'48.05S	28°28'21.64E	Erven
716	CASSELDAL	655	0	26°15'45.82S	28°28'26.72E	Erven
717	CASSELDAL	660	0	26°15'48.89S	28°28'29.26E	Erven
718	CASSELDAL	689	0	26°15'55.54S	28°28'28.07E	Erven
719	CASSELDAL	692	0	26°15'57.38S	28°28'25.35E	Erven
720	CASSELDAL	723	0	26°16'5.46S	28°28'13.49E	Erven
721	CASSELDAL	726	0	26°16'6.38S	28°28'14.26E	Erven
722	CASSELDAL	753	0	26°16'13.44S	28°28'1.68E	Erven
723	CASSELDAL	757	0	26°16'13.75S	28°28'3.36E	Erven
724	CASSELDAL	779	0	26°15'34.57S	28°28'20.93E	Erven
725	CASSELDAL	805	0	26°15'38.58S	28°28'33.45E	Erven
726	CASSELDAL	808	0	26°15'40.28S	28°28'33.65E	Erven
727	CASSELDAL	836	0	26°15'44.43S	28°28'46.1E	Erven
728	CASSELDAL	841	0	26°15'46.61S	28°28'43.34E	Erven
729	CASSELDAL	866	0	26°15'48.02S	28°28'36.01E	Erven
730	CASSELDAL	869	0	26°15'49.86S	28°28'33.28E	Erven
731	CASSELDAL	893	0	26°15'40.33S	28°28'27.28E	Erven
732	CASSELDAL	918	0	26°15'53.43S	28°27'56.47E	Erven
733	CASSELDAL	921	0	26°15'54.36S	28°27'58.99E	Erven
734	CASSELDAL	923	0	26°15'55.43S	28°27'57.4E	Erven
735	CASSELDAL	949	0	26°15'58.41S	28°28'9.98E	Erven
736	CASSELDAL	952	0	26°15'59.28S	28°28'12.34E	Erven
737	CASSELDAL	979	0	26°15'57.86S	28°27'53.53E	Erven
738	CASSELDAL	1005	0	26°16'7.94S	28°28'4.03E	Erven
739	CASSELDAL	1008	0	26°15'58.28S	28°27'48.67E	Erven
740	CASSELDAL	1029	0	26°16'2.17S	28°27'59.45E	Erven
741	CASSELDAL	1032	0	26°16'3.04S	28°28'1.81E	Erven
742	CASSELDAL	1062	0	26°16'4.92S	28°27'51.67E	Erven
743	DAGGAFONTEIN	237	0	26°17'26.16S	28°28'24.84E	Erven
744	DAGGAFONTEIN	238	0	26°17'26.17S	28°28'23.86E	Erven
745	DAGGAFONTEIN	298	0	26°17'29.81S	28°28'42.99E	Erven
746	DAGGAFONTEIN	299	0	26°17'29.81S	28°28'43.54E	Erven
747	DAGGAFONTEIN	305	0	26°17'28.63S	28°28'47.02E	Erven
748	DAGGAFONTEIN	327	0	26°17'20.76S	28°28'34.59E	Erven

749	DAGGAFONTEIN	329	0	26°17'24.11S	28°28'34.62E	Erven
750	DAGGAFONTEIN	361	0	26°18'6.56S	28°29'29.73E	Erven
751	DAGGAFONTEIN	363	0	26°18'5.85S	28°29'31.13E	Erven
752	DAGGAFONTEIN	386	0	26°18'6.56S	28°29'38.92E	Erven
753	DAGGAFONTEIN	391	0	26°18'7.26S	28°29'37.47E	Erven
754	DAGGAFONTEIN	418	0	26°18'2.11S	28°29'30.2E	Erven
755	DAGGAFONTEIN	419	0	26°18'3.65S	28°29'30.89E	Erven
756	DAGGAFONTEIN	511	0	26°17'43.88S	28°28'43.58E	Erven
757	DAGGAFONTEIN	512	0	26°17'43.09S	28°28'43.51E	Erven
758	DAGGAFONTEIN	531	0	26°17'39.16S	28°28'39.92E	Erven
759	DAGGAFONTEIN	556	0	26°17'42.9S	28°28'34.49E	Erven
760	DAGGAFONTEIN	558	0	26°17'42.92S	28°28'36.17E	Erven
761	DAGGAFONTEIN	589	0	26°17'46.55S	28°28'40.67E	Erven
762	DAGGAFONTEIN	591	0	26°17'46.48S	28°28'42.64E	Erven
763	CASSELDAL	1066	0	26°16'3.76S	28°27'48.51E	Erven
764	CASSELDAL	1091	0	26°16'6.28S	28°27'55.35E	Erven
765	CASSELDAL	1114	0	26°16'7.94S	28°27'45.74E	Erven
766	CASSELDAL	1118	0	26°16'11S	28°27'46.34E	Erven
767	CASSELDAL	1121	0	26°16'12.99S	28°27'47.6E	Erven
768	CASSELDAL	1203	0	26°15'28.37S	28°27'27.34E	Erven
769	CASSELDAL	1209	0	26°15'44.49S	28°27'34.66E	Erven
770	CASSELDAL	1241	0	26°15'56.04S	28°27'39.83E	Erven
771	CASSELDAL	1245	0	26°15'26.13S	28°27'30.32E	Erven
772	DAGGAFONTEIN	35	0	26°17'0.3S	28°28'30.81E	Erven
773	DAGGAFONTEIN	38	0	26°17'2.1S	28°28'33.33E	Erven
774	DAGGAFONTEIN	8	0	26°16'58.4S	28°28'41.88E	Erven
775	CASSELDAL	33	1	26°15'35.52S	28°27'50.8E	Erven
776	DAGGAFONTEIN	51	0	26°17'2.56S	28°28'23.25E	Erven
777	DAGGAFONTEIN	78	0	26°17'4.7S	28°29'10.01E	Erven
778	DAGGAFONTEIN	81	0	26°17'6.78S	28°28'55.81E	Erven
779	DAGGAFONTEIN	114	0	26°17'10.79S	28°28'51.86E	Erven
780	DAGGAFONTEIN	117	0	26°17'10.8S	28°28'55.03E	Erven
781	DAGGAFONTEIN	141	0	26°17'12.54S	28°28'48.56E	Erven
782	DAGGAFONTEIN	145	0	26°17'14.79S	28°28'46.97E	Erven
783	DAGGAFONTEIN	169	0	26°17'16.56S	28°28'48.4E	Erven
784	DAGGAFONTEIN	172	0	26°17'18.84S	28°28'49.83E	Erven
785	DAGGAFONTEIN	197	0	26°17'21.92S	28°28'29.74E	Erven
786	DAGGAFONTEIN	200	0	26°17'21.94S	28°28'26.77E	Erven
787	DAGGAFONTEIN	48	0	26°17'2.37S	28°28'30.56E	Erven
788	DAGGAFONTEIN	165	0	26°17'16.58S	28°28'52.98E	Erven
789	DAGGAFONTEIN	394	0	26°18'4.62S	28°29'37.46E	Erven
790	DAGGAFONTEIN	396	0	26°18'3.09S	28°29'37.46E	Erven
791	DAGGAFONTEIN	528	0	26°17'39.19S	28°28'37.16E	Erven
792	EDELWEISS	757	0	26°17'11.77S	28°28'8.88E	Erven
793	EDELWEISS	759	0	26°17'11.46S	28°28'10.43E	Erven
794	CASSELDAL	813	0	26°15'41.08S	28°28'36.05E	Erven
795	CASSELDAL	817	0	26°15'41.61S	28°28'37.64E	Erven
796	CASSELDAL	828	0	26°15'43.36S	28°28'42.9E	Erven
797	CASSELDAL	831	0	26°15'42.46S	28°28'45.09E	Erven
798	CASSELDAL	870	0	26°15'48.86S	28°28'32.3E	Erven
799	CASSELDAL	873	0	26°15'47.47S	28°28'34.35E	Erven
800	CASSELDAL	885	0	26°15'42.46S	28°28'33.67E	Erven
801	CASSELDAL	888	0	26°15'41.67S	28°28'31.27E	Erven
802	CASSELDAL	925	0	26°15'54.85S	28°27'55.82E	Erven
803	CASSELDAL	928	0	26°15'53.97S	28°27'53.46E	Erven
804	CASSELDAL	943	0	26°15'57.02S	28°28'1.72E	Erven
805	CASSELDAL	948	0	26°15'58.12S	28°28'9.19E	Erven
806	CASSELDAL	984	0	26°15'56.38S	28°27'49.52E	Erven
807	CASSELDAL	988	0	26°16'1.66S	28°28'8.57E	Erven
808	CASSELDAL	997	0	26°16'4.26S	28°28'9.48E	Erven

809	CASSELDALE	1000	0	26°16'5.64S	28°28'7.44E	Erven
810	CASSELDALE	1003	0	26°16'7.02S	28°28'5.39E	Erven
811	CASSELDALE	1037	0	26°16'4.49S	28°28'5.93E	Erven
812	CASSELDALE	1040	0	26°16'5.04S	28°28'2.74E	Erven
813	CASSELDALE	1049	0	26°15'59.21S	28°27'46.67E	Erven
814	CASSELDALE	1098	0	26°16'11.93S	28°27'58.12E	Erven
815	CASSELDALE	1110	0	26°16'5.25S	28°27'44.53E	Erven
816	CASSELDALE	1113	0	26°16'7.27S	28°27'45.44E	Erven
817	CASSELDALE	1215	0	26°15'51.33S	28°27'37.73E	Erven
818	CASSELDALE	1238	0	26°15'50.63S	28°27'37.4E	Erven
819	DAGGAFONTEIN	43	0	26°17'5.42S	28°28'34.86E	Erven
820	DAGGAFONTEIN	90	0	26°17'6.82S	28°29'5.2E	Erven
821	DAGGAFONTEIN	30	0	26°16'58.89S	28°28'35.44E	Erven
822	DAGGAFONTEIN	42	0	26°17'4.48S	28°28'36.67E	Erven
823	CASSELDALE	149	2	26°15'53.48S	28°27'44.04E	Erven
824	DAGGAFONTEIN	56	0	26°17'4.87S	28°28'26.47E	Erven
825	DAGGAFONTEIN	76	0	26°17'4.84S	28°29'7.82E	Erven
826	DAGGAFONTEIN	108	0	26°17'8.64S	28°28'52.57E	Erven
827	DAGGAFONTEIN	136	0	26°17'12.55S	28°28'53.96E	Erven
828	DAGGAFONTEIN	148	0	26°17'14.8S	28°28'50.13E	Erven
829	DAGGAFONTEIN	177	0	26°17'21.27S	28°28'52.83E	Erven
830	DAGGAFONTEIN	189	0	26°17'19.73S	28°28'17.09E	Erven
831	DAGGAFONTEIN	205	0	26°17'21.97S	28°28'21.82E	Erven
832	DAGGAFONTEIN	216	0	26°17'23.71S	28°28'18.88E	Erven
833	DAGGAFONTEIN	228	0	26°17'23.58S	28°28'30.74E	Erven
834	DAGGAFONTEIN	246	0	26°17'26.23S	28°28'15.93E	Erven
835	DAGGAFONTEIN	258	0	26°17'27.87S	28°28'25.85E	Erven
836	DAGGAFONTEIN	296	0	26°17'29.81S	28°28'41.89E	Erven
837	DAGGAFONTEIN	307	0	26°17'27.31S	28°28'46.95E	Erven
838	DAGGAFONTEIN	320	0	26°17'18.85S	28°28'44.08E	Erven
839	DAGGAFONTEIN	338	0	26°17'16.92S	28°28'44.02E	Erven
840	DAGGAFONTEIN	351	0	26°18'0.48S	28°29'22.99E	Erven
841	DAGGAFONTEIN	364	0	26°18'5.5S	28°29'31.79E	Erven
842	DAGGAFONTEIN	383	0	26°18'3.79S	28°29'38.93E	Erven
843	DAGGAFONTEIN	109	0	26°17'8.75S	28°28'51.15E	Erven
844	DAGGAFONTEIN	113	0	26°17'10.79S	28°28'50.81E	Erven
845	DAGGAFONTEIN	150	0	26°17'14.8S	28°28'52.24E	Erven
846	DAGGAFONTEIN	153	0	26°17'14.82S	28°28'55.41E	Erven
847	DAGGAFONTEIN	162	0	26°17'16.59S	28°28'56.4E	Erven
848	DAGGAFONTEIN	203	0	26°17'21.96S	28°28'23.81E	Erven
849	DAGGAFONTEIN	214	0	26°17'23.74S	28°28'16.9E	Erven
850	DAGGAFONTEIN	218	0	26°17'23.67S	28°28'20.86E	Erven
851	DAGGAFONTEIN	256	0	26°17'27.88S	28°28'23.88E	Erven
852	DAGGAFONTEIN	259	0	26°17'27.86S	28°28'26.84E	Erven
853	DAGGAFONTEIN	283	0	26°17'32.16S	28°28'34.53E	Erven
854	DAGGAFONTEIN	321	0	26°17'18.85S	28°28'41.82E	Erven
855	DAGGAFONTEIN	324	0	26°17'18.85S	28°28'36.96E	Erven
856	DAGGAFONTEIN	333	0	26°17'15.41S	28°28'41.17E	Erven
857	DAGGAFONTEIN	336	0	26°17'16.79S	28°28'41.14E	Erven
858	DAGGAFONTEIN	378	0	26°18'8.94S	28°29'35.49E	Erven
859	DAGGAFONTEIN	381	0	26°18'2.4S	28°29'38.93E	Erven
860	DAGGAFONTEIN	384	0	26°18'4.63S	28°29'38.92E	Erven
861	DAGGAFONTEIN	435	0	26°18'0.15S	28°29'33.12E	Erven
862	DAGGAFONTEIN	514	0	26°17'41.2S	28°28'43.57E	Erven
863	DAGGAFONTEIN	516	0	26°17'40.65S	28°28'41.73E	Erven
864	DAGGAFONTEIN	549	0	26°17'45.47S	28°28'31.6E	Erven
865	DAGGAFONTEIN	552	0	26°17'44.54S	28°28'30.96E	Erven
866	DAGGAFONTEIN	565	0	26°17'42.13S	28°28'31.61E	Erven
867	DAGGAFONTEIN	568	0	26°17'43.68S	28°28'28.82E	Erven
868	DAGGAFONTEIN	409	0	26°17'54.11S	28°29'23.37E	Erven

869	DAGGAFONTEIN	424	0	26°18'0.48S	28°29'28.13E	Erven
870	DAGGAFONTEIN	434	0	26°17'59.13S	28°29'33.12E	Erven
871	DAGGAFONTEIN	513	0	26°17'42.25S	28°28'43.56E	Erven
872	DAGGAFONTEIN	525	0	26°17'39.52S	28°28'34E	Erven
873	DAGGAFONTEIN	535	0	26°17'39.09S	28°28'43.85E	Erven
874	DAGGAFONTEIN	546	0	26°17'44.34S	28°28'34.53E	Erven
875	DAGGAFONTEIN	566	0	26°17'42.65S	28°28'30.67E	Erven
876	DAGGAFONTEIN	579	0	26°17'42.78S	28°28'28.2E	Erven
877	DAGGAFONTEIN	593	0	26°17'49.16S	28°28'43.8E	Erven
878	DAGGAFONTEIN	613	0	26°17'54.54S	28°28'38.51E	Erven
879	DAGGAFONTEIN	611	0	26°17'51.83S	28°28'40.69E	Erven
880	DAGGAFONTEIN	614	0	26°17'53.98S	28°28'43.87E	Erven
881	DAGGAFONTEIN	380	0	26°18'1.69S	28°29'38.91E	Erven
882	DAGGAFONTEIN	401	0	26°17'55.09S	28°29'25.31E	Erven
883	DAGGAFONTEIN	413	0	26°17'55.42S	28°29'30.27E	Erven
884	DAGGAFONTEIN	422	0	26°18'3.22S	28°29'28.12E	Erven
885	DAGGAFONTEIN	437	0	26°18'2.37S	28°29'32.97E	Erven
886	DAGGAFONTEIN	515	0	26°17'40.59S	28°28'42.94E	Erven
887	DAGGAFONTEIN	522	0	26°17'40.77S	28°28'36.22E	Erven
888	DAGGAFONTEIN	538	0	26°17'44.62S	28°28'41.32E	Erven
889	DAGGAFONTEIN	633	0	26°17'45.5S	28°28'30.34E	Erven
890	DAGGAFONTEIN	563	0	26°17'42.93S	28°28'40.27E	Erven
891	DAGGAFONTEIN	582	0	26°17'41.22S	28°28'30.98E	Erven
892	DAGGAFONTEIN	598	0	26°17'48.54S	28°28'38.07E	Erven
893	DAGGAFONTEIN	609	0	26°17'52.09S	28°28'36.82E	Erven
894	DAGGAFONTEIN	86	0	26°17'6.8S	28°29'1E	Erven
895	DAGGAFONTEIN	358	0	26°18'5.87S	28°29'26.46E	Erven
896	DAGGAFONTEIN	6	0	26°16'57.25S	28°28'40.29E	Erven
897	EDELWEISS	751	0	26°17'12.61S	28°28'1.06E	Erven
898	DAGGAFONTEIN	318	0	26°17'20.08S	28°28'46.96E	Erven
899	DAGGAFONTEIN	355	0	26°18'2.75S	28°29'25.5E	Erven
900	DAGGAFONTEIN	432	0	26°17'57.08S	28°29'33.13E	Erven
901	EDELWEISS	745	0	26°17'8.95S	28°28'3.94E	Erven
902	EDELWEISS	748	0	26°17'11.07S	28°28'3.13E	Erven
903	DAGGAFONTEIN	223	0	26°17'23.63S	28°28'25.8E	Erven
904	DAGGAFONTEIN	226	0	26°17'23.6S	28°28'28.77E	Erven
905	DAGGAFONTEIN	248	0	26°17'27.83S	28°28'14.9E	Erven
906	DAGGAFONTEIN	251	0	26°17'27.94S	28°28'17.94E	Erven
907	DAGGAFONTEIN	284	0	26°17'31.68S	28°28'35.1E	Erven
908	DAGGAFONTEIN	288	0	26°17'30.27S	28°28'37.33E	Erven
909	DAGGAFONTEIN	311	0	26°17'24.94S	28°28'46.96E	Erven
910	DAGGAFONTEIN	315	0	26°17'21.97S	28°28'46.97E	Erven
911	DAGGAFONTEIN	343	0	26°17'52.73S	28°29'21.19E	Erven
912	DAGGAFONTEIN	346	0	26°17'56.37S	28°29'21.47E	Erven
913	DAGGAFONTEIN	373	0	26°18'5.11S	28°29'35.49E	Erven
914	DAGGAFONTEIN	376	0	26°18'7.19S	28°29'35.49E	Erven
915	DAGGAFONTEIN	404	0	26°17'58.36S	28°29'25.32E	Erven
916	DAGGAFONTEIN	408	0	26°17'55.09S	28°29'23.37E	Erven
917	DAGGAFONTEIN	429	0	26°17'54.02S	28°29'33.15E	Erven
918	DAGGAFONTEIN	517	0	26°17'40.76S	28°28'40.82E	Erven
919	DAGGAFONTEIN	519	0	26°17'40.76S	28°28'38.99E	Erven
920	DAGGAFONTEIN	540	0	26°17'44.36S	28°28'39.45E	Erven
921	DAGGAFONTEIN	543	0	26°17'44.35S	28°28'36.98E	Erven
922	DAGGAFONTEIN	573	0	26°17'48.7S	28°28'27.32E	Erven
923	DAGGAFONTEIN	603	0	26°17'52.59S	28°28'27.74E	Erven
924	DAGGAFONTEIN	606	0	26°17'52.77S	28°28'30.74E	Erven
925	DAGGAFONTEIN	316	0	26°17'21.37S	28°28'46.96E	Erven
926	DAGGAFONTEIN	430	0	26°17'55.03S	28°29'33.15E	Erven
927	EDELWEISS	743	0	26°17'7.54S	28°28'4.48E	Erven
928	EDELWEISS	746	0	26°17'9.65S	28°28'3.66E	Erven

929	DAGGAFONTEIN	128	0	26°17'12.58S	28°29'2.4E	Erven
930	DAGGAFONTEIN	3	0	26°16'55.53S	28°28'37.89E	Erven
931	EDELWEISS	756	0	26°17'11.93S	28°28'7.99E	Erven
932	EDELWEISS	731	0	26°17'11.75S	28°27'57.37E	Erven
933	EDELWEISS	735	0	26°17'11.74S	28°28'0.24E	Erven
934	EDELWEISS	738	0	26°17'10.08S	28°28'2.19E	Erven
935	EDELWEISS	795	0	26°17'12.04S	28°28'13.59E	Erven
936	EDELWEISS	798	0	26°17'8.67S	28°28'12.73E	Erven
937	EDELWEISS	5	0	26°16'33.66S	28°27'53.96E	Erven
938	EDELWEISS	9	0	26°16'38.18S	28°27'44.29E	Erven
939	EDELWEISS	52	0	26°16'40.59S	28°27'40.82E	Erven
940	EDELWEISS	55	0	26°16'39.18S	28°27'51.01E	Erven
941	EDELWEISS	125	0	26°16'45.35S	28°27'42.48E	Erven
942	EDELWEISS	128	0	26°16'45.56S	28°27'45.19E	Erven
943	EDELWEISS	132	0	26°16'45.86S	28°27'48.84E	Erven
944	EDELWEISS	167	0	26°16'56.64S	28°27'43.05E	Erven
945	EDELWEISS	170	0	26°16'55.9S	28°27'40.73E	Erven
946	EDELWEISS	174	0	26°16'52.54S	28°27'38.81E	Erven
947	EDELWEISS	250	0	26°16'58.84S	28°27'49.98E	Erven
948	EDELWEISS	254	0	26°16'56.08S	28°27'50.62E	Erven
949	EDELWEISS	292	0	26°16'52.32S	28°27'56.15E	Erven
950	EDELWEISS	296	0	26°16'53.68S	28°28'0.74E	Erven
951	EDELWEISS	377	0	26°16'55.83S	28°28'2.54E	Erven
952	EDELWEISS	381	0	26°16'52.4S	28°28'3.88E	Erven
953	EDELWEISS	416	0	26°17'3.43S	28°28'14.81E	Erven
954	EDELWEISS	420	0	26°17'5.94S	28°28'12.63E	Erven
955	EDELWEISS	431	0	26°17'0.87S	28°28'15.42E	Erven
956	EDELWEISS	534	0	26°17'24.59S	28°28'6.77E	Erven
957	EDELWEISS	536	0	26°17'24.48S	28°28'8.1E	Erven
958	EDELWEISS	542	0	26°17'20.28S	28°28'10.21E	Erven
959	EDELWEISS	547	0	26°17'16.86S	28°28'12E	Erven
960	EDELWEISS	589	0	26°17'2.46S	28°28'18.07E	Erven
961	DAGGAFONTEIN	280	0	26°17'36.76S	28°28'32.69E	Erven
962	DAGGAFONTEIN	569	0	26°17'44.36S	28°28'27.83E	Erven
963	DAGGAFONTEIN	607	0	26°17'53.39S	28°28'33.63E	Erven
964	EDELWEISS	93	0	26°16'43.81S	28°27'45.29E	Erven
965	EDELWEISS	94	0	26°16'43.72S	28°27'44.2E	Erven
966	EDELWEISS	108	0	26°16'39.36S	28°27'58.96E	Erven
967	EDELWEISS	110	0	26°16'40.11S	28°28'0.3E	Erven
968	EDELWEISS	741	0	26°17'7.86S	28°28'3.01E	Erven
969	EDELWEISS	801	0	26°17'9.94S	28°28'9.4E	Erven
970	EDELWEISS	825	10	26°16'46.18S	28°28'2.77E	Erven
971	EDELWEISS	825	11	26°16'46.84S	28°28'1.65E	Erven
972	EDELWEISS	1	0	26°16'35.05S	28°27'49.61E	Erven
973	EDELWEISS	2	0	26°16'34.69S	28°27'50.73E	Erven
974	EDELWEISS	58	0	26°16'38.29S	28°27'53.52E	Erven
975	EDELWEISS	60	0	26°16'37.68S	28°27'55.17E	Erven
976	EDELWEISS	123	0	26°16'45.2S	28°27'40.67E	Erven
977	EDELWEISS	178	0	26°16'48.74S	28°27'38.01E	Erven
978	EDELWEISS	179	0	26°16'47.87S	28°27'37.99E	Erven
979	EDELWEISS	211	0	26°17'0.17S	28°27'46.36E	Erven
980	EDELWEISS	216	0	26°17'3.22S	28°27'49.41E	Erven
981	EDELWEISS	217	0	26°17'3.84S	28°27'49.99E	Erven
982	EDELWEISS	298	0	26°16'55.19S	28°28'0.14E	Erven
983	EDELWEISS	303	0	26°16'58.96S	28°27'58.66E	Erven
984	EDELWEISS	304	0	26°16'59.71S	28°27'58.35E	Erven
985	EDELWEISS	333	0	26°16'54.01S	28°27'59.1E	Erven
986	EDELWEISS	335	0	26°16'52.55S	28°27'59.69E	Erven
987	EDELWEISS	423	0	26°17'5.19S	28°28'10.7E	Erven
988	EDELWEISS	425	0	26°17'4.53S	28°28'12.2E	Erven

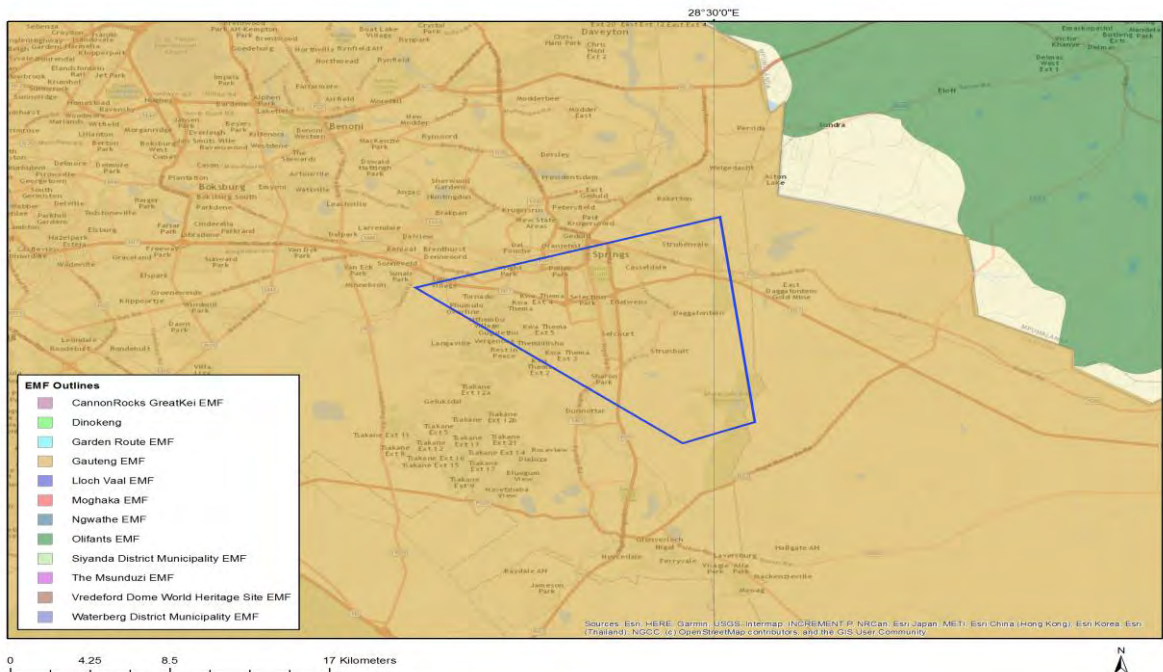
989	EDELWEISS	430	0	26°17'1.48S	28°28'14.88E	Erven
990	EDELWEISS	507	0	26°17'1.49S	28°28'10.86E	Erven
991	EDELWEISS	509	0	26°17'0.18S	28°28'12.02E	Erven
992	EDELWEISS	538	0	26°17'23.05S	28°28'8.95E	Erven
993	EDELWEISS	539	0	26°17'22.36S	28°28'9.26E	Erven
994	EDELWEISS	573	0	26°17'7.57S	28°28'28.01E	Erven
995	EDELWEISS	574	0	26°17'7.07S	28°28'27.32E	Erven
996	EDELWEISS	19	0	26°16'36.01S	28°27'51.99E	Erven
997	EDELWEISS	21	0	26°16'35.37S	28°27'53.97E	Erven
998	EDELWEISS	658	0	26°17'14.51S	28°28'15.64E	Erven
999	EDELWEISS	659	0	26°17'14.67S	28°28'14.88E	Erven
1000	EDELWEISS	79	0	26°16'42.45S	28°27'43.22E	Erven

Development footprint¹ vertices:
No development footprint(s) specified.

Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area

No	EIA Reference No	Classification	Status of application	Distance from proposed area (km)
1	14/12/16/3/3/1/569	Solar PV	Approved	13.9
2	14/12/16/3/3/2/706	Solar CSP	Approved	5.2

Environmental Management Frameworks relevant to the application



¹ “development footprint”, means the area within the site on which the development will take place and includes all ancillary developments for example roads, power lines, boundary walls, paving etc. which require vegetation clearance or which will be disturbed and for which the application has been submitted.

Environmental Management Framework	LINK
Gauteng EMF	https://screening.environment.gov.za/ScreeningDownloads/EMF/Zone 1, Zone 2, Zone 3, Zone 4, Zone 5.pdf

Environmental screening results and assessment outcomes

The following sections contain a summary of any development incentives, restrictions, exclusions or prohibitions that apply to the proposed development site as well as the most environmental sensitive features on the site based on the site sensitivity screening results for the application classification that was selected. The application classification selected for this report is: Mining|Mining Right|Mining - Mining Right.

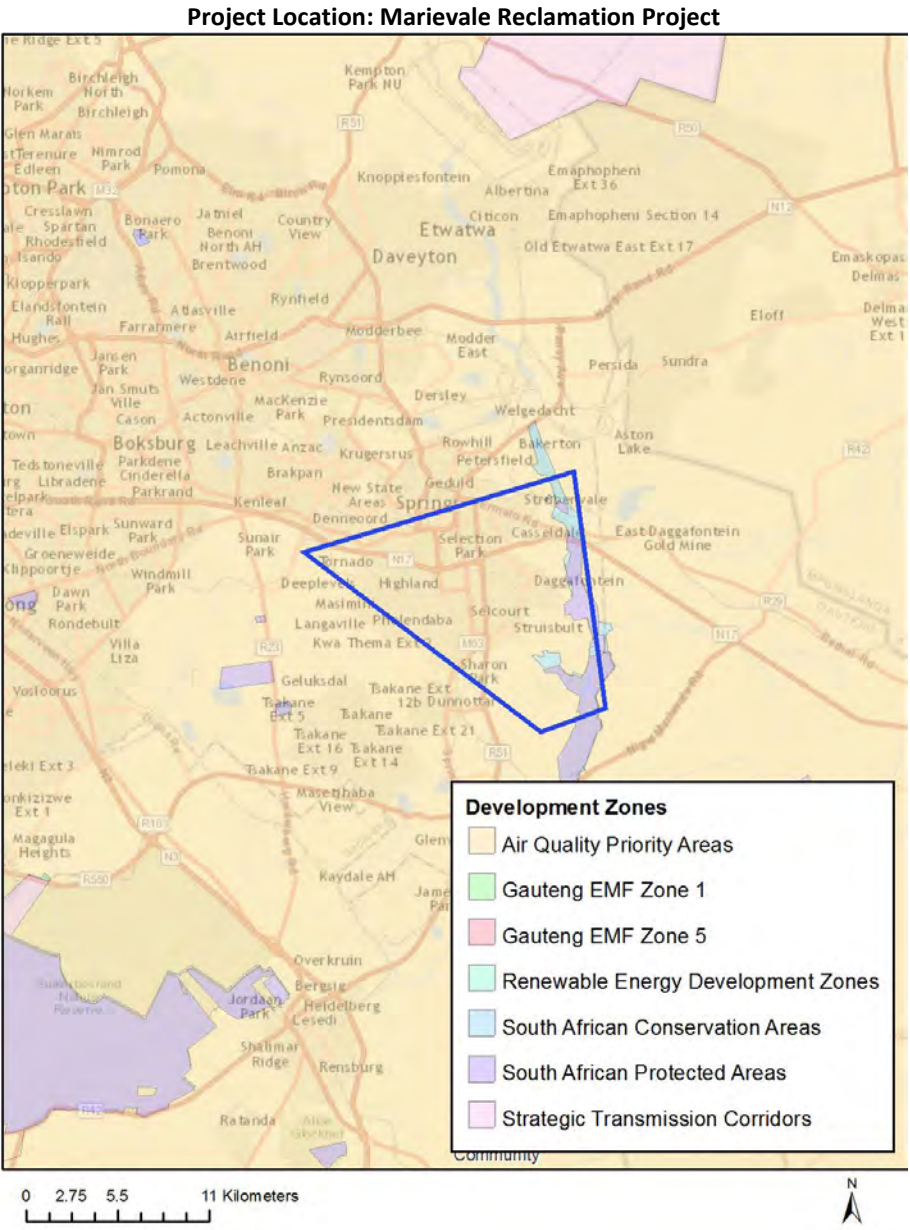
Relevant development incentives, restrictions, exclusions or prohibitions

The following development incentives, restrictions, exclusions or prohibitions and their implications that apply to this site are indicated below.

Incentive, restriction or prohibition	Implication
Strategic Transmission Corridor-International corridor	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/GNR_350_of_13_April_2017.pdf
Strategic Transmission Corridor-Central corridor	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/GNR_350_of_13_April_2017.pdf
Gauteng EMF-Urban development zone 1	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/Zone_1.pdf
Gauteng EMF-Industrial and large commercial focus zone 5	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/Zone_2.pdf

Air Quality-Highveld Priority Area	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/HIGHVELD_PRIORITY_AREA_AQMP.pdf
South African Conservation Areas	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/SACAD_OR_2019_Q1_Metadata.pdf
South African Protected Areas	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/SAPAD_OR_2019_Q2_Metadata.pdf

Map indicating proposed development footprint within applicable development incentive, restriction, exclusion or prohibition zones



Proposed Development Area Environmental Sensitivity

The following summary of the development site environmental sensitivities is identified. Only the highest environmental sensitivity is indicated. The footprint environmental sensitivities for the proposed development footprint as identified, are indicative only and must be verified on site by a suitably qualified person before the specialist assessments identified below can be confirmed.

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme	X			
Aquatic Biodiversity Theme	X			

Archaeological and Cultural Heritage Theme		X		
Civil Aviation Theme		X		
Paleontology Theme		X		
Plant Species Theme			X	
Defence Theme				X
Terrestrial Biodiversity Theme	X			

Specialist assessments identified

Based on the selected classification, and the environmental sensitivities of the proposed development footprint, the following list of specialist assessments have been identified for inclusion in the assessment report. It is the responsibility of the EAP to confirm this list and to motivate in the assessment report, the reason for not including any of the identified specialist study including the provision of photographic evidence of the site situation.

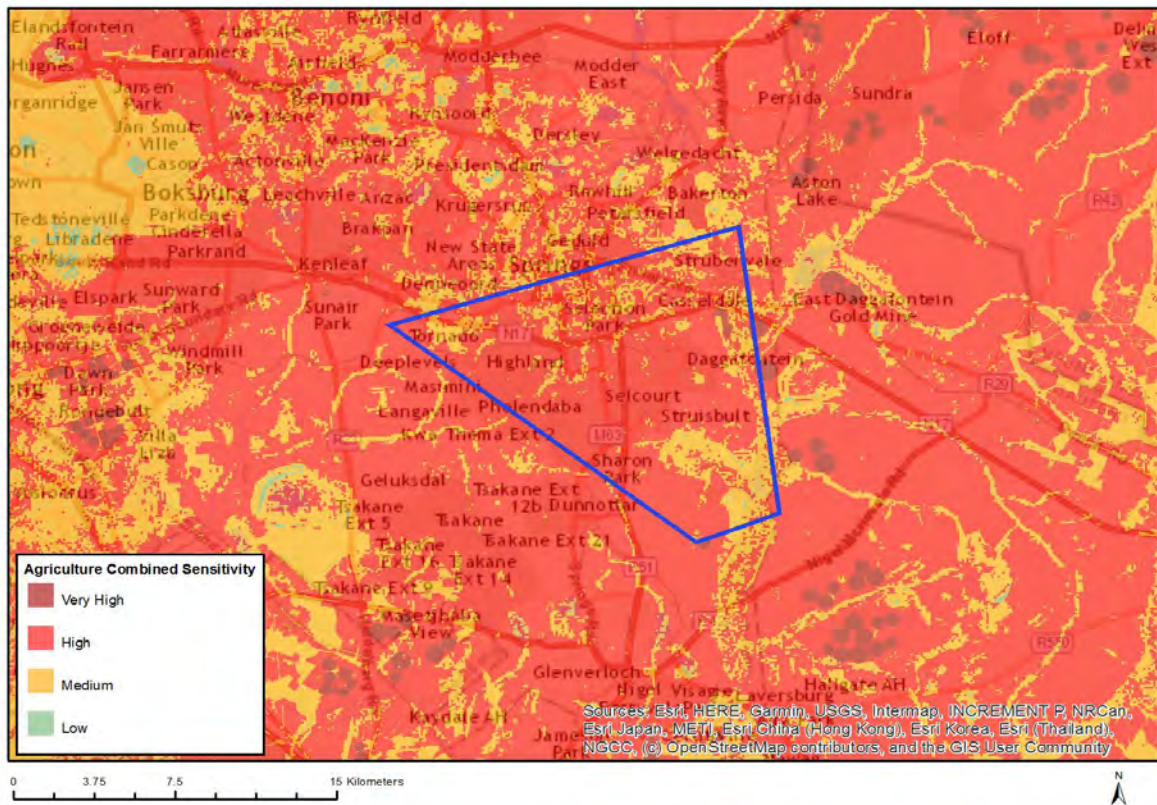
N o	Specialist assessment	Assessment Protocol
1	Agricultural Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/DraftGazetted_Agriculture_Assessment_Protocols.pdf
2	Landscape/Visual Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/DraftGazetted_General_Requirement_Assessment_Protocols.pdf
3	Archaeological and Cultural Heritage Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/DraftGazetted_General_Requirement_Assessment_Protocols.pdf
4	Palaeontology Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/DraftGazetted_General_Requirement_Assessment_Protocols.pdf
5	Terrestrial Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/DraftGazetted_Terrestrial_Biodiversity_Assessment_Protocols.pdf
6	Aquatic Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/DraftGazetted_Aquatic_Biodiversity_Assessment.pdf
7	Hydrology	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols

	Assessment	/DraftGazetted_General_Requirement_Assessment_Protocols.pdf
8	Noise Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/DraftGazetted_Noise_Impacts_Assessment_Protocols.pdf
9	Radioactivity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/DraftGazetted_General_Requirement_Assessment_Protocols.pdf
10	Traffic Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/DraftGazetted_General_Requirement_Assessment_Protocols.pdf
11	Geotechnical Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/DraftGazetted_General_Requirement_Assessment_Protocols.pdf
12	Climate Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/DraftGazetted_General_Requirement_Assessment_Protocols.pdf
13	Health Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/DraftGazetted_General_Requirement_Assessment_Protocols.pdf
14	Socio-Economic Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/DraftGazetted_General_Requirement_Assessment_Protocols.pdf
15	Ambient Air Quality Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/DraftGazetted_General_Requirement_Assessment_Protocols.pdf
16	Seismicity Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/DraftGazetted_General_Requirement_Assessment_Protocols.pdf
17	Plant Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/DraftGazetted_General_Requirement_Assessment_Protocols.pdf
18	Animal Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/DraftGazetted_General_Requirement_Assessment_Protocols.pdf

Results of the environmental sensitivity of the proposed area.

The following section represents the results of the screening for environmental sensitivity of the proposed site for relevant environmental themes associated with the project classification. It is the duty of the EAP to ensure that the environmental themes provided by the screening tool are comprehensive and complete for the project. Refer to the disclaimer.

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY



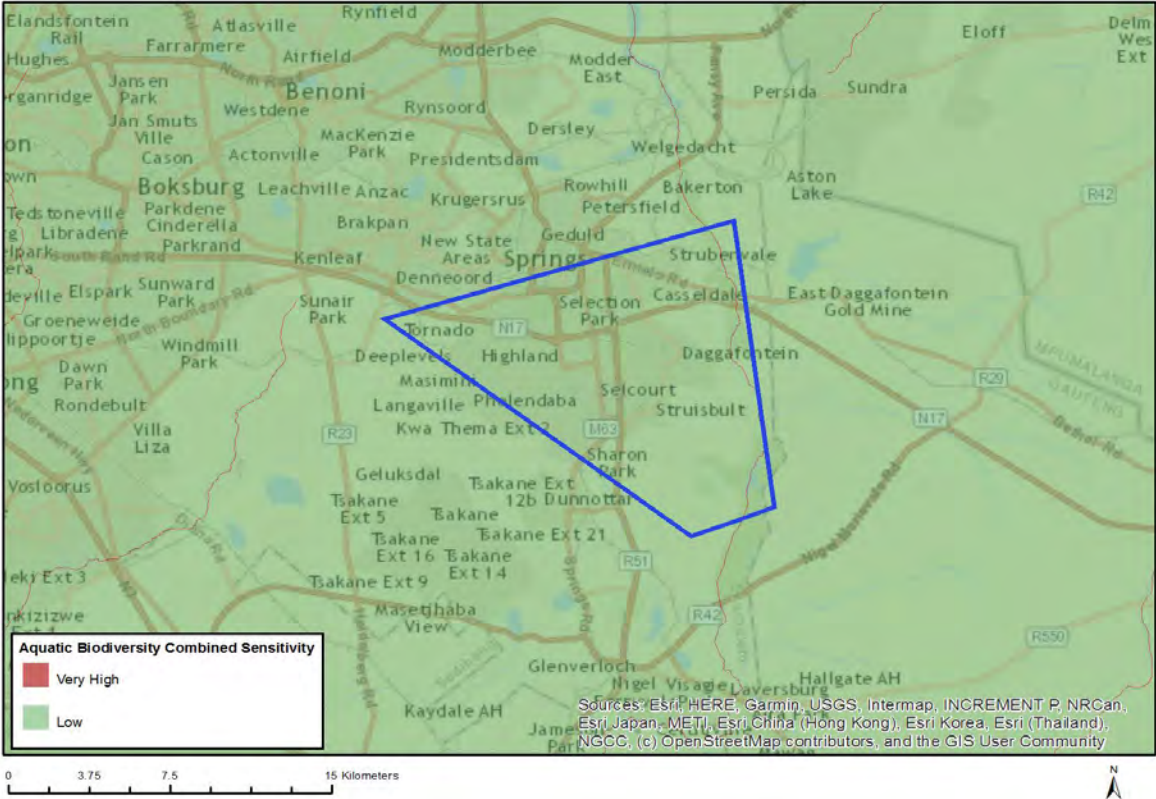
Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
High	Land capability;09. Moderate-High/10. Moderate-High
High	Annual Crop Cultivation / Planted Pastures Rotation;Land capability;09. Moderate-High/10. Moderate-High
High	Small Holdings;Land capability;09. Moderate-High/10. Moderate-High
High	Annual Crop Cultivation / Planted Pastures Rotation;Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate
High	Small Holdings;Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate
Low	Land capability;01. Very low/02. Very low/03. Low-Very low/04. Low-Very low/05. Low
Medium	Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate
Very High	Land capability;11. High/12. High-Very high/13. High-Very high/14. Very high/15. Very high
Very High	Pivot Irrigation;Land capability;09. Moderate-High/10. Moderate-High
Very High	Pivot Irrigation;Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate
Very High	Annual Crop Cultivation / Planted Pastures Rotation;Land capability;11. High/12. High-Very high/13.

High-Very high/14. Very high/15. Very high
--

MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY

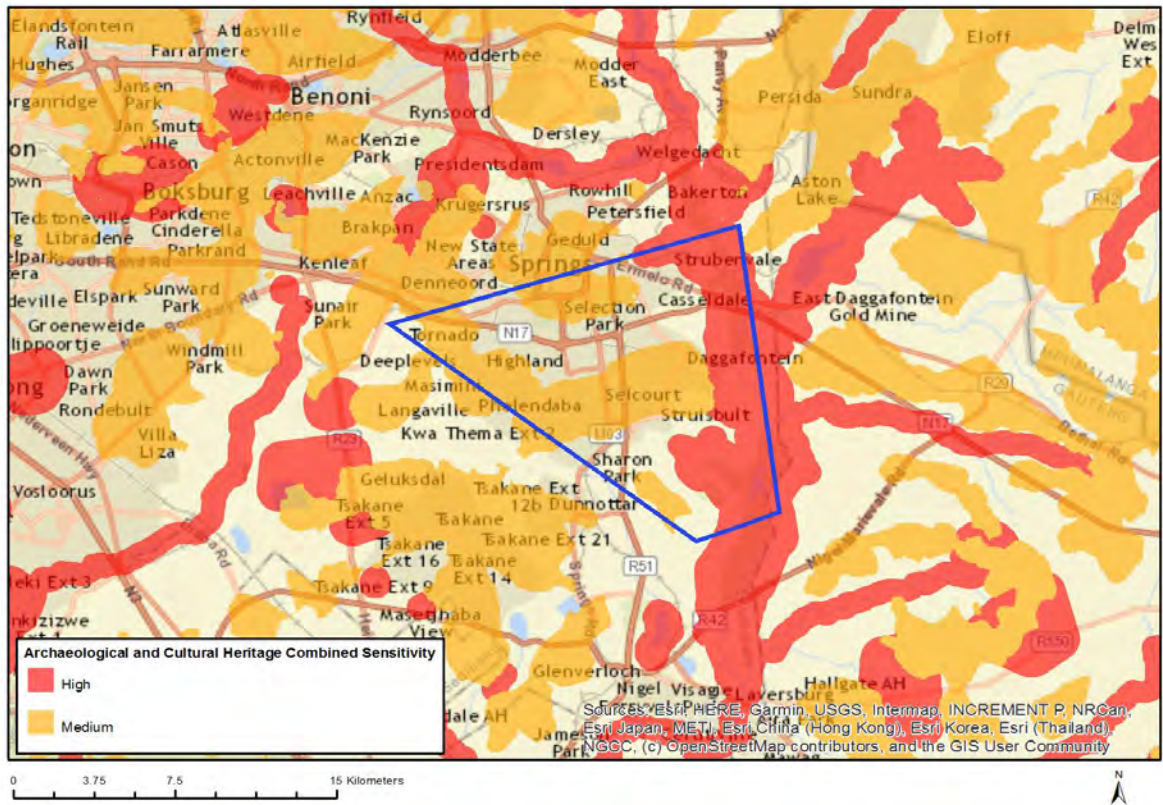


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity Areas
Very High	CBA,River,Blesbokspruit

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY

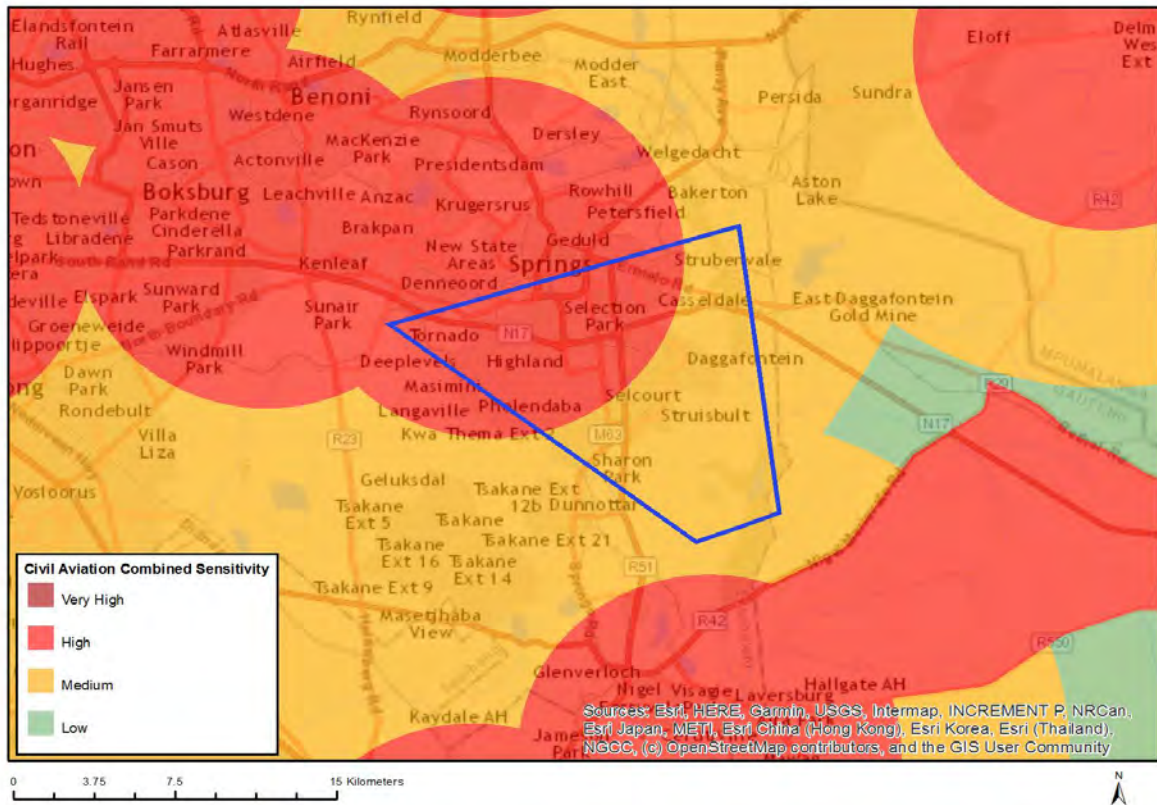


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Within 500 m of an important river
High	Within an important wetland
High	Within 500 m of an important wetland
High	Within protected area
High	Within 1 km of a protected area
Medium	Mountain or ridge

MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY

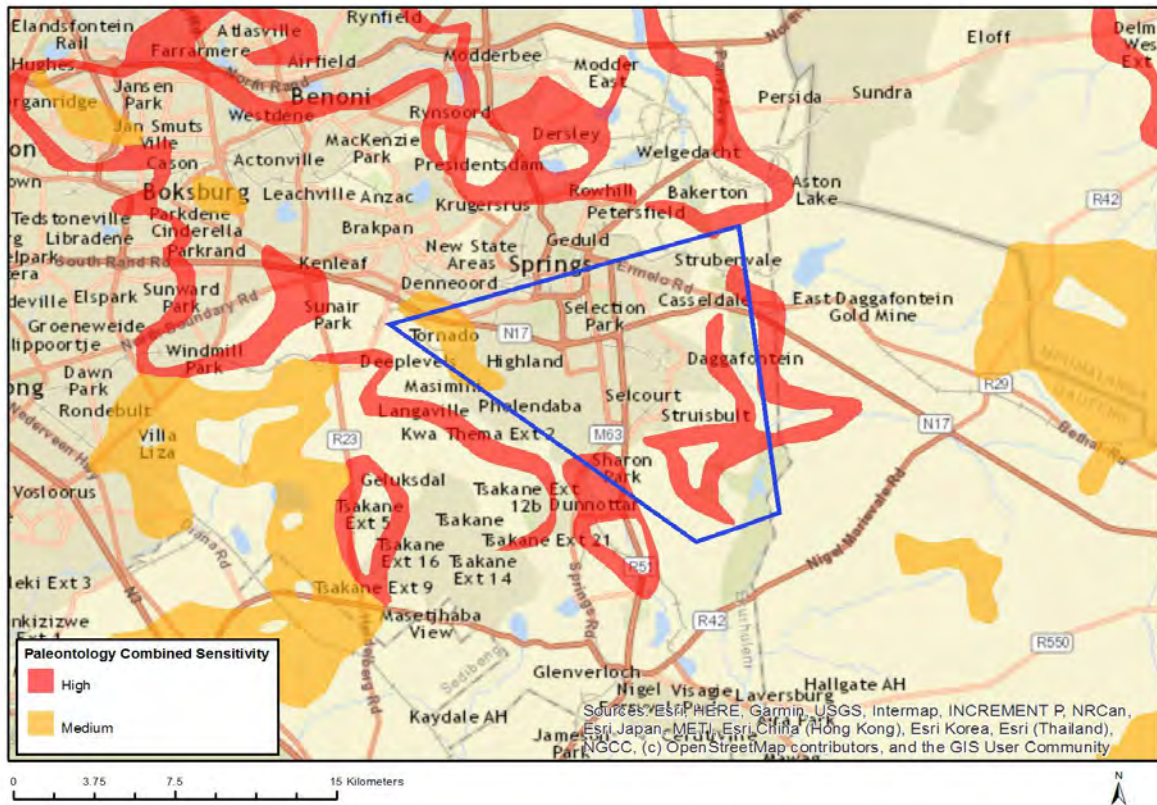


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Within 8 km of other civil aviation aerodrome
Medium	Between 15 and 35 km from a civil aviation radar
Medium	Between 15 and 35 km from a major civil aviation aerodrome
Medium	Between 8 and 15 km of other civil aviation aerodrome

MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY

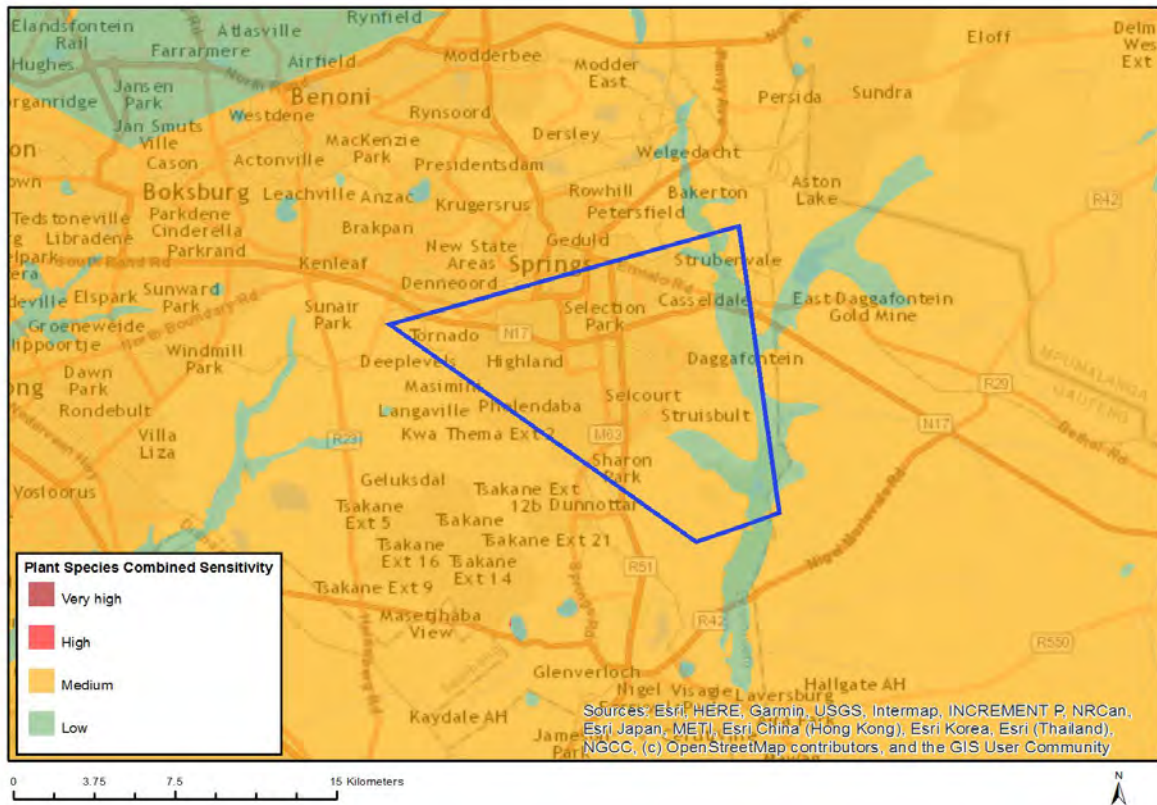


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Rock units with a high paleontological sensitivity
Medium	Rock units with a medium paleontological sensitivity

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity
Medium	Sensitive species 275
Medium	Sensitive species 647
Medium	Pachycarpus suaveolens
Medium	Khadia beswickii

MAP OF RELATIVE DEFENCE THEME SENSITIVITY

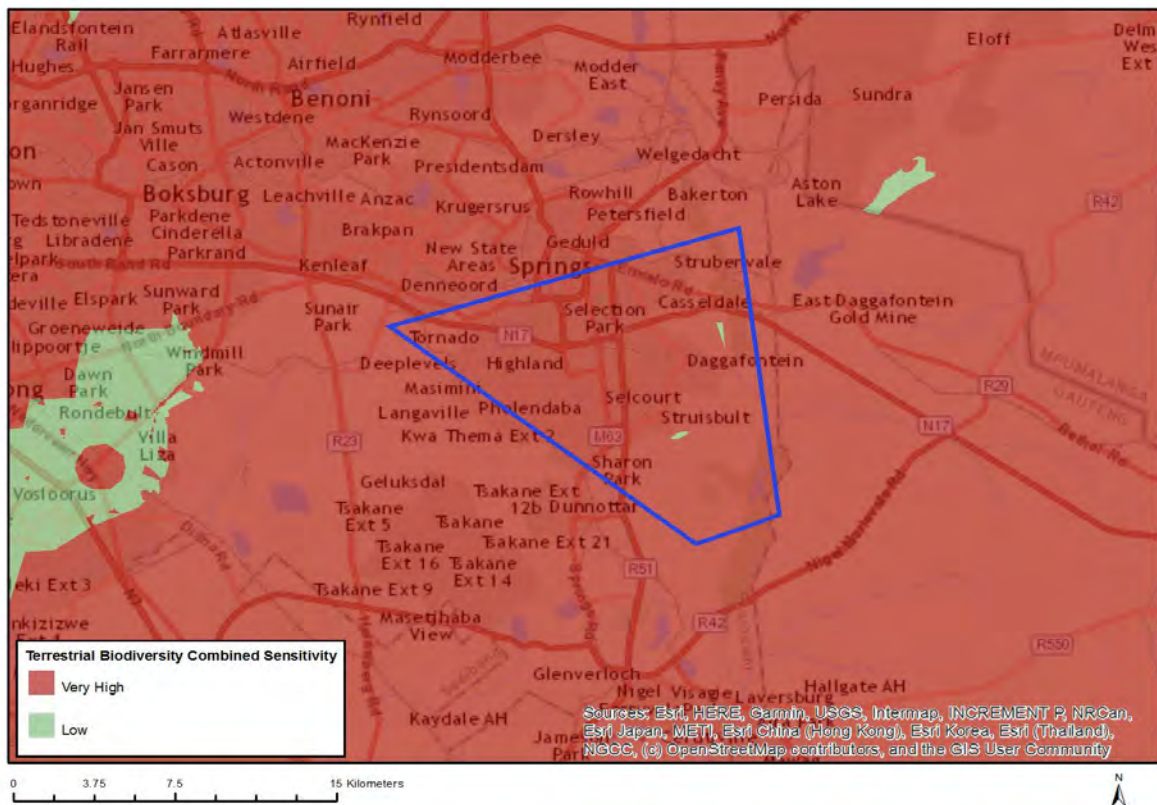


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	None
Very High	Vulnerable ecosystem
Very High	Endangered ecosystem
Very High	Critically endangered ecosystem
Very High	Ecological Support Area 1
Very High	Critical Biodiversity Area 1
Very High	Focus Areas for land-based protected areas expansion