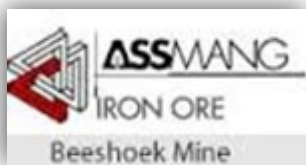


Beeshoek Iron Ore Mine

2019 Environmental Audit and recommended Regulation 34 amendments in terms of NEMA, 1998 and MPRDA, 2002 (Competent Authority – Department of Mineral Resources - DMR)



Report Purpose

Providing the client and Regulatory Authority with an understanding of the environmental compliance in terms of the Aligned Environmental Management Programme.

To address any potential amendments to the Environmental Authorisations and/or Environmental Management Programmes (EMPr's) through Regulation 34 of the Environmental Impact Assessment Regulations, 2014.

Report Status

Final

Report Reference

EnviroGistics Ref.: 21912

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10 October 2019



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With more than 17 years' experience in environmental management and the consulting industry, she follows a methodical and practical approach in attending to environmental problems and identifying environmental solutions throughout the planning, initiation, operation and decommissioning or closure of projects.

Disclaimer

The findings, results, observations, conclusions and recommendations given in this report are based on the author's best scientific and professional knowledge, as well as available information. Information utilised and contained in this report is based on data/information supplied to EnviroGistics (Pty) Ltd by the client and other external sources (including previous site investigation data and external specialist studies). EnviroGistics (Pty) Ltd exercises due care and diligence in rendering services and preparing documents, however it has been assumed that the information provided to EnviroGistics (Pty) Ltd is correct and as such the accuracy of the conclusions made are reliant on the accuracy and completeness of the data supplied. No responsibility is accepted by EnviroGistics (Pty) Ltd for incomplete or inaccurate data supplied by the client and/or other external sources. Opinions expressed in this report apply to the site conditions and features that existed at the time of the start of the relevant investigations and the production of this document. For this reason, EnviroGistics (Pty) Ltd accepts no liability, and the client by receiving and therefore accepting this document, indemnifies EnviroGistics (Pty) Ltd and its directors against all actions, claims, demands, losses, liabilities, costs, damages and expenses arising from or in connection with the services rendered, directly or indirectly.

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Quality Control

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Report Ref. No.	21912_F2	
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Amendments

Report Ref:	Nature of Amendment	Date	Report Output Ref:
21912_W	Inclusion of audit evidence	22 August 2019	21912_DW2
21912_DW2	External Review	2 September 2019	21912_D1
21912_D1	Improvement in rating regarding the submission of dust monitoring to the DMR. The mine is submitting this to the NCDENC in line with the NEM:AQA and for this reason the finding was reduced to a minor non-compliance.	3 September 2019	21912_FD
21912_FD	Rephrasing of condition listed in report – minor amendment.	4 October 2019	21912_F
21912_F2	Including legal review where applicable.	10 October 2019	21912_F2

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Msimelelo Silomntu; Crystal Vries	Clarification of Audit Evidence	16 August 2019	Electronic
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1 INTRODUCTION AND TERMS OF REFERENCE

1.1 Purpose of the Environmental Audit Report

The purpose of this Environmental Audit is **three-fold**:

Firstly, in terms of Beeshoek Iron Ore Mine's (hereafter referred to as Beeshoek, Beeshoek Mine or the mine) legal requirements, an annual Environmental Audit is required in terms of the approvals set out under Section 1.1 in terms of the following Acts:

- ☞ National Environmental Management Act, Act No. 107 of 1998 (NEMA) (excluding the ECA);
- ☞ Mineral and Petroleum Resources Development Act, Act No. 28 of 2002 (MPRDA); and
- ☞ National Water Act, Act No. 36 of 1998 (NWA).

The purpose of this Environmental Audit Report is to provide the client with feedback in terms of the MPRDA and the Mine's compliance in terms of the 2009 Aligned EMPr. This EMPr was approved under the MPRDA Regulations of 2002.

Secondly, to give effect to the 2014 NEMA Environmental Impact Assessment (EIA) Regulations. Regulation 26 (1e) states that an environmental authorisation must specify the frequency of auditing of compliance with the conditions of the environmental authorisation and of compliance with the EMPr, and where applicable the closure plan in order to determine whether such EMPr and closure plan continuously meet mitigation requirements and addresses environmental impacts, taking into account processes for such auditing prescribed in terms of these Regulations: provided that the frequency of the auditing of compliance with the conditions of the environmental authorisation and of compliance with the EMPr may not exceed intervals of five years.

In terms of Section 34 of the 2014 NEMA EIA Regulations (as amended), the holder of an environmental authorisation (this now includes Approvals in terms of the NEMA, the MPRDA and the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEMWA)), must, for the period during which the environmental authorisation and EMPr, and where applicable the closure plan, remain valid-

- a) ensure that the compliance with the conditions of the environmental authorisation and the EMP, and where applicable the closure plan, is audited; and
- b) submit an environmental audit report to the relevant competent authority.

Thirdly, to list the identified amendments required for the Environmental Authorisation and/or EMPs, as well as list the recommended Stakeholder Consultation Process to be followed, where applicable.

The following table presents the format of the audit report:

Table 1: Reference Table

#	Section	Requirements	Section in this Report
	34(2)	The environmental audit report contemplated in subregulation (1) must-	
1	34(2)(a)	be prepared by an independent person with the relevant environmental auditing expertise;	2.3
	34(2)(b)	provide verifiable findings, in a structured and systematic manner, on-	
2	34(2)(b)i	the level of performance against and compliance of an organization or project with the provisions of the requisite environmental authorisation or EMPr and, where applicable, the closure plan; and	5.3
3	3(2)(b)ii	the ability of the measures contained in the EMPr, and where applicable the closure plan, to sufficiently provide for the	4, 5.2, 5.5

#	Section	Requirements	Section in this Report
		avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity;	
4	34(2)(c)	contain the information set out in Appendix 7; and	See this report
5	34(2)(d)	be conducted and submitted to the competent authority at intervals as indicated in the environmental authorisation.	1.1
	34(3)	The environmental audit report contemplated in subregulation (1) must determine-	
6	34(3)(a)	the ability of the EMPr, and where applicable the closure plan, to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity on an ongoing basis and to sufficiently provide for the, avoidance, management and mitigation of environmental impacts associated with the closure of the facility; and	4, 5.2, 5.3
7	34(3)(b)	the level of compliance with the provisions of environmental authorisation, EMPr and where applicable the closure plan.	5.2
	34(4)	Where the findings of the environmental audit report contemplated in subregulation (1) indicate-	
8	34(4)(a)	insufficient mitigation of environmental impacts associated with the undertaking of the activity; or	5.3, 5.4
9	34(4)(b)	insufficient levels of compliance with the environmental authorisation or EMPr and, where applicable the closure plan;	5.3, 5.4
10		the holder must, when submitting the environmental audit report to the competent authority in terms of subregulation (1), submit recommendations to amend the EMPr or closure plan in order to rectify the shortcomings identified in the environmental audit report.	Noted, see Section 4 for recommendations made by auditor.
11	34(5)	When submitting recommendations in terms of subregulation (4), such recommendations must have been subjected to a public participation process, which process has been agreed to by the competent authority and was appropriate to bring the proposed amendment of the EMPr and, where applicable the closure plan, to the attention of potential and registered interested and affected parties, including organs of state which have jurisdiction in respect of any aspect of the relevant activity and the competent authority, for approval by the competent authority.	5.6 – recommended to be undertaken in conjunction with new EIA Process scheduled for commissioning early 2020.
12	34(6)	Within 7 days of the date of submission of an environmental audit report to the competent authority, the holder of an environmental authorisation must notify all potential and registered interested and affected parties of the submission of that report, and make such report immediately available-	Noted
13	34(6)(a)	to anyone on request; and	Noted
14	34(6)(b)	on a publicly accessible website, where the holder has such a website.	Noted
Appendix 7			
	3(1)	An environmental audit report prepared in terms of these Regulations must contain-	
15	3(1)(a)i	the independent person who prepared the environmental audit report; and	2.3
16	3(1)(a)ii	the expertise of independent person that compiled the environmental audit report;	2.3.2
17	3(1)(b)	a declaration that the independent auditor is independent in a form as may be specified by the competent authority specified by the competent authority;	5.9
18	3(1)(c)	an indication of the scope of, and the purpose for which, the environmental audit report was prepared;	1.1
19	3(1)(d)	a description of the methodology adopted in preparing the environmental audit report;	2.2
	3(1)(e)	an indication of the ability of the EMPr, and where applicable, the closure plan to-	

#	Section	Requirements	Section in this Report
20	3(1)(e)i	sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity on an on-going basis;	4, 5.2, 5.4
21	3(1)(e)ii	sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the closure of the facility; and	4, 5.2, 5.4
22	3(1)(e)iii	ensure compliance with the provisions of environmental authorisation, EMP, and where applicable, the closure plan;	4, 5.2, 5.2, 5.4
23	3(1)(f)	a description of any assumptions made, and any uncertainties or gaps in knowledge;	5.5
24	3(1)(g)	a description of any consultation process that was undertaken during the course of carrying out the environmental audit report;	5.6
25	3(1)(j)	a summary and copies of any comments that were received during any consultation process; and	Recommended to be undertaken in conjunction with new EIA Process scheduled for commissioning early 2020.
26	3(1)(k)	any other information requested by the competent authority.	Noted

The Environmental Audit is undertaken to determine the following:

- ☞ Compliance with conditions pertaining to the ROD and EMP approval; and
- ☞ The appropriateness (adequacy) of the Environmental Authorisation to ensure that it covers all the activities and developments on-site and, in the process, to identify information required to update the EMP if required.

The objectives of this Environmental Audit Report are to:

- ☞ Provide the management of the mine, as well as the DMR with an understanding of the level of compliance towards the Environmental Authorisation; and
- ☞ Supply a basis for the initiation of corrective action.

1.2 Introduction

The Iron Ore Division of Assmang Ltd (hereafter referred to as Assmang) is made up of the Beeshoek and the Khumani Iron Ore Mines, both located in the Northern Cape Province.

Beeshoek is located approximately 7km west of the town of Postmasburg. The mine falls under the jurisdiction of the Tsantsabane Local Municipality, which is an administrative area in the ZF Mgcawu District Municipality. The mining area is situated on the properties Beesthoek and Olyfontein in the Kuruman Registration Division (RD).

The R385 roadway, as well as the Sishen–Saldanha railway line, also known as the Ore Export Line (OREX), traverse the mine. The overall area is characterised by intensive mining development. Various servitudes traverse the mine, which include roads, telephone lines and electricity lines.

Assmang is the holder of the new order rights in terms of the MPRDA in respect of high-grade hematite iron ore deposits at Beeshoek on the farms Beesthoek and Olyfontein. The mining method currently entails an opencast mining operation, which consists of three (3) opencast pits. The current resources of the mine are 98 million tonnes with a reserve of 46 million tonnes.

Mining at Beeshoek was established in 1964 with a basic hand sorting operation. In 1975 a full washing and screening plant was installed. Because of increased production, Beeshoek South (South Mine), a southern extension of Beeshoek Mine, was commissioned during 1999 on the farms Beesthoek and Olyfontein.

Broadly, Beeshoek Mine can be categorised as follows:

- ☞ North Mine: This area comprises active as well as historical mining areas. Several active opencast pits and mine residue dumps of various categories are located within this area. The area also includes the iron ore beneficiation plant.
- ☞ Housing (almost fully decommissioned and demolished) and administration: This area comprises the older housing on the mine, as well as the offices and related administration buildings. This area is separated from the north eastern mining area (North Mine) by means of the railway line running from Postmasburg to Saldanha.
- ☞ Village and recreational area (fully demolished); and
- ☞ South Mine: This area includes the latest mining developments comprising large opencast pits and associated waste rock dumps. This area also includes a crushing and screening area as pre-preparation of the Run of Mine (ROM) iron ore before being routed by overland conveyor to the iron ore beneficiation plant located within the north eastern mining area (North Mine).

Beeshoek is certified for Safety, Health, Environment and Quality (SHEQ) management systems according to ISO 14001, OHSAS 18001 and ISO 9001.

The mine is operating with all required environmental authorisations in terms of the:

- ☞ NEMA, and also the original approval in terms of the ECA:
 - Licence 1 (in terms of ECA)
 - Licence Ref.: Permit 12/9/11/P49
 - Purpose: Landfill site.
 - Date: 30 October 2008
 - Licence 2
 - Licence Ref.: Permit 17/2011
 - Purpose: Road Diversion
 - Date: 3 March 2011
 - Licence 3
 - Licence Ref.: Permit 12/2014
 - Purpose: BF Waste Rock Dump (WRD) (now the Village WRD)
 - Date 7 March 2014
 - Licence 4
 - Licence Ref.: Permit 20/2015
 - Purpose: Village WRD Haul Road
 - Date: 3 June 2015
 - Licence 5
 - Licence Ref.: Permit NC 30/5/1/2/3/2/1 (223) MR
 - Purpose: Storm Water Dam North Upgrade
 - Date: 10 March 2017
- ☞ MPRDA:
 - EMP 1 (pre-alignment, and used for information purposes – no longer audited):
 - EMP 1 Report
 - Purpose: Beeshoek Mining Operation
 - Date: August 2004
 - EMP 2:
 - Licence Ref.: NC30/5/1/2/3/2/1/223EM
 - Purpose: EMP 2 Alignment for activities on Beeshoek
 - Date: 7 June 2010
- ☞ National Water Act, 1998 (Act No. 36 of 1998) (NWA):
 - Licence Ref.: 10/D73A/ABGJ/2592
 - Purpose: Licence for all Section 21 Water Uses and Government Notice No. 704 (GN704) triggered activities (such as backfilling)
 - Date: 21 August 2018

1.3 Catchment Description

Beeshoek Mine is located within quaternary catchment D73A, which measures 3 238km² in size. The overall catchment is part of a large endoreic area. The main drainage feature within this area is the Groenwater Spruit, which has a catchment of approximately 1 000km². The Groenwater Spruit discharges into a major local depression at Vleiputs.

The local catchment upslope of the mine is small, since it is located near a range of koppies which forms the water shed between the Groenwater Spruit and the unnamed adjacent catchment. The general drainage starts off in a westerly direction, from the koppie to the north and east of the mine's northern workings. From the North Mine, the drainage is in a south westerly direction, before turning south at the southern portion of the South Mine area.

The above, combined with the sandy soils that are prevalent in the area, should result in high infiltration with limited runoff during normal rainfall events. No distinct drainage paths exist, but some minor preferential pathways are evident, and runoff could be concentrated in these pathways.

1.3.1 Licence Holder Details

The following table provides the details of the Licence Holder.

Table 2: Licence Holder Contact Details

Licence Holder:	Assmang (Pty) Ltd: Beeshoek iron Ore Mine		
Registration no (if any):	35007343/06		
Trading name (if any):	N/A		
Contact person:	Mr Msimelelo Silomntu (Environmental Superintendent)		
Physical address:	The mining area is situated on the properties Beesthoek and Olynfontein in the Kuruman RD. The specific farms include: Beesthoek 448, portion 0, Beesthoek 448, portion 1 and Olynfontein 475, portion 4.		
Postal address:	Private Bag X3002, Postmasburg,		
Postal code:	8420	Cell:	+27 (0) 63 520 9191
Telephone:	+27 (0) 53 311 6666		
E-mail:	Msimelelo.Silomntu@assmang.co.za		

2 COMPLIANCE ASSESSMENT METHODOLOGY

2.1 Methodology

The following methodology was implemented to assess the compliance of Beeshoek Mine to its MPRDA and associated EMP Conditions:

- Gathering of Information;
- Checklist Formulation;
- Site Visit and Staff engagements;
- Compliance Assessment; and
- Feedback.

2.1.1 Gathering of Information

The most relevant documents were reviewed. Budgetary constraints make it impossible to review absolutely all the documents and spending days on site. The audit was conducted by doing numerous spot-checks on site as well as assessing licence or permit conditions. The external audit included discussions with the responsible environmental and engineering staff at the Operations.

Information required for the Environmental Audit Report was provided by Ms. Crystal Vries during the site visit. The following documents were reviewed by EnviroGistics (Pty) Ltd and consulted during the assessment:

- Permits:
 - Permit 17/2011 for the Road Diversion
 - Permit 12/2014 for the BF WRD (Village WRD)
 - Permit 20/2015 for the Village Haul Road
 - EMP Alignment in terms of the MPRDA and associated Record of Decision (ROD) NC 30/5/1/2/3/2/1 (223) EM
 - Water Use Licence (WUL), Reference 10/D73A/ABGJ/2592
- Chemical Water Analysis:
 - Aquatico Water Quality Reports for 2019
 - Dust Watch Air Quality Reports for 2019
- Past Environmental Audits:
 - 2016-2018 Environmental Audits for the purposes of the Environmental Audit.
- Department of Water and Sanitation (DWS) consultation
 - Beeshoek Integrated WUL (IWUL) Amendment Request, letter dating 2018 and 2019
- Other Information:
 - All reference material is listed in the Environmental Audit Table included in Section 4 of this report.
 - Water Reports up until July 2019 (levels and qualities used)

2.1.2 Checklist Formulation

EnviroGistics (Pty) Ltd conducts its Environmental Audits on an electronic spreadsheet as presented in this report. The detail findings of the audit are incorporated together with compliance score levels in the spreadsheet. The findings are results of the evaluation of the collected audit evidence against audit criteria.

For ease of cross referencing, the Audit Findings and Scores within the spreadsheet follow the same order as laid out in the various licences and permits being assessed, but only lists those conditions which are measurable as being in compliance or not (i.e. conditions which cannot be measured are not included). The spreadsheet is formulated based on all provided information.

2.1.3 Site Assessment and Schedule

A site visit was undertaken on 16-18 July 2019. During the site visit, the following areas were visited:

- ☛ South Mine:
 - Village Opencast Pit (“Village Pit”);
 - East Pit;
 - GK Pit;
 - West Pit;
 - East WRD;
 - West WRD;
 - Banded Iron Stone (BIS) and Contaminated Stockpiles;
 - ROM Stockpiles;
 - Village WRD;
 - Rehabilitation Areas;
 - Laydown Areas;
 - New Haul Road;
 - Workshop areas; and
 - General mining area.
- ☛ Administrative Area:
 - Demolition activities of houses; and
 - Area where Storm Water Dam is being constructed.
- ☛ North Mine:
 - Workshop areas;
 - General mining area;
 - Plant area;
 - Railway area;
 - Landfill Site;
 - Slimes Dam and surrounding area;
 - HH WRD; and
 - Discard Dump.

2.1.4 Rating Methodology

The specific audit spreadsheet prepared by EnviroGistics (Pty) Ltd was utilised to report on environmental compliance at the Mine. Each finding or observation received a compliance score in terms of the following:

Table 3: Rating Methodology

Compliance Score	Implication	Description
N/A	Not Applicable	Not applicable and will not be implemented or not discussed/assessed.
T/N	Take Note	The condition is applicable, and the client is aware of the requirement and must keep note of the condition in the near future.
Dup	Duplication	The same conditions which are not rated again.
NLR	No Longer Relevant	If a phase is completed and the condition does not relate to the subsequent phases.
TBA	To Be Amended	Conditions to be amended in terms of Regulation 34 of the Environmental Impact Assessment Regulations, 2014.

Compliance Score	Implication	Description
0	Major Non-Compliance	Relates to the absence of a requirement needed to be implemented or the total breakdown of a process. A number of minor non-compliances listed against the same requirement may represent a total breakdown of a process and thus could collectively be a major non-compliance.
1	Minor Non-Compliance	The requirement is partially implemented or non-compliant.
2	Observation	Relates to a matter about which the Assessor is concerned but which cannot be clearly stated as a non-compliance. Observations also indicate trends which may result in a future non-compliance.
3	Compliant	The project management plans and procedures are executed in a managed fashion (planned, tracked, verified and adjusted) based upon defined activities, inputs and outputs. Objective evidence is available for each process.

2.1.5 Reporting and Feedback

After the site visit a formal feedback meeting was held with the Engineering Department, Workshop Manager, Mining Team and Environmental Department to present the general feedback on the observations made during the site visit. The site notes were also presented to the Licence Holder for their review.

The working Audit Report was provided to the client on 14 August 2019 for feedback and input. During this time additional proof was obtained to assess conditions, such as proof of submission of reports, proof of monitoring activities and availability of training material. The first draft report was submitted to the client on 2 September 2019.

2.2 Details of Environmental Assessment Practitioner

2.2.1 The Company

EnviroGistics (Pty) Ltd (hereafter referred to as “EnviroGistics”) was appointed, as the independent Environmental Assessment Practitioner (EAP) to undertake the required Compliance Assessment.

EnviroGistics, established in 2015, provides Independent Environmental Planning, Permitting, and Consulting Services to a vast array of clients throughout the mining, construction and development industry. EnviroGistics’ independence is ensured with Ms Tanja Bekker being both registered with the South African Council for Natural Scientific Professions (SACNASP), as well as with the Environmental Assessment Practitioners Association of South Africa (EAPASA), complying with the highest requirements of the South African Environmental Legislation. The company holds further no equity in any other project. EnviroGistics operates with the goal of fulfilling its vision and mission, breaking away from a general consulting mould, striving to form an integrate part of a project team. For this reason, clients will be provided with experienced, practical, technically sound, independent, objective and value adding advice, ensuring support on environmental planning, permitting and compliance matters.

EnviroGistics is an independent company and has no vested interest in the outcome of the environmental assessment.

2.2.2 Expertise of the Environmental Assessment Practitioner

Ms. Bekker is registered as a Professional Natural Scientist in the field of Environmental Science with SACNASP and is also a registered with EAPASA as an EAP, a legal requirement stipulated by NEMA. She is further certified as an ISO 14001 Lead Auditor. Her qualifications include BSc. Earth Sciences (Geology and Geography), BSc. (Hons.) Geography, and MSc. Environmental Management. In addition to these tertiary qualifications, she obtained a Certificate in Project Management, and completed the Management Advancement Programme at Wits Business School.



With more than 17 years' working experience in environmental management and the consulting industry and managing various Large Account Clients, she understands the South African Regulatory System, and can advise clients with due diligence on their environmental regulatory requirements and offer a solution driven service to their project life cycle. She is equipped with exceptional project management and coordination skills, which especially enhances the service she offers clients within the environmental permitting system.

Her key focus is environmental management and compliance with extensive experience in the mining industry. Project Management and Coordination of projects form a critical component of her duties, which include project planning, initiation of projects, client, authority and stakeholder consultation, specialist coordination, budget control, process control, quality control and timeframe management. Her interest lies in a client advisory capacity, being involved during due diligence investigations, pre-project development and assisting the client and engineering team in adding value to develop the project in an environmentally sustainable manner, considering client costs and liabilities, as well as considering the implication of environmental authorisation conditions and requirements on project deliverables. Her involvement in projects has spanned over the project life cycle from Due Diligence Investigations, Pre-Feasibility Investigations, Prospecting Right Applications, Mining Right Applications, Environmental Reporting and implementation and auditing of Environmental Management Plans and Authorisations.

Table 4: EAP Contact Details

Name	Tanja Bekker
Designation	Environmental Assessment Practitioner
Postal Address	PO Box 22014, Helderkruin, 1733
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The following table presents the expertise of the EAP to carry out the Compliance Assessment.

Table 5: Table listing auditors experience

Name	Position	Project Responsibility	Qualification	Professional Registrations	Experience
Tanja Bekker	Principal Practitioner	Compliance Assessor	M.Sc. Environmental Management (RAU, now University of Johannesburg)	Registered member of the Environmental Assessment Practitioners Association of South Africa (EAPASA) (EAPASA Reg. 2019/306) South African Council of National Scientific Professions (SACNASP: Pr.Sci.Nat. Reg No. 400198/09) Member of the International Association for Impact Assessment (IAIA)	17 Years
Hendrik Kruger	Environmental Assessment Practitioner	Compliance Assessor	Geography Hons. – University of Johannesburg	Member of the International Association for Impact Assessment (IAIA)	9 Years

3 LEGISLATIVE SETTING

South Africa has a comprehensive environmental governance framework underpinned by an extensive array of environmental laws. The past years have evidenced the wholesale reform of South Africa's environmental legal framework under the guidance of the Constitution.

Historically, the mining industry in South Africa has not been subjected to comprehensive environmental regulation. However, in recent years, this has changed significantly, and the industry is now required to comply with a multifaceted network of mining and environmental legislation. There are no shortages of policy and legal frameworks to ensure "responsible" mining in South Africa. The Minerals and Mining Policy for South Africa, 1998 affirmed that the State, as custodian of the nation's natural resources, will support mining development while maintaining and enhancing environmental awareness of the mining industry in accordance with national environmental policy, norms and standards.

3.1 The Constitution

The Constitution reigns supreme and the advancement of human rights is one of the foundations of South Africa's democracy. Furthermore, the Bill of Rights plays a central role in the democratic regime because it embodies a set of fundamental values which should always be promoted. An environmental right is contained in Section 24 and is, arguably, the cornerstone for environmental governance in South Africa which includes the mining industry. Section 24(a) proclaims the right of everyone "**to an environment that is not harmful to their health or well-being**". Mining companies are thus duty-bound to constitutional, legislative, and other measures to prevent pollution and ecological degradation, promote conservation and to develop in a sustainable manner.

The constitutional environmental right elevates the importance of environmental protection and conservation; and emphasises the significance that South Africans attach to a sound and healthy environment. In addition, the environmental right applies horizontally; and this implies that the mining industry must exercise a duty of care if liability, based on the constitutional environmental right, is to be avoided. The constitutional environmental right is given effect to by means of detailed statutory provisions ranging from framework to sectoral legislation which relate to mining.

3.2 The National Environmental Management Act

The *National Environmental Management Act, 1998* (Act No. 107 of 1998) (NEMA) is considered to be environmental framework legislation and has been enacted to, *inter alia*, establish a culture of compliance and enforcement in terms of which environmental laws must be heeded by the private sector.

3.2.1 Sustainability Principles and Duty of Care

NEMA provides for a comprehensive array of sustainability principles which cumulatively aim to create, among others, corporate socially responsible behaviour by establishing legal liability for environmental damage as well as damage to human health and well-being. Apart from these principles, NEMA also contains mechanisms, procedures and structures to facilitate pollution prevention, minimisation and remediation.

Chapter 7 of NEMA contains essential provisions dealing with liability for environmental damage in South Africa and two key elements form part thereof; namely pollution prevention and remediation. A duty of care is contained in Section 28, which encompasses the main liability provision which applies retrospectively and therefore also to historical pollution. Section 28(1) applies to all forms of pollution, including mining pollution, and is formulated generally by providing a duty of care to avoid, minimise and/or remedy pollution or environmental degradation. In terms of this subsection, the duty imposes liability on an almost non-exhaustive



category of persons, because it refers to "every person". Subsection (3) provides an indicative range of measures that can be considered as "reasonable measures" and these may include measures to investigate, assess and evaluate the impact on the environment; inform and educate employees about the environmental risks of their work and the manner in which their tasks must be performed in order to avoid causing significant pollution or degradation, contain or prevent the movement of pollutants or the causing of degradation, eliminate any source of the pollution or degradation and remedy the effects of the pollution or degradation.

Where a mine fails to take reasonable measures to prevent or minimise pollution, it can be directed to do so by the relevant authority and if it does not comply with the directive, measures will be taken by government on its behalf, but at the mine's expense.

3.2.2 Authorisation Requirements

NEMA serves as framework legislation in guiding the country's overall environmental protection effort. In respect of the listed activities in terms NEMA, Section 24F(1)(a) of NEMA stipulates the following:

"no person may- commence an activity listed or specified in terms of section 24(2)(a) or (b) unless the competent authority or the Minister of Minerals and Energy, as the case may be, has granted an environmental Authorisation for the activity..."

Section 24F is clear in its prohibition that only those "*listed or specified*" activities may not commence without prior environmental authorisation. Consequently, the activities conducted by the mine will only trigger an environmental authorisation when the said activities trigger a listed or specified activity referred to in Section 24F.

In addition to the aforementioned, kindly note the definition of "*commencement*" in Section 1 of NEMA which reads as follows:

"...the start of any physical implementation in furtherance of a listed activity or specified activity, including site preparation and any other action on the site..."

The law is clear in that the NEMA Regulations **do not have retrospective working** and accordingly, the activities on site must be assessed in accordance with "*when they commenced*".

Furthermore, Section 24(1) of NEMA requires that the potential consequences of or impacts on the environment of listed activities must be considered, investigated, assessed and reported on to the competent authority. Where environmental impact assessment has been identified as the instrument to be utilised in achieving the aforementioned, an application for environmental authorisation needs to be obtained.

Activities contained in Listing Notice 1 and 3 require a Basic Assessment process to be followed whilst activities in Listing Notice 2 require a Scoping and Environmental Impact Reporting (S&EIR) process to be followed.

3.2.3 Legalities regarding the Auditing Requirements

Of particular relevance to the annual legal compliance audit and performance assessments, Section 24Q of NEMA determines that, as part of the general terms and conditions for an environmental authorisation and in order to ensure compliance with the conditions of the environmental authorisation, every holder and every holder of an old order right must conduct such monitoring and such performance assessment of the approved environmental management programme as may be prescribed.

In addition to the above, Regulation 54A of the amended 2014 Environmental Impact Assessment (EIA) Regulations stipulates that where a right or permit issued in terms of the MPRDA or an authorisation issued in terms of the previous NEMA Regulations (and the associated Environmental Management Programme (EMPr) or Environmental Management Plan (EMP)) is still in effect after 8 December 2014, the requirements contained in Part 3 of Chapter 5 of the 2014 EIA Regulations (i.e. the auditing provisions) apply to such EMPr's/ EMPs **and**

the first environmental audit report must be submitted to the competent authority no later than 7 December 2019 and at least every 5 years thereafter for the period during which such right, permit, authorisation, EMP or EMP is still in effect.

3.3 The Mineral and Petroleum Resources Development Act

Since 2004, the *Mineral and Petroleum Resources Development Act, 2002* (Act No. 28 of 2002) (MPRDA) has been the principle piece of legislation that regulates the South African mineral and petroleum sector.

The MPRDA was enacted with the objectives of promoting local and rural development, ensuring equal access to minerals, and eradicating discriminatory practices in the industry, while still guaranteeing security of tenure to participants in the industry and increasing the industries international competitiveness.

In December 2014, Government commenced the rollout of the “*One Environmental System*”, which initiated the streamlining of the licensing processes for, *inter alia*, mining and environmental authorisations.

The system, announced by the President in his State of the Nation Address in February 2014, represented Government’s commitment to improve the ease of doing business and further enhance South Africa’s global competitiveness as a mining investment jurisdiction.

Under the One Environmental System, the Minister of the DMR, *inter alia*, issues environmental authorisations (and Waste Management Licences (WMLs)) in terms of NEMA and NEMWA, for mining and related activities. The Minister of the DEA is the appeal authority for these authorisations. To enable the abovementioned One Environmental System, amendments to NEMA and the MPRDA were published with the objective to align NEMA and the MPRDA authorisation processes as well as to provide for cooperative governance between the DMR and the DEA.

The governing provisions in respect of EMPs were removed from the MPRDA and incorporated into Sections 24N, 24O, 24P, 24Q, 24R and 24S of NEMA. However, Regulation 55 remains applicable in that the MPRDA Regulations states that as part of the general terms of conditions for a mining right and in order to ensure compliance with and EMP and to assess the continued appropriateness and adequacy of the EMP a holder of such a right must, conduct performance assessments of the EMP as required and submit such report to the Minister which demonstrate compliance. This assessment must be undertaken as specified in the approved EMP, every two (2) year or as agreed to in writing by the Minister.

3.4 Legal Risk Summary

The sections which follow hereunder provide a general overview of the legal risk/ liability associated with non-compliance with governing legislation. Kindly note that only the most relevant sections will be highlighted.

3.4.1 Non-compliance with the MPRDA

Section 25 of the MPRDA states, *inter alia*, that the holder of a mining right must –

- actively conduct mining in accordance with the mining work programme;
- comply with the relevant provisions of this Act, any other relevant law and the terms and conditions of the mining right;
- comply with the requirements of the approved EMP; and
- comply with the requirements of the prescribed social and labour plan.

Section 98(a)(viii) of the MPRDA stipulates that any person is guilty of an offence if he or she contravenes or fails to comply with any other provision of the MPRDA. Furthermore, Section 99(1) (g) states that in the case of any



conviction of an offence in terms of this Act for which no penalty is expressly determined, to a fine or to imprisonment for a period not exceeding six months or to both a fine and such imprisonment.

3.4.2 Non-compliance with NEMA

3.4.2.1 *General provisions*

Section 24F of NEMA prohibits the commencement of an activity listed or specified in terms of Section 24(2)(a) or (b) unless the competent authority or the Minister responsible for mineral resources, as the case may be, has granted an environmental authorisation for the activity.

Section 49A(1)(a) stipulates that it is an offence to commence with an activity in contravention of Section 24F (1). Furthermore, and in terms of Section 49B, a person convicted of an offence is liable to a fine not exceeding R10 million or imprisonment for a period not exceeding 10 years, or to both such a fine and imprisonment.

3.4.2.2 *Section 28 – Duty of Care*

Section 28 of NEMA stipulates that every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment.

The provision also applies to significant pollution or degradation that occurred prior to the commencement of NEMA and is likely to arise at a different time from the actual activity that caused the pollution or degradation.

The person obliged to take the reasonable measures as contemplated in Section 28(1) includes an owner of land or premises, a person in control of land or premises or a person who has a right to use the land or premises on which the activity is undertaken. A manager or the owner of the land can therefore be held liable for any environmental pollution or degradation caused.

The measures required to be undertaken, may include measures to:

- investigate, assess and evaluate the impact on the environment;
- inform and educate employees about the environmental risks of their work and the manner in which their tasks must be performed in order to avoid causing significant pollution or degradation of the environment;
- cease, modify or control any act, activity or process causing the pollution or degradation;
- contain or prevent the movement of pollutants or the cause of degradation;
- eliminate any source of the pollution or degradation; or
- remedy the effects of the pollution or degradation.

Sections 49A (1) (e) and (f) stipulate that a person is guilty of an offence if that person unlawfully and intentionally or negligently commits any act or omission which causes significant pollution or degradation of the environment or is likely to cause significant pollution or degradation of the environment and/or unlawfully and intentionally or negligently commit any act or omission which detrimentally affects or is likely to detrimentally affect the environment.

Furthermore, and in terms of Section 49B, a person convicted of an offence is liable to a fine not exceeding R10 million or imprisonment for a period not exceeding 10 years, or to both such a fine and imprisonment.

3.4.2.3 *Section 24Q - Monitoring and performance assessment*

As part of the general terms and conditions for an environmental authorisation and in order to –

- ensure compliance with the conditions of the environmental authorisation; and

- to assess the continued appropriateness and adequacy of the EMP;

every holder and every holder of an old order right must conduct such monitoring and such performance assessment of the approved EMP as may be prescribed.

Section 49A(1)(c) stipulates that a person is guilty of an offence if that person fails to comply with or contravenes a condition of an environmental authorisation granted for a listed activity or specified activity or an approved EMP. Furthermore, Section 49B(1) states that a person convicted of an offence in terms of Section 49A(1)(c) is liable to a fine not exceeding R10 million or to imprisonment for a period not exceeding 10 years, or to both such fine and such imprisonment.

3.4.2.4 Section 24G - Consequences of Unlawful Commencement of Activity

A Section 24G application relates to a “rectification process” by which an applicant –

- has commenced with a listed or specified activity without an environmental authorisation in contravention of Section 24F(1) of NEMA; or
- has commenced, undertaken or conducted a waste management activity without a WML.

It is pertinent to note that the Minister or MEC concerned may direct the applicant to –

- immediately cease the activity pending a decision on the application submitted in terms of this subsection;
- investigate, evaluate and assess the impact of the activity on the environment;
- remedy any adverse effects of the activity on the environment;
- cease, modify or control any act, activity, process or omission causing pollution or environmental degradation;
- contain or prevent the movement of pollution or degradation of the environment; and
- eliminate any source of pollution or degradation.

Furthermore, and as part of the Section 24G application process, the applicant **must pay an administrative fine**, which **may not exceed R5 million** and which must be determined by the Competent Authority.

The submission of an application or the granting of an environmental authorisation shall in no way derogate from –

- the environmental management inspector’s or the South African Police Services’ authority to investigate any transgression in terms of this Act or any specific environmental management Act; and
- the National Prosecuting Authority’s legal authority to institute any criminal prosecution.

3.4.2.5 Section 24G Fine Regulations

Regulation 2 determines that the purpose of the *National Environmental Management Act 107 of 1998: Section 24G Fine Regulations* (GN R698 in GG 40994 of 20 July 2017) (Fine Regulations) is to provide for the procedure to be followed and criteria to be considered to determine a fine in respect of a Section 24G of NEMA application for the rectification of illegal commencement.

The Fine Committee will take the following factors into account when determining the proposed quantum of the fine (Regulation 4):

- the information submitted by an applicant in terms of Section 24G(1)(b)(vii)-(viii);
- the completed application form, including Section C of Annexure A, Part 1 of which is to be completed by the applicant’s environmental assessment practitioner;
- the impacts or potential impacts, including the cumulative impacts, of the activity or activities namely:
 - the socio-economic impact;
 - the biodiversity impact;
 - the impact on sense of place and/or heritage; and



- any pollution and/or environmental degradation which has been, is being or may be caused by the activity or activities.
- ☞ any technical or specialist advice or information on local knowledge received;
- ☞ the compliance history of the applicant;
- ☞ whether the applicant is a firm or a natural person; in this regard the fine committee and the competent authority must take into account whether or not-
 - any of the directors of the applicant firm are, or were, at the relevant time, directors of a firm.
- ☞ any other representations made by the applicant in terms of Annexure A Section C in respect of the quantum of the fine.

Regulation 5 provides a mechanism to the applicant to make representations in respect of the quantum of the fine.

Regulation 6(3) stipulates that the applicant must, within 14 days of receipt of the determination of the quantum of the fine, ensure that all interested and affected parties (as registered in terms of Regulation 8), are notified of, and provided with access to, the determination and the reasons for the determination.

Additionally, sub-regulation (4) determines that failure to pay the fine within the time period specified in the determination, the application shall lapse, and partial amounts paid to the competent authority, if any, will not be refunded to the applicant.

The recommendation, from the Fine Committee, for repeat contraveners must be to be penalised with the maximum fine. For the purposes of this regulation, the competent authority may consider the applicant's conduct since 7 January 2005 (Regulation 9).

Regulation 11 allows for consolidated applications and stipulates that where a consolidated application is submitted for more than one listed or specified activity or waste management activity, the Competent Authority may impose a single fine in respect of the consolidated application provided the activities are interrelated.

3.4.2.6 Criminal Liability

Section 34 of NEMA governs criminal liability and stipulates that whenever any person is convicted of an offence under any provision listed in Schedule 3 and it appears that such person has by that offence caused loss or damage to any organ of state or other person, including the cost incurred or likely to be incurred by an organ of state in rehabilitating the environment or preventing damage to the environment, the court may in the same proceedings at the written request of the Minister or other organ of state or other person concerned, and in the presence of the convicted person, inquire summarily and without pleadings into the amount of the loss or damage so caused.

All offences as listed in Section 49A of NEMA are considered Schedule 3 offences.

Section 34(2) states that upon proof of such amount, the court may give judgment therefor in favour of the organ of state or other person concerned against the convicted person, and such judgment shall be of the same force and effect and be executable in the same manner as if it had been given in a civil action duly instituted before a competent court.

Section 34(3) stipulates that whenever a person is convicted of an offence under any provision listed in Schedule 3 the court convicting such person may summarily enquire into and assess the monetary value of any advantage gained or likely to be gained by such person in consequence of that offence, and, in addition to any other punishment imposed in respect of that offence, the court may order –

- ☞ the award of damages or compensation or a fine equal to the amount so assessed; or
- ☞ that such remedial measures as the court may determine must be undertaken by the convicted person.

Section 34(4) states that whenever any person is convicted of an offence under any provision listed in Schedule 3 the court convicting such person may, upon application by the public prosecutor or another organ of state,



order such person to pay the reasonable costs incurred by the public prosecutor and the organ of state concerned in the investigation and prosecution of the offence.

The following parties can be held criminally liable in terms of Section 34 of NEMA:

- ☞ The firm (“a body incorporated by or in terms of any law as well as a partnership”).
- ☞ Employer, as a result of the actions of any manager, agent or employee.
- ☞ Any manager, agent or employee in his/her personal capacity.
- ☞ Previous or current directors of a firm in his/her personal capacity.

3.4.2.7 Cancellation of Permits

Section 34C of NEMA stipulates that the court convicting a person of an offence in terms of this Act or a specific environmental management Act may –

- ☞ withdraw any permit or other authorisation issued in terms of this Act or a specific environmental management Act to that person, if the rights conferred by the permit or authorisation were abused by that person;
- ☞ disqualify that person from obtaining a permit or other authorisation for a period not exceeding five years;
- ☞ issue an order that all competent authorities authorised to issue permits or other authorisations be notified of any disqualification in terms of paragraph (b).

4 COMPLIANCE ASSESSMENT

According to Regulation 34(3) of the NEMA 2014 EIA Regulations, the environmental audit report must determine:

- (a) the ability of the EMPr, and where applicable the closure plan, to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity on an ongoing basis and to sufficiently provide for the, avoidance, management and mitigation of environmental impacts associated with the closure of the facility; and
- (b) the level of compliance with the provisions of the environmental authorisation, EMPr and where applicable the closure plan.

The Environmental Audit is presented in a tabular format to provide the reader with an understanding of the following:

1. Environmental Management Programme (EMPr) and/or Environmental Authorisation Requirement;
2. Observation made in terms of Compliance;
3. Whether the mine is compliant, partially compliant, non-compliant, whether the condition is applicable or whether it should be taken notice of for further developments;
4. Recommendations on how to achieve compliance and/or improvements; and
5. Who the responsible department at the mine is.

Table 6: Environmental Audit: New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2010)] (ROD Conditions)

	Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2010)]						
EMP Requirements - RoD Conditions						
1	<p>This approval doesn't purport to absolve Assmang Limited (the company) from their common law obligations towards the owner(s) of the surface of land affected.</p> <p>Noted. The Licence Holder is operating under approved licences/ permits/ Environmental Authorisation in terms of the NEMA, ECA, MPRDA and NWA for the overall operation.</p> <p>One area of concern is at the North Mine Vehicle Workshop Area. The dirty water in this area drains from the north into an easterly channel, which discharges through a culvert into the Transnet Servitude. This finding was raised during the 2017 and 2018 external audits. Subsequent to the finding, the mine is assessing plans to link the discharge channel to the Storm Water Dam North currently under construction. However, up until this plan has been implemented the finding will remain.</p>	Site observations	0	3	It is recommended that measures be implemented to prohibit any uncontained discharges into the environment. If possible, this water must be diverted back to the mine's internal water management circuit.	Engineering and SHEQ Departments
2	<p>Mining activities must conform to all legislations and such other conditions as may be imposed by the Regional Manager or any other official of this office, duly authorised thereto.</p> <p>Noted. The Licence Holder is operating under approved licences/ permits/ Environmental Authorisation in terms of the NEMA, ECA, MPRDA and NWA for the overall operation. In addition to this the mine is undertaking annual Legal Compliance Audits.</p> <p>The mine has been issued with a new WUL, 2018, which includes all waste discharge areas as well as abstraction points.</p> <p>A new Change House has been built on site within the mining rights area at the entrance to the North Mine. This facility also includes a sump, which should be included into a WUL. The mine has engaged with the DWS to apply for an amendment to the WUL, 2018. In addition to this, the Licence Holder has informed the DWS of a collapsed monitoring borehole (WG73) on South Mine which has been replaced. Currently an Integrated Water and Waste Management Plan (IWWMP) is being compiled, which will support the required new additions in order to incorporate this sump, coordinate change of borehole, along with two fire water tanks into the 2018 WUL.</p> <p>Newly constructed or planned projects (expansion of Mine Residue Deposits, Opencast Pits, new Plants, etc.) will necessitate a WUL and new Environmental Authorisations. An Environmental Authorisation Process in terms of the NEMA and NEMWA is currently underway, in parallel with a new Water Use Licence Application (WULA) process.</p>	<p>WUL 2018, Reference 10/D73A/ABGJ/2592 (21 August 2018)</p> <p>Site observations</p> <p>NEMA EIA Regulations, 2017</p> <p>Letter in response to WUL Condition, dated 27 November 2018</p> <p>Letter notifying DWS of collapsed borehole, 15 March 2019</p>	2	3	<p>A communication procedure should be implemented in which any new projects planned by the Mining and/or Engineering Departments should first be assessed by the SHEQ Department to determine the potential Environmental Legal requirements associated with such projects.</p> <p>All water uses currently on site, which have not been applied for should be included into the WUL 2018 as part of the WUL Amendment application or the new WULA being undertaken.</p>	<p>Mining Department (survey of all roads).</p> <p>Environmental Department (management of the relevant environmental authorisation processes, assess the Environmental Authorisation Requirements around road construction and newly planned activities).</p>

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2010)]							
		<p>The mine has three contaminated soil storage areas (North Workshop, South Mine Secondary Crusher area and the Sampling Workshop area) which are below the NEMWA Norms and Standard thresholds for the storage of hazardous waste.</p> <p>Subsequent to the 2018 Environmental Audit, non-mineral wastes on site (silt) have been determined to require classification in terms of the Waste Classification and Management Regulations, 2013. These regulations require a generator of waste to classify all wastes within 18 months of the publication of the regulations. The waste was classified as Type 3 wates.</p>					
3	Environmental management must conform to the Environmental Management Programme as approved.	The purpose of this audit is to determine the extent of compliance of the mine to the EMP. Please refer to the assessment of the Environmental Authorisation hereafter.	Refer to EMP Alignment Checklist Table 7.	3	3	No recommendations. The EMP is currently being updated to allow for the consolidation of all conditions and EMPs.	SHEQ Department
4	The company is responsible for all surface disturbances on the Mining area, which includes all historical surface disturbances.	Compliant. The mine has a fully updated financial provision in place for all infrastructure (including historical facilities on site). This is undertaken annually. In addition to this, the Licence Holder is submitting quarterly rehabilitation reports for activities completed and progress on others to the DMR. The Licence Holder has commenced with the rehabilitation on the HH WRD, on the Quad Bike Quarry, and rehabilitation work is currently in progress on the southern slopes of the East Pit WRD.	Site observations GlobeSight (Pty) Ltd Financial Provision Reports May 2018 and May 2019 Annual Mine Closure Reports Proof of submission, June 2019 Quarterly Rehabilitation Progress Report Proof of Submission, March 2019	3	3	No recommendations.	-
5	The financial provision provided in terms of Section 41 and Regulation 53 of the Act must be periodically reviewed and adjusted (Regulation 54(2) refers) to conform to the above-mentioned mining activities.	Compliant. The mine has a fully updated financial provision in place for all infrastructure (including historical facilities on site).	GlobeSight (Pty) Ltd Closure Cost Reports May 2018 and May 2019 Annual Mine Closure Reports Proof of submission, June 2019 Quarterly Rehabilitation Progress Report Proof of Submission, March 2019	3	3	No recommendations.	-
6	Note that a copy of the approved Environmental Management Programme must always be available on the mine premises for inspection by duly authorised officers.	Compliant. A copy of the report is available at the SHEQ office.	Site observations	3	3	No recommendations.	-
7	No Mining waste will be allowed to be deposited in a natural drainage lines, erosion gullies and or dongas, unless agreed thereto in writing with the Regional Manager.	The mine has designated mine residue and mine deposit facilities. The mine is undertaking backfilling, which is an approved activity in terms of the NWA and as part of the Integrated Water and Waste Management Plan (IWWMP). It should be noted that the East Pit WRD has extended slightly outside of the approved footprint on the southern side. According to the Biodiversity Action Plan compiled by EXM	WUL 2018, Reference 10/D73A/ABGJ/2592 (21 August 2018) EXM, Biodiversity Action Plan, 2018 Site observations.	2	3	Should any pans be identified as part of the 2019 specialist studies, these should be applied for in terms of the new WULA process.	SHEQ Department

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2010)]							
		<p>Advisory Services (Pty) Ltd (EXM), this area is demarcated as "Panveld" (Figure 2.5 of the report). As part of the new Environmental Authorisation Process, specialists have been appointed to assess the area for the presence of pans or water resources in order to apply for the necessary WUL.</p> <p>The mine also has exemption from GN704 to use waste rock in the construction of safety berms and environmental berms.</p> <p>The nearest watercourse is the Groenwater Spruit, located about 6km to the east of the South Mine.</p>					
8	Performance assessment report as contemplated in regulation 55(1)(c) must be submitted bi-annually (from the date on which the permit was granted) to the Regional Manager: Mineral Regulations.	<p>The EMP Record of Decision (ROD) requires the mine to undertake bi-annual assessments. The term biannual needs to be clarified to determine whether the DMR requires assessments every second year, or twice a year. For the purposes of this audit it is assumed that this refers to once every two years, as documented in the EMP.</p> <p>Annual external audits have however been undertaken by the mine.</p>	<p>EMP, 2009</p> <p>Environmental Audit, November 2018</p> <p>Proof of receipt from DMR dated 11 December 2018.</p>	3	3	The coordination of Environmental Audits between the various Environmental Authorisations and EMPs on site should be streamlined as part of the new Environmental Authorisation process (Regulation 29, Part 1 amendment).	SHEQ Department
9	The approved Environmental Management Programme that is attached is for implementation and compliance to the conditions stipulated therein.	The purpose of this audit is to determine the extent of compliance of the mine to the EMP. Please refer to the assessment of the Environmental Authorisation hereafter.	Refer to EMP Alignment Checklist Table 7.	3	3	The findings identified in this Environmental Audit should be documented with the relevant action plans and be closed out or in progress before the next Environmental Audit.	SHEQ Department
10	This approval provides no relief from the provisions of any other relevant statutory or contractual obligations.	Noted. The Licence Holder is operating under approved licences/ permits/ Environmental Authorisation in terms of the NEMA, ECA, MPRDA and NWA for the overall operation. The WUL 2018 addresses the Landfill Site as well. Please refer to previous observations in this audit sheet for more information (specifically the assessment of Condition 1 and 2 above).	<p>*Licence 1 (in terms of the ECO): Licence Ref.: Permit 12/9/11/P49; Purpose: Landfill site; Date: 30 October 2008</p> <p>*Licence 2: Licence Ref.: Permit 17/2011; Purpose: Road Diversion; Date: 3 March 2011</p> <p>*Licence 3: Licence Ref.: Permit 12/2014; Purpose: BF WRD (Village WRD); Date 7 March 2014</p> <p>*Licence 4: Licence Ref: Permit 20/2015; Purpose: WRD Village Haul Road; Date: 3 June 2015</p> <p>*Licence 5: Licence Ref: Permit NC 30/5/1/2/3/2/1 (223) MR; Purpose: Storm Water Dam North Upgrade; Date: 10 March 2017</p>	Dup	Dup	Refer to the recommendations of Condition 1 and 2.	SHEQ Department

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 Project Ref: 21912
 Version: Final

	Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2010)]						
		*EMP 1: EMP Report; Purpose: Beeshoek Mining Operation; Date: August 2004 *EMP 2: Licence Ref.: NC30/5/1/2/3/2/1 (223) EM; Purpose: EMP Alignment for activities on Beeshoek; Date: 7 June 2010 *Licence Ref.: 10/D73A/ABGJ/2592; Purpose: Licence for all Section 21 Water Uses and GN704 triggered activities (such as backfilling); Date: 21 August 2018				
Compliance Score			22	27	81,48%	

Table 7: Environmental Audit: New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)] (EMPr Conditions)

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
Construction Phase - Removal of Existing Infrastructure							
Geology	No impact envisaged	Not assessed, no construction activities associated with this EA are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process. Construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, such as for the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
Climate	No impact envisaged	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
Topography	No impact envisaged	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
Land Use	No impact envisaged	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
Soil Contamination	A detailed waste management strategy will be established and implemented, which will clearly demarcate the containments for different waste streams.	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
	Disused surface infrastructure and rubble will be disposed of at a suitable site	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities	-	NLR	NLR	No further recommendation.	-

BEESHOEK IRON ORE MINE 2019 EMP PERFORMANCE ASSESSMENT

Departmental Ref: NC 30/5/1/2/3/2/1/223EM

Project Ref: 21912

Version: Final

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
	which will be rehabilitated once its purpose is served.	management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.					
	The mine will adopt a cradle-to-grave approach to ensure that the waste is removed and disposed of in a prescribed and correct manner.	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
	All hydrocarbons should be stored in designated, bunded areas with a capacity of at least 110% of the volume stored.	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
	Soil that has been contaminated by spillages, seepages and leachates will be sampled and analysed. If necessary, it will be treated, ameliorated or removed for safe disposal	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
	In the event of a major spill that could result in major soil and water contamination the DWAF should be informed immediately and a remediation strategy should be implemented.	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
Erosion of Soils	Clean and dirty water systems should be maintained until closure.	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
Re-establishment of vegetation	The mine will establish and implement a regular weed-control programme to eradicate existing invader plants and to prevent new invasions during ongoing mining operation and decommissioning	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
Disturbance to animal habitats.	No impact envisaged as the area is already previously disturbed	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
Contamination of Surface Water	A detailed waste management strategy will be established and implemented, which will clearly demarcate the containments for different waste streams.	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
	Waste management will form a detailed component as part of the induction process provided by the mine	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
	The mine will adopt a cradle-to-grave approach to ensure that the waste is removed and disposed of in a prescribed and correct manner.	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
Contamination of Groundwater Resources	In the event of a major spill that could result in major soil and water contamination the DWAF should be informed immediately and a remediation	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-



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Departmental Ref: NC 30/5/1/2/3/2/1/223EM

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		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
	strategy should be enforced						
	No activities associated with hydrocarbons and or chemicals (i.e. wash bays etc.) may be undertaken outside of an effectively designed contained area.	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
Air Quality	No impact envisaged.	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
Visual impacts on the surrounding area	No impact is envisaged as this area is earmarked for the opencast pit which will have a visual impact	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
Archaeology	No impact envisaged.	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
Increase in Noise	Machinery and vehicles will be well maintained to prevent excessive noise and to comply with national and provincial regulations	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
	All employees working within the area will be issued with protective gear.	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific	-	NLR	NLR	No further recommendation.	-



		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
		approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.					
	All vehicles will have mufflers to minimise noise emissions.	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
Impact of new opencast pit area on local community of mine Workers.	The relocation of mine workers was done prior to the commencement of this report so no further impact is envisaged	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
Construction Phase - Footprint Area							
Geology	No impact envisaged.	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
Climate	No impact envisaged.	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
Degradation of landscape	In-fill the pits with excess mine residue	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
	Shaping of the in-filled pits to be free draining, resembling the natural surface topography.	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities	-	NLR	NLR	No further recommendation.	-

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		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
		management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.					
Land Use	The opencast pit area is within the mine site, so no additional impact is envisaged.	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
Soil Contamination	Vehicles / machinery will be regularly monitored and maintained. Maintenance programmes will be established and implemented.	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
	If necessary, the polluted soils will be remediated by the use of a spill kit. After remediation of the contaminated soils, the affected areas will be rehabilitated.	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
Erosion of Soil	Collect and stockpile usable soils over newly developed opencast pit area.	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
	If de-watering is undertaken, the resultant soil/silt could be stockpiled for use in backfilling during concurrent rehabilitation or final rehabilitation.	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
Ecology Flora	Although no direct impact on vegetation is expected due to the fact that the vegetation has been removed with the	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific	-	NLR	NLR	No further recommendation.	-



		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
	demolition activities, the human activities could increase the presence and spread of invasive species.	approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.					
Ecology Fauna	Disused surface infrastructure and rubble will be disposed of at a suitable site which will be rehabilitated once its purpose is served.	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
Contamination of surface water.	Vehicles / machinery will be regularly monitored and maintained. Maintenance programmes will be established and implemented.	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
	If necessary, the polluted soils will be remediated by the use of a spill kit. After remediation of the contaminated soils, the affected areas will be rehabilitated.	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
	Excess water will be pumped out of the pit and stored as dirty water in the slimes dam.	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
Groundwater	No impact envisaged.	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
Dispersion of dust	Install air quality monitoring stations that determine fall-out and	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental	-	NLR	NLR	No further recommendation.	-

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		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
	respirable dust (PM10) concentrations that could arise from the mine activities.	Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.					
	All denuded areas will be revegetated.	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
	Dust suppression measures such as utilising a water dowsers to wet haul roads and areas with fine powdered sand and soils can be utilised.	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
Visual impacts of the opencast pit on the surrounding environment	Continuous pit in-filling and associated rehabilitation.	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
	Vegetate rehabilitated disturbed areas as far as possible.	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
Archaeology	The permit holder must provide the director with any information which he/she may require to enable him/her to fulfil the objective of the Environmental Conservation Act, 1989 (Act 73 of 1989) as amended or any current legislation for waste management purposes.	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-



		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
Increase in Noise	Machinery and vehicles will be well maintained to prevent excessive noise and to comply with national and provincial regulations.	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
	All employees working within the area will be issued with protective gear.	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
	All vehicles will have mufflers to minimise noise emissions.	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
Socio-Economic	No impact envisaged.	Not assessed, no construction activities are currently taking place on site. The mine is fully operational. Any additional activities are being applied for in terms of a new Environmental Authorisation Process and the construction activities management requirements are assessed in terms of the specific approved EMP and Environmental Authorisation, like the Storm Water Dam North and Village Pit WRD.	-	NLR	NLR	No further recommendation.	-
Operational Phase - Opencast & Detrital							
Removal of natural mineral resource	The removal of the iron ore through the village pit is a permanent impact on the geology as this mineral resource will not be able to be replaced.	Note that the current WUL, 2018 requires the mine to undertake a dolomitic study. SRK Consulting South Africa (Pty) Ltd (SRK) has been appointed to undertake this dolomitic study and it is currently in process. The study should be available during the next six (6) months and will then be provided to the DWS as part of the WUL 2018 requirements (Condition 5.2, Appendix IV: It is evident from the report that the mine is situated in a dolomitic area. Dolomite aquifers are known to be highly vulnerable to pollution and difficult to remediate. There is possibility of sinkholes and cavities development, therefore; dolomite instability must be investigated, and a dolomite risk management plan must be established within one (1) year of issuance of this licence). This study should be submitted to the DWS within 12 months from August 2018.	WUL 2018, Reference 10/D73A/ABGJ/2592 (21 August 2018)	T/N	T/N	No further recommendation.	-

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
Climate	No impact envisaged.	No condition to assess.	-	-	-	No recommendations.	-
Degradation of landscape	Ongoing rehabilitation during the opencast mining of the village pit as well as the detrital mining on the south mine.	Clearance and excavations in the Village Pit is still taking place to reach the required depth. No rehabilitation has commenced as a result. However, ongoing rehabilitation has been taking place at Beeshoek over time which has been successful in terms of shaping and vegetation. The South Mine Detrital Area has not been rehabilitated; it is the intention of the mine to assess the potential to mine these areas in the future.	Site observations	T/N	T/N	The mine should ensure that the necessary Environmental Authorisations are being applied for proactively should expansions to the mining operations be required. Regular meetings between the SHEQ, Mining and Production Departments must be undertaken to ensure that planning and legal compliance can be run in parallel.	SHEQ Department
	In-fill the pits with excess mine residue.	The mine is approved in terms of the MPRDA and the NWA to backfill the opencast pits. Due to the current economic conditions, no backfilling is undertaken as mining may return to various pits for lower grade ore, such as is currently planned expansions for the HF Pit, BN Pit, Village Pit, with the associated satellite pits. Various pits have been successfully rehabilitated by the Licence Holder in the past.	Site observations	3	3	Backfilling will remain part of the operational rehabilitation strategy. It is recommended that the waste derived from the BN Pit and Village Pit be used to backfill surrounding opencast pit areas where possible to give effect to the final land use commitments and to reduce the need for additional WRD expansions.	SHEQ and Mining Departments
	Shaping of the in-filled pits to be free draining, resembling the natural surface topography.	Various pits have been successfully rehabilitated in terms of shaping and vegetation.	Site observations	3	3	Backfilling will remain part of the operational rehabilitation strategy. It is recommended that the waste derived from the BN Pit and Village Pit be used to backfill surrounding opencast pit areas where possible to give effect to the final land use commitments.	SHEQ and Mining Departments
Land Use	The opencast pits are all within the mine site, so no additional impact is envisaged.	No condition to assess.	-	-	-	No recommendations.	-

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
Soil Contamination	Vehicles / machinery will be regularly monitored and maintained. Maintenance programmes will be established and implemented.	<p>Maintenance programmes are in place on site and managed by the Engineers. Maintenance is undertaken at the TMM Workshops at both North and South Mines.</p> <p>When considering awareness of contractors in terms of the Maintenance Procedures and requirements on site the following areas of concern were raised:</p> <ul style="list-style-type: none"> • Lenfield Temporary Vehicle Parking: This area is not a demarcated area for vehicle servicing and no infrastructure is present to contain spills. Hydrocarbon spills were present. • Booyesen Bore Laydown Area: This area is not a demarcated area for vehicle servicing and no infrastructure is present to contain spills. The area is also used for minor vehicle maintenance as the formal workshop is located off site. A large presence of hydrocarbon spills was observed – after this was pointed out by the auditor, the personnel immediately started with clean up processes. 	Site observations	2	3	Maintenance of vehicles should only be undertaken in areas demarcated for such purpose.	SHEQ and Engineering Departments
	If spills do occur and soils become contaminated, the appropriate remedial measures will be identified in consultation with an appropriately qualified specialist.	<p>Overall the mine is effectively managing hydrocarbon spills. Bund walls for hazardous waste containment has been surveyed and each bund is labelled in terms of its capacity. During the site visit the following observations were made in terms of areas where hazardous waste is handled and or temporary stored, with spills present:</p> <ul style="list-style-type: none"> • Lenfield Temporary Vehicle Parking: This area is not a demarcated area for vehicle servicing and no infrastructure is present to contain spills. Hydrocarbon spills were present. • Booyesen Bore Laydown Area: This area is not a demarcated area for vehicle servicing and no infrastructure is present to contain spills. The area is also used for minor vehicle maintenance as the formal workshop is located off site. A large presence of hydrocarbon spills was observed – after this was pointed out by the auditor, the personnel immediately started with clean up processes. • South Mine Engineering/ Crusher Workshop: 1) Hazardous waste skips have covers but are not closed; these are also not located in banded areas. If covers are not utilised, overspills can occur outside of contained areas. 2) Crusher slings that are contaminated with hydrocarbons are stored uncontained in various areas within this workshop area. Some are stored on wooden pallets, but not contained, which could lead to pollution. • South Mine Contaminated Soil Sump: Overfull with spills outside of the contained area. 	Site observations.	1	3	<p>Areas where hazardous waste or materials are handled should be contained to avoid potential spills from occurring.</p> <p>Hazardous waste skips should have lids, and where lids are present these should be closed at all times.</p> <p>Spill kits should be available in all areas and be labelled in a manner to inform the user whether this is for hard surfaces, water spills or sand.</p> <p>Training on all new absorbent materials should be provided.</p>	SHEQ Department.

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
		<ul style="list-style-type: none"> • South Mine Primary Crusher: At the hydraulic oil bund spills were present on the outside of the bunded area and also over the sides of the bund wall. This area is not contained, but any spills will fall to the lower levels where the conveyor exits the crusher. This area is contained with a sump present. • South Bulk Diesel Storage Area: 1) On the outlet side of the bunded areas full drip trays were stored in uncontained areas. 2) Various spills were present in this area on unsurfaced areas. According to the site interviews this could be due to the water truck spraying hydrocarbons from the surfaced areas. This is however unlikely when considering the spill and is more likely to be the result of a drip tray which toppled over. It is recommended that the surfaced area in this vicinity be extended towards the bunded area and sloped towards the existing grid/ sump area. • South Old Oil Storage: As per the previous audit, the outlet pipe where old oils are pumped from the tanks are not located in a bunded area, and the presence of spills were observed. A bunded area should be constructed around this area. • North Primary Crusher Workshop: 1) Hazardous waste skips are not covered although lids are present. The skips are not optimally used as waste is not pushed to the centre of the skip, creating the sense of overfilling on the sides. Some hydrocarbon spills are present around the skips. 2) Various oil (Total) drums are present in this area, but not in bunded areas. 3) Bunded areas are available in this area but not used. • Sculpting, buffing and screening area: The bund wall is broken (with a hole therein) to allow water to discharge through an informal channel (unlined) towards a downgradient sump. • The Wash and Screen sump receives water from the downgradient settlers. This sump is not formally bunded and is highly silted. It is not clear whether the pump can operate with the volume of silt present. Leaks from the upgradient valves are present and reporting water to this sump area. • Jig Maintenance Workshop: 1) Bunds in this area are overused, with spills around this area present. 2) The bund wall indicates seepage which raises an integrity concern. The area may need to be waterproofed from the inside. • Salvage Yard: 1) A surfaced area for skips has been constructed. 2) A plan is in place to undertake formal sorting in this area – space for such separation will have to be created. 3) At the roofed bunded area to the west of the bund, some diesel drums are stored on drip trays (drum carriers) but not in the contained area; if these topple over spills will occur. Small spills 					

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New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
		<p>are present around this area. 4) The furthest right bunded area surface area is broken with paint containers stored in this area. 5) The overall area in the centre indicates some haphazard storage, but is overall in good condition.</p> <ul style="list-style-type: none"> • North TMM Workshop: A circular area is present on the eastern portion of the workshop (east of the skips) which is not surfaced. Broken down vehicles and a diesel tank are stored here, and spills are present. At the tank the use of absorbents was noted. The absorbents used here were however not for the purpose of soils remediation, but rather for hard surfaces and fluids, resulting in the absorbents being windblown. In general spill kits are present on site, but not utilised effectively in all areas. Containment areas or infrastructure are present on site, but not used as these should. Measures are therefore available, but implementation should receive attention. 					
	If necessary, the polluted soils will be remediated using a spill-kit. The affected areas will then be rehabilitated.	<p>In various areas, spill absorbents were used, however these were used in large quantities, resulting in unnecessary use and wastage thereof. This was specifically observed at the North TMM Workshop.</p> <p>At the South TMM Workshop, there was a presence of an area where rehabilitation has taken place to the east of the settlers. According to the site interviews the settlers overflowed due to the operator not starting the pump (to pump water to the tank for the washbay). The pump generally is automatically operated, but has broken and must now be operated manually. No procedure or protocol is in place to ensure regular and effective management of the system. A fault has been logged with the electrical department and apparently the required equipment has been ordered. The overflow has been well rehabilitated and contaminated soils taken to the contaminated soil sump. The risk however for a reoccurrence will remain high up until this system is fixed. This has however resulted in an overfull South Contaminated Soil Sump.</p> <p>At the North TMM Workshop the absorbents used on open soils were not for the purpose of soils remediation, but rather for hard surfaces and fluids, resulting in the absorbents being windblown and not effective.</p>	Site observations	2	3	<p>The mine should investigate whether the contaminated soils sumps could be improved to allow for the collection of the contaminated soils, without spilling these around the contained areas - one suggestion could be to construct a high bund wall on the far side and sides of the sump, which could aid the front end loader to lift the soils without overflowing.</p> <p>Spill kits should be available in all areas and be labelled in a manner to inform the user whether this is for hard surfaces, water spills or sand.</p> <p>Training on all new absorbent materials should be provided.</p>	SHEQ and Engineering Departments
Erosion of Soils	Collect and stockpile usable soils over newly developed opencast pit area.	The mine has undertaken various successful rehabilitation activities on site. Usable soils are stockpiled on designated areas for future rehabilitation and to rehabilitate the Landfill Site. Topsoil stockpiles were specifically observed around the East Pit and Detrital Area.	Site observations	3	3	No recommendations.	-

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New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
		At the Storm Water Dam North, topsoil has been removed prior to construction; this has been used for the purposes of rehabilitating the quarry adjacent to the Storm Water Dam as part of the ongoing rehabilitation procedures.					
	If de-watering is undertaken, the resultant soil/silt could be stockpiled for use in backfilling during concurrent rehabilitation or final rehabilitation.	The Licence Holder is aware of this condition. This will be specifically relevant at the Storm Water Dam North, which will result water from dewatering activities from the Village Pit.	Site observations	T/N	T/N	It will be important to ensure that the silt in the Storm Water Dam North does not contain any hydrocarbons prior to removal and disposal in areas such as the opencast pits.	SHEQ Department
	Identify disturbed areas that can be rehabilitated as part of the mine's operational activity and vegetate these areas after rehabilitation.	Compliant. The mine has a fully updated financial provision in place for all infrastructure (including historical facilities on site). This is undertaken annually. In addition to this, the Licence Holder is submitting quarterly rehabilitation reports for activities completed and progress on rehabilitation works on others to the DMR. The Licence Holder has undertaken rehabilitation on the HH WRD and on the Quad Bike Quarry, and rehabilitation is currently in progress on the southern slopes of the East Pit WRD. When considering the closure management measures, the Licence Holder is responsible to ensure self-succession, and in the event that this is unsuccessful, specific vegetation measures should be undertaken. Currently ongoing rehabilitation is undertaken on site.	Site observations GlobeSight (Pty) Ltd Financial Provision Reports, dated May 2018 and May 2019. Annual Mine Closure Reports Proof of submission, June 2019 Quarterly Rehabilitation Progress Report Proof of Submission, March 2019 EMPr Alignment, 2009	3	3	No recommendations.	-
Ecology Flora	Although no additional, direct impact on vegetation is expected due to the fact that the vegetation surrounding the opencast pit has been removed, the human activities could increase the presence and spread of invasive species.	During prior Environmental Audits (2017) it was indicated that concerns have been raised by Kolomela Mine (Kolomela), neighbouring mine, regarding the spreading of weeds, specifically fountain grass, into the Kolomela mining area south of Beeshoek. A document was developed by the mine: Biodiversity Control, 2017 which details various areas (nine in total) which have been earmarked for weed eradication. Although alien and invasive plant species were visible on site, the mine has commenced with the implementation of eradication processes. A forum has been established between Beeshoek and Kolomela. The last meeting was held in August 2016, according to the representative of the mine, the forum (technical meeting) only meets when there are issues called.	Site observations Biodiversity Control, 21 November 2017 Environmental Audit, 2017 Minutes of meeting, 12 August 2016 Email from representative, 27 August 2019	2	3	The weed eradication programme should be implemented and maintained as part of a scheduled maintenance programme on site. It is recommended that an environmental forum be held more regularly between Kolomela and Beeshoek to discuss dust, groundwater and invasive plant concerns and/or cumulative strategies. If meetings are not possible, it is recommended that a mutual plan be developed to manage	SHEQ Department

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New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
						aspects such as invasive species holistically.	
Ecology Fauna	No impact envisaged as the area is already previously disturbed.	No condition to assess.	-	N/A	N/A	No recommendations.	-
Contamination of Surface Water	Vehicles / machinery will be regularly monitored and maintained. Maintenance programmes will be established and implemented.	<p>Maintenance programmes are in place on site and managed by the Engineers. Maintenance is undertaken at the TMM Workshops at both North and South Mine.</p> <p>When considering awareness of contractors in terms of the Maintenance Procedures and requirements on site the following areas of concern were raised:</p> <ul style="list-style-type: none"> • Lenfield Temporary Vehicle Parking: This area is not a demarcated area for vehicle servicing and no infrastructure is present to contain spills. Hydrocarbon spills were present. • Booyesen Bore Laydown Area: This area is not a demarcated area for vehicle servicing and no infrastructure is present to contain spills. The area is also used for minor vehicle maintenance as the formal workshop is located off site. A large presence of hydrocarbon spills was observed – after this was pointed out by the auditor, the personnel immediately started with clean up processes. 	Site observations	Dup	Dup	Maintenance of vehicles should only be undertaken in areas demarcated for such purpose.	SHEQ and Engineering Departments
	If spills do occur and soils become contaminated, the appropriate remedial measures will be identified in consultation with an appropriately qualified specialist.	<p>Overall the mine is effectively managing hydrocarbon spills. Bund walls for hazardous waste containment has been surveyed and each bund is labelled in terms of its capacity. During the site visit the following observations were made in terms of areas where hazardous waste is handled and or temporary stored, with spills present:</p> <ul style="list-style-type: none"> • Lenfield Temporary Vehicle Parking: This area is not a demarcated area for vehicle servicing and no infrastructure is present to contain spills. Hydrocarbon spills were present. • Booyesen Bore Laydown Area: This area is not a demarcated area for vehicle servicing and no infrastructure is present to contain spills. The area is also used for minor vehicle maintenance as the formal workshop is located off site. A large presence of hydrocarbon spills was observed – after this was pointed out by the auditor, the personnel immediately started with clean up processes. • South Mine Engineering/ Crusher Workshop: 1) Hazardous waste skips have covers but are not closed; these are also not located in banded areas. If covers are not utilised, overspills can occur outside of contained areas. 2) Crusher slings that are 	Site observations.	Dup	Dup	<p>Areas where hazardous waste or materials are handled should be contained.</p> <p>Hazardous waste skips should have lids, and where lids are present these should be closed at all times.</p> <p>Spill kits should be available in all areas and be labelled in a manner to inform the user whether this is for hard surfaces, water spills or sand.</p> <p>Training on all new absorbent materials should be provided.</p>	SHEQ Department.

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New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
		<p>contaminated with hydrocarbons are stored uncontained in various areas within this workshop area. Some are stored on wooden pallets, but not contained, which could lead to pollution.</p> <ul style="list-style-type: none"> • South Mine Contaminated Soil Sump: Overfull with spills outside of the contained area. • South Mine Primary Crusher: At the hydraulic oil bund spills were present on the outside of the bunded area and also over the sides of the bund wall. This area is not contained, but any spills will fall to the lower levels where the conveyor exits the crusher. This area is contained with a sump present. • South Bulk Diesel Storage Area: 1) On the outlet side of the bunded areas full drip trays were stored in uncontained areas. 2) Various spills were present in this area on unsurfaced areas. According to the site interviews this could be due to the water truck spraying hydrocarbons from the surfaced areas. This is however unlikely when considering the spill and is more likely to be the result of a drip tray which toppled over. It is recommended that the surfaced area in this vicinity be extended towards the bunded area and sloped towards the existing grid/ sump area. • South Old Oil Storage: As per the previous audit, the outlet pipe where old oils are pumped from the tanks are not located in a bunded area, and the presence of spills were observed. A bunded area should be constructed around this area. • North Primary Crusher Workshop: 1) Hazardous waste skips are not covered although lids are present. The skips are not optimally used as waste is not pushed to the centre of the skip, creating the sense of overfilling on the sides. Some hydrocarbon spills are present around the skips. 2) Various oil (Total) drums are present in this area, but not in bunded areas. 3) Bunded areas are available in this area but not used. • Sculpting, buffing and screening area: The bund wall is broken (with a hole therein) to allow water to discharge through an informal channel (unlined) towards a downgradient sump. • The Wash and Screen sump receives water from the downgradient settlers. This sump is not formally bunded and is highly silted. It is not clear whether the pump can operate with the volume of silt present. Leaks from the upgradient valves are present and reporting water to this sump area. • Jig Maintenance Workshop: 1) Bunds in this area are overused, with spills around this area present. 2) The bund wall indicates seepage which raises an integrity concern. The area may need to be waterproofed from the inside. 					

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New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
		<ul style="list-style-type: none"> Salvage Yard: 1) A surfaced area for skips has been constructed. 2) A plan is in place to undertake formal sorting in this area – space for such separation will have to be created. 3) At the roofed bunded area to the west of the bund, some diesel drums are stored on drip trays (drum carriers) but not in the contained area; if these topple over spills will occur. Small spills are present around this area. 4) The furthest right bunded area surface area is broken with paint containers stored in this area. 5) The overall area in the centre indicates some haphazard storage, but is overall in good condition. North TMM Workshop: A circular area is present on the eastern portion of the workshop (east of the skips) which is not surfaced. Broken down vehicles and a diesel tank are stored here, and spills are present. At the tank the use of absorbents was noted. The absorbents used here were however not for the purpose of soils remediation, but rather for hard surfaces and fluids, resulting in the absorbents being windblown. In general spill kits are present on site, but not utilised effectively in all areas. Containment areas or infrastructure are present on site, but not used as these should. Measures are therefore available, but implementation should receive attention. 					
	If necessary, the polluted soils will be remediated using a spill-kit. The affected areas will then be rehabilitated.	<p>In various areas, spill absorbents were used, however these were used in large quantities, presenting waste thereof .</p> <p>At the South TMM Workshop, there was a presence of an area where rehabilitation has taken place to the east of the settlers. According to the site interviews the settlers overflowed due to the operator not starting the pump (to pump water to the tank for the washbay). The pump generally is automatically operated, but has broken and must now be operated manually. No procedure or protocol is in place to ensure regular and effective management of the system. A fault has been logged with the electrical department and apparently the required equipment has been ordered. The overflow has been well rehabilitated and contaminated soils taken to the contaminated soil sump. The risk however for a reoccurrence will remain high up until this system is fixed. This has however resulted in an overfull South Contaminated Soil Sump.</p> <p>At the North TMM Workshop the absorbents used on open soils were not for the purpose of soils remediation, but rather for hard surfaces and fluids, resulting in the absorbents being windblown and not effective.</p>	Site observations	Dup	Dup	<p>Spill kits should be available in all areas and be labelled in a manner to inform the user whether this is for hard surfaces, water spills or sand.</p> <p>Training on all new absorbent materials should be provided.</p>	SHEQ and Engineering Departments

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New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
		The mine has three areas (North Workshop, South Mine Secondary Crusher area and the Sampling Workshop area) for the storage of contaminated soils.					
Reduction in surface water runoff	Excess water will be pumped out of the pit and stored as dirty water in the slimes dam.	Water is managed in terms of the approved WUL, 2018. These practices are implemented to reuse water as far as practically possible. Water from the opencast pits are not stored in the Slimes Dam directly, but rather into tanks, which is linked to the plant process. This is important as the Slimes Dam should not be utilised as a water storage facility (as governed in terms of the WUL). Slimes from the plant thickener in return is pumped to the slimes dam and beached water is returned to the clarifier. Water from the Thickener is also pumped to the clarifier for reuse in the plant process water circuit.	Site observations WCDMP, 2017 June 2019 Monthly Water Monitoring Report	3	3	No further recommendation.	-
Contamination of groundwater resources.	Groundwater monitoring points were located as far as possible on existing boreholes.	Compliant, a detailed groundwater monitoring programme has been developed and has also been audited by Geo Pollution Technologies (Pty) Ltd (GPT) during 2016. This report has recommended the drilling of several additional monitoring boreholes. In addition to this, the WUL, 2018 commits the Licence Holder to optimise the drilling programme and adhere to various conditions, such as specific zoning locations around Workshops, Residue Deposits, etc. The mine has contracted GPT to assess the WUL, 2018 conditions and provide input on amendments required to the water monitoring programme. According to the latest water quality report by Aquatico for April 2019, the current Beeshoek Mine Water Monitoring Programme consists of two major components of monitoring: 1. Surface water monitoring – Monthly frequency 2. Groundwater monitoring – Quarterly frequency The monitoring network comprises of the following: Potable water (6 localities) and Process water (2 localities) while the Groundwater monitoring consists of 11 monitoring boreholes. All samples are analysed by Aquatico, a South African National Accreditation System (SANAS) Accredited Testing Laboratory, No T0685.	GPT Critical Evaluation of the Groundwater Quality Monitoring Network at Beeshoek Mine and the development of Groundwater Related EMPs, April 2016 Site Observations WUL 2018, Reference 10/D73A/ABGJ/2592 (21 August 2018) Aquatico Water Monitoring Report, April 2019	3	3	The monitoring boreholes as requested in the critical evaluation by GPT should be drilled and included into the monitoring programme. The updated monitoring programme should be submitted to the DWS for approval.	-
	Six monthly intervals of groundwater monitoring will be undertaken during the operational life of mine.	According to the latest water quality report by Aquatico for April 2019 the current Beeshoek Mine Water Monitoring Programme consists of two major components of monitoring: 1. Surface water monitoring – Monthly frequency 2. Groundwater monitoring – Quarterly frequency	Aquatico Water Monitoring Report, April 2019 Letter of Acknowledgement signed by DWS, 28 June 2019	3	3	No recommendations.	-

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New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
		The reports are submitted to the DWS, with proof available on site.					
Reduction in groundwater yield.	Establish the extent and nature of groundwater draw down zones with opencast mining within the southern mining area over the remaining operational life of mine.	<p>An updated numerical model has been compiled by GPT for specifically the Village Pit and BN Pit operations. This model has been submitted to the DWS as part of the IWWMP, 2017. No impacts beyond the mine boundary is currently experienced.</p> <p>The mine has contracted GPT to assess the 2018 WUL conditions and provide input on amendments required to the water monitoring programme.</p> <p>As part of the new Environmental Authorisation process, GPT has been appointed to undertake an updated numerical model for the purposes of the proposed pit expansions.</p>	<p>GPT Updated numerical model of the predicted groundwater drawdown resulting from mining of the Village Pit at Beeshoek Mine, July 2017</p> <p>IWWMP, 2017</p> <p>WUL 2018, Reference 10/D73A/ABGJ/2592 (21 August 2018)</p>	3	3	No recommendations.	-
	Determine the possible adverse yield effects on the local groundwater users.	<p>An updated numerical model has been compiled by GPT for specifically the Village Pit and BN Pit operations. This model has been submitted to the DWS as part of the IWWMP, 2017. The mine is currently mostly being impacted by the dewatering activities of Kolomela and is not resulting in an impact on surrounding groundwater users in terms of the model. Ongoing monitoring is being undertaken.</p> <p>As part of the new Environmental Authorisation process, GPT has been appointed to undertake an updated numerical model for the purposes of the proposed pit expansions.</p>	<p>GPT Updated numerical model of the predicted groundwater drawdown resulting from mining of the Village Pit at Beeshoek Mine, July 2017</p> <p>IWWMP, 2017</p>	3	3	No recommendations.	-
	Quarterly monitoring of groundwater will be undertaken.	<p>According to the latest water quality report by Aquatico for April 2019 the current Beeshoek Mine Water Monitoring Programme consists of two major components of monitoring:</p> <ol style="list-style-type: none"> 1. Surface water monitoring – Monthly frequency 2. Groundwater monitoring – Quarterly frequency <p>The monitoring network comprises of the following: Potable water (6 localities) and Process water (2 localities) while the Groundwater monitoring consists of 11 monitoring boreholes. All samples are analysed by Aquatico, a SANAS Accredited Testing Laboratory, No T0685.</p>	<p>Aquatico Water Monitoring Report, April 2019</p> <p>Letter of Acknowledgement signed by DWS, 28 June 2019</p>	3	3	No recommendations.	-
Dispersion of dust.	Install air quality monitoring stations that determine fall-out and respirable dust (PM10) concentrations that could arise from the mine activities.	<p>The mine has an air quality monitoring programme in place. The monitoring is being undertaken by Dustwatch CC (Dustwatch). PM10 monitoring has also been implemented on site.</p>	<p>Dustwatch Monitoring Report, May to June 2019.</p> <p>Site observations</p>	3	3	No recommendations.	-

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New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
	All denuded areas will be revegetated.	<p>Clearance and excavations in the Village Pit is still taking place to reach the required depth. No rehabilitation has commenced in this area as a result. However, ongoing rehabilitation has been taking place at Beeshoek over time which has been successful in terms of shaping and vegetation. The South Mine Detrital Area has not been rehabilitated; it is the intention of the mine to assess the potential to mine these areas in the future.</p> <p>Self-succession is taking place successfully on site. It should however be noted that a significant presence of weeds is visible in the area. During prior Environmental Audits (2017) it was indicated that concerns have been raised by Kolomela regarding the spreading of weeds, specifically fountain grass, into the Kolomela mining area south of Beeshoek. A document was developed: Biodiversity Control, 2017 which details various areas (nine in total) which have been earmarked for weed eradication. Although alien and invasive species were visible on site, the mine has commenced with the implementation of eradication processes. A map was presented to the audit team indicating the various areas of concern which have been earmarked for weed eradication.</p> <p>When considering the closure management measures, the Licence Holder is responsible to ensure self-succession, and if this is unsuccessful, specific vegetation measures should be undertaken.</p>	Site observations	3	3	<p>Where self-succession does not take place, the mine must investigate a seed mix which could be utilised for the purposes of vegetation.</p> <p>The weed eradication programme should be implemented as part of a scheduled maintenance programme on site.</p>	SHEQ Department
	Dust suppression measures such as utilising a water douser to wet haul roads and areas with fine powdered sand and soils can be utilised.	Dust suppression is being undertaken using a water bowser. E-CAT (I-CAT in Postmasburg) is also providing dust suppression chemicals on site.	Site Observations	3	3	No recommendations.	-
Visual impacts of the opencast pit on the surrounding environment	Continuous pit in-filling and associated rehabilitation.	The mine is approved in terms of the MPRDA and the NWA to backfill the opencast pits. Due to the current economic conditions, no backfilling is undertaken as mining may return to various pits for lower grade ore, such as is currently planned expansions for the HF Pit, BN Pit, Village Pit, with the associated satellite pits. Various pits have been successfully rehabilitated by the Licence Holder in the past.	Site observations	Dup	Dup	<p>Backfilling will remain part of the operational rehabilitation strategy.</p> <p>It is recommended that the waste derived from the BN Pit and Village Pit be used to backfill surrounding opencast pit areas where possible to give effect to the final land use commitments and to reduce</p>	SHEQ and Mining Departments



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New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
						the need for additional WRD expansions.	
	Support re-vegetation of rehabilitated disturbed areas as far as possible.	<p>Clearance and excavations in the Village Pit is still taking place to reach the required depth. No rehabilitation has commenced in this area as a result. However, ongoing rehabilitation has been taking place at Beeshoek over time which has been successful in terms of shaping and vegetation. The South Mine Detrital Area has not been rehabilitated; it is the intention of the mine to assess the potential to mine these areas in the future.</p> <p>Self-succession is taking place successfully on site. It should however be noted that a significant presence of weeds is visible in the area. During prior Environmental Audits (2017) it was indicated that concerns have been raised by Kolomela regarding the spreading of weeds, specifically fountain grass, into the Kolomela mining area south of Beeshoek. A document was developed: Biodiversity Control, 2017 which details various areas (nine in total) which have been earmarked for weed eradication. Although alien and invasive species were visible on site, the mine has commenced with the implementation of eradication processes. A map was presented to the audit team indicating the various areas of concern which have been earmarked for weed eradication.</p> <p>When considering the closure management measures, the Licence Holder is responsible to ensure self-succession, and if this is unsuccessful, specific vegetation measures should be undertaken.</p>	Site observations	Dup	Dup	<p>Where self-succession does not take place, the mine must investigate a seed mix which could be utilised for the purposes of vegetation.</p> <p>The weed eradication programme should be implemented as part of a scheduled maintenance programme on site.</p>	SHEQ Department
Archaeology	Should anything that could be related to a historic artefact or civilisation be found during the excavation of the pits, operations will cease in that area and the relevant authorities must be notified.	The Licence Holder is aware of this condition. A Heritage Specialist has been appointed to undertake the necessary heritage and palaeontological studies for the proposed expansions on site.	Site observations	3	3	Should the Heritage Study identify any areas of significance, the necessary permits must be obtained from the South African Heritage Resources Agency (SAHRA).	SHEQ Department
Increase in Noise	Machinery and vehicles will be well maintained to prevent excessive noise and to comply with national and provincial regulations.	<p>Maintenance programmes are in place on site and managed by the Engineers. Maintenance is undertaken at the TMM Workshops at both North and South Mines.</p> <p>Noise is assessed as part of the operational aspects and specifically as part of hygiene management on site (in terms of</p>	Site observations	3	3	No recommendations.	-

BEESHOEK IRON ORE MINE 2019 EMP PERFORMANCE ASSESSMENT

Departmental Ref: NC 30/5/1/2/3/2/1/223EM

Project Ref: 21912

Version: Final

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
		the Mine Health and Safety Act, 1996). No areas of concern were observed during the site visit.					
	All employees working within the area will be issued with protective gear.	Signs indicating the required PPE are present on site. During the site inspection no areas of concern were observed in terms of the use of Personal Protective Equipment (PPE).	Site observations	3	3	No recommendations.	-
	All vehicles will have mufflers to minimise noise emissions.	Mufflers are not implemented on vehicles. Maintenance programmes are in place on site and managed by the Engineers. Maintenance is undertaken at the TMM Workshops at both North and South Mines. Noise is assessed as part of the operational aspects and specifically as part of hygiene management on site (in terms of the Mine Health and Safety Act, 1996). No areas of concern were observed during the site visit.	Site observations	TBA	TBA	It is recommended that this condition be revised as part of the current EIA Process. It is recommended that mufflers only be prescribed should noise become a concern on site. The mine is in an area characterised by mining activities.	Engineering Department
	A noise monitoring network which conducts monthly noise measurements will be established.	This condition is not requiring ambient noise monitoring. Specific noise monitoring is being undertaken as and when required, as part of the function of the Hygiene Department. Due to the location of the mine and the fact that there are no nearby sensitive receptors, a detailed noise monitoring programme is not required and for that reason ambient (environmental) noise monitoring is not being undertaken, but rather considered in terms of hygiene management.	Site observations	3	3	Should the noise readings indicate that the mine is resulting in excess noise levels a detailed noise monitoring programme should be implemented.	SHEQ and hygiene Department
	Where noise becomes a nuisance noise management measures will be investigated and implemented to address these	Specific noise monitoring is being undertaken as and when required, as part of the function of the Hygiene Department. Noise is assessed as part of the operational aspects and specifically as part of hygiene management on site (in terms of the Mine Health and Safety Act, 1996). No areas of concern were observed during the site visit. Due to the location of the mine and the fact that there are no nearby sensitive receptors, a detailed noise monitoring programme is not required and for that reason ambient (environmental) noise monitoring is not being undertaken, but rather considered in terms of hygiene management.	Site observations	T/N	T/N	Should the noise readings indicate that the mine is resulting in excess noise levels a detailed noise monitoring programme should be implemented.	SHEQ and hygiene Department
	Schedule blasting activities to set times during the day.	Blasting is undertaken during the day at scheduled intervals and normally between 16h00 and 17h00. Personnel and surrounding landowners are notified of scheduled blasting times in advance.	Site observations.	3	3	No recommendations.	-
	Place notifications of blasting activities around the affected areas.	Notification by means of emails and sirens are undertaken. This was observed during the site visit.	Site observations	3	3	No recommendations.	-
Impact of the opencast	Beeshoek Village houses the mine workers and	Relocation has been undertaken successfully.	Site observations	NLR	NLR	No recommendations.	-

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
workings on the mine workers	their families. The mine has entered into negotiations with the workers and the resulting decision is to relocate workers to Postmasburg and transport them onto the mine.						
Operational Phase - Product and Topsoil Stockpiles							
Geology	Rework all the contaminated iron ore stockpiles present on the mine site in order to optimise iron ore resource utilisation.	Currently the Discard and Slimes Dams are being reworked. This is lawful in terms of the EMP, and confirmed as such by the DMR.	The contaminated stockpiles (low-grade stockpiles) are being rehabilitated. Email from DMR (Raisibe Sekepane) - From: Raisibe Sekepane [mailto:Raisibe.Sekepane@dmr.gov.za] Sent: Monday, 07 August 2017 12:49 PM	3	3	No recommendations.	-
Climate	No impact envisaged	No condition to assess.	-	-	-	No recommendations.	-
Alteration of surface features	Stockpile areas will be contained to the designated footprint areas.	All Product and Topsoil Stockpiles areas are located on designated areas on the mine and are indicated on the surface layout plan. The mine has undertaken various successful rehabilitation activities on site. Usable soils are stockpiled on designated areas for future rehabilitation. Topsoil is utilised in the backfilling and covering of the Landfill Site.	Site observations	3	3	No recommendations.	-
	Stockpiles will as far as practically possible be designed to ensure that they are free draining with a slope to blend into the surrounding environmental as near as practically possible.	The mine has undertaken various successful rehabilitation activities on site. Usable soils are stockpiled on designated areas for future rehabilitation and to rehabilitate the Landfill Site. Topsoil stockpiles were specifically observed around the East Pit and Detrital Area. Note that the slopes of the topsoil stockpile at the Detrital Area on South Mine was noted to be excessively steep and could lead to a safety hazard. Erosion is present, which will impact on the integrity of the soils.	Site observations	1	3	It is recommended that the mine should undertake a topsoil balance on site to determine whether sufficient topsoil is available for the required rehabilitation practices in the future. The latter will especially be important to ensure that sufficient topsoil is available for the Landfill Site backfilling as well as for rehabilitation. It is further important to allocate the topsoil for long-term rehabilitation and for ongoing rehabilitation of the Landfill Site as the one stockpile could be managed differently in terms of short-and long-term	Engineering Department



		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
						erosion management and revegetation practices. Erosion control measures should be implemented on the topsoil stockpiles.	
Change of land use	As this is an increase of the already existing product stockpile footprint area and the topsoil stockpiles will be in already disturbed areas, no impact is envisaged.	No condition to assess.	-	-	-	No recommendations.	
Erosion of Soils	Erosion control measures are required on all slopes.	Topsoil stockpiles north of the Detrital Mining Area indicated steep slopes and erosion.	Site observations	0	3	Erosion control measures should be implemented on the topsoil stockpile north of the Detrital Mining Area. This stockpile should be shaped, or erosion control measures implemented.	Engineering Department
	Vegetation of the soil stockpiles with suitable grass species in order to limit erosion of the outer slopes of the stockpiles.	The areas where rehabilitation activities have been completed are successful in terms of self-succession. However, the establishment of vegetation on topsoil stockpiles are not practically possible as the soil is being utilised to cover the Landfill Site. It is not possible for vegetation to establish on such stockpiles due to the active activities in these areas.	Site observations	TBA	TBA	Erosion control measures should be implemented on the topsoil stockpile north of the Detrital Mining Area. This stockpile should be shaped, or erosion control measures implemented. Where self-succession does not take place, the mine must investigate a seed mix which could be utilised for the purposes of vegetation.	SHEQ Engineering Departments
Loss of Soils	Soils will be stripped prior to the stockpiling of product.	This condition cannot be audited retrospectively. The Product Stockpiles are already established on site.	Site observations	T/N	T/N	Where new areas are required topsoils should be removed. Clearing of areas should only be undertaken if approved in terms of an Environmental Authorisation.	SHEQ Department
	The soils will be stockpiled on designated areas and will be clearly marked.	Soils are stockpiled in designated areas. However, no signage has been placed to indicate that these are topsoil stockpiles and to restrict access over these areas. This is applicable to all soils that are stockpiled.	Site observations	0	3	Signage and demarcation must be implemented around topsoil stockpiles. The location and extent of topsoil stockpiles	SHEQ Department

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
						should also be indicated on surface layout plans.	
	The deposited material will be un-compacted as far as possible.	No contamination of topsoil stockpiles was observed during the site inspection. No vehicle transportation is allowed on the topsoil stockpiles. Compaction is managed in this regard.	Site observations	3	3	No recommendations.	-
	Erosion control measures will be implemented on all stockpiles and self-succession will be encouraged.	Topsoil stockpiles north of the Detrital Mining Area indicated steep slopes and erosion. The areas where activities have been completed are successful in terms of self-succession. This is however not the case at the Detrital Area topsoil stockpile; as this topsoil is being utilised to cover the Landfill Site, it is not possible for vegetation to establish on these stockpiles.	Site observations	Dup	Dup	Erosion control measures should be implemented on the topsoil stockpile north of the Detrital Mining Area. This stockpile should be shaped, or erosion control measures implemented.	Engineering Department
Loss of Vegetation	Beeshoek Mine will establish and implement a regular weed-control programme to eradicate existing invader plants and to prevent new invasions during ongoing mining operation and decommissioning.	During prior Environmental Audits (2017) it was indicated that concerns have been raised by Kolomela regarding the spreading of weeds, specifically fountain grass, into the Kolomela mining area south of Beeshoek. A document was developed: Biodiversity Control, 2017 which details various areas (nine in total) which have been earmarked for weed eradication. Although alien and invasive species were visible on site, the mine has commenced with the implementation of eradication processes.	Site observations Biodiversity Control, 21 November 2017 Environmental Audit, 2017 Minutes of meeting, 12 August 2016 Email from representative, 27 August 2019	Dup	Dup	The weed eradication programme should be implemented and maintained as part of a scheduled maintenance programme on site. It is recommended that an environmental forum be held more regularly between Kolomela and Beeshoek to discuss dust, groundwater and invasive plant concerns and/or cumulative strategies. If meetings are not possible, it is recommended that a mutual plan be developed to manage aspects such as invasive species holistically.	SHEQ Department
	The weed management programme must continue for three (3) years after closure.	The Licence Holder is aware of this condition. The mine is still operational.	Site observations	T/N	T/N	No recommendations.	-
Ecology Fauna	No impact envisaged.	No condition to assess.	Site observations	-	-	No recommendations.	-
Contamination of surface water	Berms will be constructed upstream of the stockpiles to ensure that clean water is kept separate from dirty water.	The area upgradient of the Product Stockpiles is characterised by mining activities. The overall Product Stockpile area and area upgradient thereof is characterised as a dirty water area, with a trench downgradient of the Plant area. No berms are present around the topsoil stockpiles.	Site observations	0	3	The implementation of the storm water management measures must be undertaken in terms of the approved Storm Water Management Plan. Berms should be constructed	SHEQ Department

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
						around the topsoil stockpiles to protect the integrity thereof in the event of rain events.	
	All berms will be sized so as to prevent spilling for up to a 1:50 year storm event.	<p>The product stockpiles are located within the mining area and therefore contained. It should however be noted that the lack of storm water management measures in the Plant area is leading to excess water runoff which is damaging the integrity of the berms downgradient of the Plant and increasing silt build-up in the system.</p> <p>At the Plant area, various areas of concern were observed in terms of dirty water management, which include:</p> <ul style="list-style-type: none"> • Overflow at the Jig Plant where pumps are located. The pump was operating at the time of the site visit, however there is no specific, effective bund present and the area cannot accommodate the volumes of water. Water is discharging on open ground, into an uncontained area, forming gulleys and then reporting to a sump from where water is channelled to the settling dams. A pipe was also observed, where water is pumped from the Jig Plant into an uncontained area. This area must be investigated in terms of containment capacity. • A repeat finding from the previous two years (2017 and 2018) is the water management around the Clarifier. Water around the pumps at the Thickener is channelled with a pipe into the open area around the Clarifier, creating erosion on the slopes, already visible from the road between the Thickener and the Clarifier. This has also resulted in the area around the Clarifier becoming a wet marshy area. A berm has been placed around the Clarifier to contain water, but water is still running off beyond this berm. The pump at the Clarifier seems to not be capable of managing the volumes of water present. Four new water tanks area planned in this area. Water runoff forms gulleys and reports to a sump downgradient which connects to the downgradient settlers. • The Wash and Screen Sump receives water from the downgradient settlers. This sump is not formally banded and highly silted. It is not clear whether the pump can operate with the volume of silt present. Leaks from the upgradient valves are present and reporting water to this sump area. • At the North TMM Workshop, a large portion of the Workshop area is surfaced; all vehicles being maintained during the site visit was maintained on the surfaced area. The surfaced area is however not banded and any runoff will still be uncontained or run into the channel from where it is discharged into the open 	Site observations	0	3	<p>The operational procedures (i.e. potential decant of the Thickener during shutdown and/or maintenance periods) of the containment facilities at the Plant area should be investigated to avoid overflows during maintenance schedules and should be undertaken in line with the current Storm Water Management Plan.</p> <p>The implementation of the storm water management measures must be undertaken in terms of the approved storm water management plan.</p> <p>Berms should be constructed around the topsoil stockpiles to protect the integrity thereof in the event of rain events.</p>	SHEQ Department

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
		environment on the other side of the access road near the railway line. No berms are present around the topsoil stockpiles.					
	Any storm water runoff from the outer slopes will contain some eroded residue solids. In order to prevent this from discharging into the surrounding environment, the side slopes will be dosed down to 1v:3h then covered with approximately 150mm topsoil and then grassed.	This section of the EMP conditions specifically refers to topsoil and Product Stockpiles. It is not practically possible to vegetate the Product Stockpiles. Topsoil stockpiles were specifically observed around the East Pit and Detrital Area. Note that the slopes of the topsoil stockpile at the Detrital Area on South Mine was noted to be excessively steep and could lead to a safety hazard. Erosion is present, which will impact on the integrity of the soils.	Site observations	0	3	Erosion control measures should be implemented on the topsoil stockpile north of the Detrital Mining Area. This stockpile should be shaped or erosion control measures implemented. It is further important to allocate towards the topsoil for long-term rehabilitation and for ongoing rehabilitation of the Landfill Site as the one stockpile could be managed differently in terms of short- and long-term erosion and vegetation practices.	SHEQ Department
	Stockpiles will be constructed in such a way to ensure stability and thereby preventing the possibility of wash down.	The topsoil stockpiles north of the Detrital Mining Area indicated steep slopes and erosion. No significant areas of concern were observed around the Product Stockpiles.	Site observations	Dup	Dup	Erosion control measures such as shaping should be implemented on the topsoil stockpile north of the Detrital Mining Area. A detailed study is recommended to manage water in the specific areas in and around the Plant area. For instance, at the secondary and tertiary crusher, the stockpile area and the North Vehicle Workshop. It is understood that the facilities are old, but measures are required to contain water in specific areas and reuse this where possible to decrease the storm water runoff downgradient.	SHEQ Department
	Storm water controls at all sites of mine infrastructure will be	Storm water management measures are available specifically downgradient of the Plant area. The drainage channels to the sumps to the north of the railway line, collecting all runoff from	Site observations	0	3	A detailed study is recommended to manage water in the specific areas in	SHEQ, Engineering and Production Departments

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
	established around all the mining activities in the mining area.	<p>the Plant have recently been cleaned.</p> <p>Other concerns observed in terms of storm water management around the mining activities in the mining area, but specifically the Plant area, include:</p> <ul style="list-style-type: none"> • Overflow at the Jig Plant where pumps are located. The pump was operating at the time of the site visit, however there is no specific, effective bund present and the area cannot accommodate the volumes of water. Water is discharging on open ground, into an uncontained area, forming gulleys and then reporting to a sump from where water is channelled to the settling dams. A pipe was also observed, where water is pumped from the Jig Plant into an uncontained area. This area must be investigated in terms of containment capacity. • A repeat finding from the previous two years (2017 and 2018) is the water management around the Clarifier. Water around the pumps at the Thickener is channelled with a pipe into the open area around the Clarifier, creating erosion on the slopes, already visible from the road between the Thickener and the Clarifier. This has also resulted in the area around the Clarifier becoming a wet marshy area. A berm has been placed around the Clarifier to contain water, but water is still running off beyond this berm. The pump at the Clarifier seems to not be capable of managing the volumes of water present. Four new water tanks area planned in this area. Water runoff forms gulleys and reports to a sump downgradient which connects to the downgradient settlers. • The Wash and Screen Sump receives water from the downgradient settlers. This sump is not formally bunded and highly silted. It is not clear whether the pump can operate with the volume of silt present. Leaks from the upgradient valves are present and reporting water to this sump area. • At the North TMM Workshop, a large portion of the Workshop area is surfaced; all vehicles being maintained during the site visit was maintained on the surfaced area. The surfaced area is however not bunded and any runoff will still be uncontained or run into the channel from where it is discharged into the open environment on the other side of the access road near the railway line. • Also at the North TMM Workshop, a circular area is present in the eastern portion of the Workshop (east of the skips) which is not surfaced. Broken down vehicles and a diesel tank are stored here, and spills are present. At the tank, the use of absorbents was present. It should be noted that the incorrect absorbents for 				<p>and around the Plant area.</p> <p>The storm water management measures around the North Workshop should be implemented.</p> <p>Roles and responsibilities for the maintenance of storm water channels at workshops and the plant area should be formalised.</p> <p>It is recommended that measures be implemented to prohibit any uncontained discharges into the environment. If possible, to revert this water back to the mines internal water management circuit.</p>	

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
		<p>water systems are used in this area - not the ones issued by the SHEQ Department of surface contamination. The absorbents used on open soils were not for the purpose of soils remediation, but rather for hard surfaces and fluids, resulting in the absorbents being windblown and not effective.</p> <p>All of the above are contributing to the degrading of the integrity of the downgradient storm water management system.</p> <p>Another area of concern is at the North Mine Vehicle Workshop Area. The dirty water in this area drains from the north into an easterly channel, which discharges through a culvert into the Transnet Servitude. The mine has implemented action measures to improve the surfacing around the workshop with orders in place. Although a large surfaced area is present, the dirty water from the workshop is washed off with a pressure hose. There is no cut-off channel in place to capture the dirty water, which then runs into the uncontained area.</p> <p>A new Storm Water Dam North is currently being constructed. This facility should assist in improving water management and containment around the Plant. The mine is currently also constructing a silt trap upgradient of the Storm Water Dam North.</p>					
	There will be no mining within the 1:100-year flood line of any of the tributaries and drainage channels in the area.	Currently no mining takes place within the 1:100-year flood line of any of the tributaries and drainage channels in the area. The nearest watercourse is the Groenwater Spruit, located about 6km to the east of the South Mine.	Site observations	3	3	No recommendations.	-
	The perimeter or footprint of the stockpile areas will be inspected to see whether storm water is flowing off site to the veld. If such an activity occurs and the water contains pollutants in the form of fine ore particles, measures must be implemented for these particles to be contained prior to discharge.	Regular inspections are undertaken by the mining team (SHEQ Department, Engineering Department and the Production/ Mining Department).	Site observations	3	3	No recommendations.	-

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
Reduction in groundwater yield.	Due to the depth of the groundwater levels no impacts are envisaged.	No condition to assess.		-	-	No recommendations.	-
Deterioration in Air Quality	All denuded areas must be re-vegetated; and Beeshoek will commit to air quality management planning throughout the various operations of the mine.	<p>The mine has an air quality monitoring programme in place. The monitoring is being undertaken by Aquatico. PM10 monitoring has also been implemented.</p> <p>Ongoing rehabilitation is undertaken at the mine, within areas such as the HH WRD, south boundary of the East Pit WRD and the Quad Bike Quarry. Past rehabilitation practices have indicated that the rehabilitation practices are effective on site, and that vegetation establishment is sufficient.</p> <p>The closure commitments for this EMP Alignment, 2009 also stipulates that revegetation through self-succession should be allowed, and only if unsuccessful should active revegetation be undertaken.</p> <p>Dustwatch is undertaking the dust monitoring on site monthly and Aquatico is responsible for the water monitoring programme.</p> <p>According to the latest dust monitoring results undertaken by Dustwatch (3 May to 3 June 2019) all nine (9) monitoring points were compliant (below 1 200mg/m²/day) for 2019 to date, and no exceedances during the year 2019 have yet been recorded.</p>	<p>Dustwatch Monitoring Report, May to June 2019.</p> <p>Site observations</p> <p>EMPr Alignment, 2009</p>	3	3	Where self-succession does not take place, the mine must investigate a seed mix which could be utilised for the purposes of vegetation.	SHEQ Department
	Erosion control measures will be implemented in and around all stockpile areas.	Topsoil stockpiles north of the Detrital Mining Area indicated steep slopes and erosion. The areas where activities have been completed are successful in terms of self-succession, except for the Detrital Area topsoil stockpile. As this topsoil is being utilised to cover the Landfill Site, it is not possible for vegetation to establish on this stockpile.	Site observations	Dup	Dup	Erosion control measures should be implemented on the topsoil stockpile north of the Detrital Mining Area, which could include shaping or the implementation of benches.	Engineering Department
	Vegetation of the soil stockpiles with suitable grass species in order to limit erosion of the outer slopes of the stockpiles.	The areas where activities have been completed are successful in terms of self-succession. This is however not the case at the Detrital Area topsoil stockpile. As topsoil is being utilised to cover the Landfill Site, it is not possible for vegetation to establish on this stockpile.	Site observations	TBA	TBA	<p>Erosion control measures should be implemented on the topsoil stockpile north of the Detrital Mining Area, which could include shaping or the implementation of benches.</p> <p>Regulation 29 (Part 1). The amendment should allow for the following:</p>	SHEQ and Engineering Departments



		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
						<p>1) Where self-succession does not take place, the mine must investigate a seed mix which could be utilised for the purposes of vegetation.</p> <p>2) Topsoil stockpiles should be demarcated for long-term rehabilitation and others for ongoing rehabilitation. Long-term rehabilitation topsoil stockpiles should be shaped to allow for vegetation establishment through self-succession.</p> <p>It is further important to allocate the topsoil towards long-term rehabilitation and for ongoing rehabilitation of the Landfill Site as the one stockpile could be managed differently in terms of short- and long-term erosion and revegetation practices.</p>	
Impairment of Visual Character.	Dust control measures will be implemented.	<p>Dust suppression is being undertaken using a water dowsers. E-CAT (I-CAT in Postmasburg) was appointed at both North and South Mine to undertake dust suppression. E-CAT makes use of molasses as part of the dust suppression on partial access roads. Dustwatch is undertaking the dust monitoring on site monthly and Aquatico is responsible for the water monitoring programme.</p> <p>According to the latest dust monitoring results undertaken by Dustwatch (3 May to 3 June 2019) all nine (9) monitoring points</p>	<p>Site observations</p> <p>Dustwatch Monitoring Report, May to June 2019.</p>	3	3	No recommendations.	-

BEESHOEK IRON ORE MINE 2019 EMP PERFORMANCE ASSESSMENT

Departmental Ref: NC 30/5/1/2/3/2/1/223EM

Project Ref: 21912

Version: Final

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
		were compliant (below 1 200mg/m ² /day) for 2019 to date, and no exceedances during the year 2019 have yet been recorded.					
	The stockpiling of iron ore material will be limited to the designated areas.	Compliant, designated Product Stockpile areas have been delineated on site.	Site observations	3	3	No recommendations.	-
	Stockpile heights will be restricted to 1.5m.	It is assumed that this condition refers to the topsoil stockpiles as a 1.5m height is not practical for Product Stockpiles. The stockpile height is not 1.5m at any of the topsoil stockpiles.	Site observations	TBA	TBA	As per the 2014 – 2018 External Environmental Audits, the measure that all stockpiles must be less than 1.5m must be revisited by the DMR. All topsoil stockpiles on the mine exceed this height and are designed accordingly to ensure slope stability. It is recommended that this condition be amended as part of a Regulation 29 Part 1 amendment application to clearly stipulate that this height refers to the topsoil stockpiles only and not the Product Stockpiles.	SHEQ Department
	Stockpiles will only be placed within the mine area boundaries.	All stockpile areas are located on designated area on the mine and are indicated on the surface layout plans.	Site observations	3	3	No recommendations.	-
Loss or damage to sites of archaeological or cultural importance.	No evidence of past cultures has been found at the Beeshoek Mine.	The Licence Holder is aware of this condition. A Heritage Specialist has been appointed to undertake the necessary heritage and palaeontological studies for the proposed expansions on site.	Site observations	Dup	Dup	Should the Heritage Study identify any areas of significance, the necessary permits must be obtained from SAHRA.	SHEQ Department
Increase in Noise	All the equipment, but especially the diesel-powered mining equipment, must be well maintained.	Maintenance programmes are in place on site and managed by the Engineers. Maintenance is undertaken at the TMM Workshops at both North and South Mines. Noise is assessed as part of the operational aspects and specifically as part of hygiene management on site (in terms of the Mine Health and Safety Act, 1996). No areas of concern were observed during the site visit.	Site observations	3	3	No recommendations.	-
	Ensure all vehicle noise emissions are within industry norms.	Noise protection is provided where determined by the workshops. Noise is assessed as part of the operational aspects and specifically as part of hygiene management on site (in terms	Site observations	T/N	T/N	No recommendations.	-



		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
		of the Mine Health and Safety Act, 1996). No areas of concern were observed during the site visit.					
	The maintenance schedule will include the checking of exhaust and intake silencers. Any change in the noise emissions characteristics of equipment must serve as an indicator for its immediate withdrawal from service and placement on the maintenance schedule.	Maintenance programmes are in place on site and managed by the Engineers. Maintenance is undertaken at the TMM Workshops at both North and South Mines. The specific emission characteristics will not be checked if there are no concerns with the operation of the equipment.	Site observations	3	3	No recommendations.	-
	Noise monitoring will be undertaken throughout the life of the mining activities to ensure that noise levels comply with Safety and Health Standards.	Ad hoc noise monitoring is being undertaken as part of the function of the hygiene department. Due to the location of the mine and the fact that there are no nearby sensitive receptors, a detailed noise monitoring programme is not required and for that reason ambient (environmental) noise monitoring is not being undertaken but rather considered in terms of hygiene management on the mine.	Site observations	Dup	Dup	Should the noise readings indicate that the mine is resulting in excess noise levels, a detailed noise monitoring programme should be implemented.	SHEQ and hygiene Department
Socio-Economic	No impact envisaged.	No condition to assess.		-	-	No recommendations.	-
Plant Area with Associated Infrastructure: The mine has an existing plant area which deals with the processing of the product. The associated infrastructure in these areas is as follows: <ul style="list-style-type: none"> • Primary and Secondary Crushers; • Washing and Screening Plant; • Preparation Plant; • Jig Plant; and • Clarified Water Dam. 							
Geology	No impact envisaged.	No condition to assess.		-	-	No recommendations.	-
Climate	No impact envisaged.	No condition to assess.		-	-	No recommendations.	-
Alteration of surface features	No management measures required.	No condition to assess.		-	-	No recommendations.	-
Change of land use	No management measures required.	No condition to assess.		-	-	No recommendations.	-
Loss of soils	The re-establishment of natural vegetation will be encouraged. Should re-establishment not take place, re-seeding options will be investigated.	The Licence Holder is aware of this condition. All activities around the Plant area are still operational with no areas available for rehabilitation in terms of revegetation.	Site observations	T/N	T/N	No recommendations.	-
	Where disturbed areas cannot be re-vegetated	The mine has undertaken various successful rehabilitation activities on site. The areas where activities have been	Site observations	T/N	T/N	No recommendations.	-

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
	during the life of operations, appropriate measures will be taken to control wind erosion.	completed are successful in terms of self-succession, specifically at the current topsoil stockpiles. During the site investigation, no areas subjected to severe wind erosion were observed around the Plant area.					
Loss of Vegetation	The weed eradication programme will be established and implemented.	<p>A significant abundance of weeds is present in the Plant area.</p> <p>During prior Environmental Audits (2017) it was indicated that concerns have been raised by Kolomela regarding the spreading of weeds, specifically fountain grass, into the Kolomela mining area south of Beeshoek. A document was developed: Biodiversity Control, 2017 which details various areas (nine in total) which have been earmarked for weed eradication. Although alien and invasive species were visible on site, the mine has commenced with the implementation of eradication processes.</p>	Site observations Biodiversity Control, 21 November 2017 Environmental Audit, 2017	1	3	<p>The weed eradication programme should be implemented and maintained as part of a scheduled maintenance programme on site.</p> <p>It is recommended that an environmental forum be held more regularly between Kolomela and Beeshoek to discuss dust, groundwater and invasive plant concerns and/or cumulative strategies. If meetings are not possible, it is recommended that a mutual plan be developed to manage aspects such as invasive species holistically.</p>	SHEQ Department
Ecology Fauna	No impact envisaged.	No condition to assess.	-	-	-	No recommendations.	-
Contamination of Surface Water	Storm water controls at all sites of mine infrastructure will be established around the crushers and plant infrastructure as well as the clarified water dam.	<p>Storm Water Management Measures are available specifically downgradient of the Plant area. The drainage channels to the sumps to the north of the railway line, collecting all run off from the plant have recently been cleaned.</p> <p>Other concerns observed in terms of storm water management around the mining activities in the mining area, but specifically the Plant area, include:</p> <ul style="list-style-type: none"> • Overflow at the Jig Plant where pumps are located. The pump was operating, however there is no specific, effective bund present and the area cannot accommodate the volumes of water. Water is discharging on open ground, forming gulleys and then entering into a sump from where water is channelled to the settling dams, however water is also discharging into uncontained area. A pipe was also observed, where water is pumped from the Jig Plant into the uncontained area and no longer overflows. This area must be investigated in terms of containment capacity. • A repeat finding from the previous two years (2017 and 2018) is the water management around the Clarifier. Water around 	Site observations	0	3	<p>A detailed study is recommended to manage water in the specific areas in and around the Plant area. The storm water management measures around the North Workshop should be implemented.</p> <p>Roles and responsibilities for the maintenance of storm water channels at workshops and the Plant area should be formalised.</p> <p>It is recommended that measures be implemented to prohibit any uncontained discharges into the environment, and if possible,</p>	SHEQ Engineering and Production Departments



		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
		<p>the pumps at the Thickener is channelled with a pipe into the open area around the Clarifier, creating erosion on the slopes, already visible from the road between the Thickener and the Clarifier. This has also resulted in the area around the Clarifier becoming a wet marshy area. A berm has been placed around the Clarifier to contain water, but water is still running off beyond this berm. The pump at the Clarifier seems to not be capable of managing the volumes of water present. Four new water tanks area planned in this area. Water runoff forms gulleys and reports to a sump downgradient which connects to the downgradient settlers.</p> <ul style="list-style-type: none"> • The Wash and Screen Sump receives water from the downgradient settlers. This sump is not formally bunded and highly silted. It is not clear whether the pump can operate with the volume of silt present. Leaks from the upgradient valves are present and reporting water to this sump area. • At the North TMM Workshop, a large portion of the Workshop area is surfaced; all vehicles being maintained during the site visit was maintained on the surfaced area. The surfaced area is however not bunded and any runoff will still be uncontained or run into the channel from where it is discharged into the open environment on the other side of the access road near the railway line. • Also at the North TMM Workshop, a circular area is present in the eastern portion of the Workshop (east of the skips) which is not surfaced. Broken down vehicles and a diesel tank are stored here, and spills are present. At the tank, the use of absorbents was present. It should be noted that the incorrect absorbents for water systems are used in this area - not the ones issued by the SHEQ Department of surface contamination. The absorbents used on open soils were not for the purpose of soils remediation, but rather for hard surfaces and fluids, resulting in the absorbents being windblown and not effective. <p>All of the above are contributing to the degrading of the integrity of the downgradient storm water management system.</p> <p>Another area of concern is at the North Mine Vehicle Workshop Area. The dirty water in this area drains from the north into an easterly channel, which discharges through a culvert into the Transnet Servitude. The mine has implemented action measures to improve the surfacing around the workshop with orders in place. Although a large surfaced area is present, the dirty water from the workshop is washed off with a pressure hose. There is</p>				to revert this water back to the mine's internal water management circuit.	

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
		<p>no cut-off channel in place to capture the dirty water, which then runs into the uncontained area.</p> <p>A new Storm Water Dam North is currently being constructed. This facility should assist in improving water management and containment around the Plant. The mine is currently also constructing a silt trap upgradient of the Storm Water Dam North.</p>					
Reduction in Groundwater Yield.	No impact envisaged.	No condition to assess.	-	-	-	No recommendations.	-
Deterioration in Air Quality	Dust extraction systems comprising of wet scrubbers will be installed at the secondary and tertiary crushing and screening plants. For crushing and screening operations at metallic mineral processing plants, fugitive dust can be controlled with wet scrubbers or baghouses. Chemical dust suppression systems will be implemented at the primary crushing and screening plants.	<p>Note that no wet scrubbers or bag houses are present on site.</p> <p>Dustwatch is undertaking the dust monitoring on site monthly and Aquatico is responsible for the water monitoring programme.</p> <p>According to the latest dust monitoring results undertaken by Dustwatch (3 May to 3 June 2019) all nine (9) monitoring points were compliant (below 1 200mg/m²/day) for 2019 to date, and no exceedances during the year 2019 have yet been recorded.</p>	<p>Site observations</p> <p>Dustwatch Monitoring Report, May to June 2019.</p>	TBA	TBA	The design of the Plant does not incorporate the measures as stipulated in the EMPr Alignment. Based on the outcomes of the Dust Monitoring Report, concerns are also not raised in terms of emissions from the Plant area. It is recommended that this condition be amendment as part of the Regulation 29 Part 1 amendment process which will form part of the Environmental Authorisation Process.	SHEQ Department
	Beeshoek will commit to air quality management planning throughout the various operations of the mine.	Compliant. Dustwatch is undertaking the dust monitoring on site monthly and Aquatico is responsible for the water monitoring programme. In addition to this, the Licence Holder has also implemented PM10 monitoring equipment.	<p>Dustwatch Monitoring Report, May to June 2019.</p> <p>Site observations</p>	3	3	No recommendations.	-
Impairment of Visual Character.	Due to the presence of the existing infrastructure in the area, no further impacts are envisaged.	No condition to assess.	-	-	-	No recommendations.	-
Loss or damage to sites of archaeological or cultural importance.	No evidence of past cultures has been found at the Beeshoek Mine. There is no mitigation for this impact as the	The Plant area has been operational for many years. No evidence of past cultures will be present in this area.	-	NLR	NLR	No recommendations.	-



		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
	chance for such sites having occurred within the developed footprint of the mines are low to none.						
Increase in noise levels	Implement operational controls on equipment to reduce noise levels.	Ad hoc noise monitoring is being undertaken. Due to the location of the mine and the fact that there are no nearby sensitive receptors, a detailed noise monitoring programme is not required and for that reason ambient (environmental) noise monitoring is not being undertaken but rather considered in terms of hygiene management on the mine. No areas of concern were observed.	Site observations	3	3	Should the noise readings indicate that the mine is resulting in excess noise levels a detailed noise monitoring programme should be implemented.	SHEQ Department
Impact on existing businesses, residents and services	The operations at Beeshoek Mine have a positive benefit on the regional and local economy. It creates an additional employment opportunity which have an effect on the local economy.	An approved Social and Labour Plan is also implemented on site.	Site observations	3	3	Ongoing commitment should be shown towards the conditions of the Social and Labour Plan.	SHEQ Department
Impact of mine on neighbouring communities.	The Beeshoek Mine is located in an isolated area. Potential impacts to neighbouring communities are limited. Existing lines of communication exist between Beeshoek personnel and neighbouring community.	The mine is actively involved in the farmers forums and water forums in the area. The mine further maintains an open channel of communication. An updated numerical model has been compiled by GPT for specifically the Village Pit and BN Pit operations. This model has been submitted to the DWS as part of the IWWMP, 2017. In terms of the model, the mine is currently mostly being impacted by the dewatering activities of Kolomela and is not resulting in an impact on surrounding groundwater users. A subsequent numerical model is currently underway for the purposes of the proposed expansions in the opencast pits. GPT has been appointed to conduct this work.	GPT Updated numerical model of the predicted groundwater drawdown resulting from mining of the Village Pit at Beeshoek Mine, July 2017	3	3	No recommendations.	-
Operational Phase - Access Roads							
Geology	No impact envisaged.	No condition to assess.	-	-	-	No recommendations.	-
Climate	No impact envisaged.	No condition to assess.	-	-	-	No recommendations.	-
Topography	The access roads are all constructed and will not contribute to any topographical impacts.	When considering road construction, various haul roads are present on site. It is important for the mine to record and survey all roads, as the construction of roads, when meeting certain criteria will trigger Environmental Authorisations:	Site observations NEMA EIA Regulations, 2017	3	3	All haul roads on site should be regularly surveyed to ensure that the infrastructure does not trigger the requirements for an environmental	Mining Department (survey of all roads)

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
		Listing Notice 1, Activity 24: "The development of a road— (i) [a road] for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Government Notice 545 of 2010; or (ii) [a road] with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres." or Activity 56: "The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre— (i) where the existing reserve is wider than 13,5 meters; or (ii) where no reserve exists, where the existing road is wider than 8 metres.				authorisation. A communication procedure should be implemented in which any new projects planned by the Mining and/or Engineering Departments should first be assessed by the SHEQ Department to determine the potential Environmental Legal requirements associated with such projects.	
Land Use	The access roads are all within the mine site, so no impact is envisaged.	No condition to assess.	-	-	-	No recommendations.	-
Soil Contamination	Vehicles / machinery will be regularly monitored and maintained. Maintenance programmes will be established and implemented.	Maintenance programmes are in place on site and managed by the Engineers. Maintenance are undertaken at the TMM Workshops at both North and South Mines. When considering awareness of contractors in terms of the Maintenance Procedures and requirements on site the following areas of concern were raised: <ul style="list-style-type: none"> • Lenfield Temporary Vehicle Parking: This area is not a demarcated area for vehicle servicing and no infrastructure is present to contain spills. Hydrocarbon spills were present. • Booyesen Bore Laydown Area: This area is not a demarcated area for vehicle servicing and no infrastructure is present to contain spills. The area is also used for minor vehicle maintenance as the formal workshop is off site. A large presence of hydrocarbon spills was observed – after this was pointed out, the personnel immediately started with clean up processes. 	Site observations	Dup	Dup	Maintenance of vehicles should only be undertaken in areas demarcated for such purpose.	SHEQ and Engineering Departments
	If spills do occur and soils become contaminated, the appropriate remedial measures will be identified in consultation with an appropriately qualified specialist.	Overall, the mine is effectively managing hydrocarbon spills. No significant areas of spills were observed on roads, with the exception of two areas, where vehicles were maintained outside of demarcated areas: <ul style="list-style-type: none"> • At the Booyesen Bore Laydown Area, a large presence of hydrocarbon spills were observed – was observed – after this was noted, the personnel immediately started with clean up processes. • At the Lenfield Laydown Area, diesel spills were present. 	Site observations.	Dup	Dup	Maintenance of vehicles should only be undertaken in areas demarcated for such purpose.	Engineering Department

	Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility	
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
	If necessary, the polluted soils will be remediated with a spill-kit. After remediation of the contaminated soils, the affected areas will be rehabilitated.	In various areas, spill absorbents were used, however these were used in large quantities, presenting waste thereof . At the Booyesen Bore Laydown Area, a large presence of hydrocarbon spills was observed – after this was noted, the personnel immediately started with clean up processes. At the Lenfield Laydown Area, diesel spills were present in this area. The contractor did not have spill kits available.	Site observations	0	3	Spill kits should be available in all areas and be labelled in a manner to inform the user whether this is for hard surfaces, water spills or sand.	SHEQ and Engineering Departments
Loss of vegetation due to the establishment of invasive species	Beeshoek Mine will establish and implement a regular weed-control programme to eradicate existing invader plants and to prevent new invasions during ongoing mining operation and decommissioning.	A significant abundance of weeds is present along roads. During prior Environmental Audits (2017) it was indicated that concerns have been raised by Kolomela regarding the spreading of weeds, specifically fountain grass, into the Kolomela mining area south of Beeshoek. A document was developed: Biodiversity Control, 2017 which details various areas (nine in total) which have been earmarked for weed eradication. Although alien and invasive species were visible on site, the mine has commenced with the implementation of eradication processes.	Site observations Biodiversity Control, 21 November 2017 Environmental Audit, 2017 & 2018	0	3	The weed eradication programme should be implemented and maintained as part of a scheduled maintenance programme on site. It is recommended that an environmental forum be held more regularly between Kolomela and Beeshoek to discuss dust, groundwater and invasive plant concerns and/or cumulative strategies. If meetings are not possible, it is recommended that a mutual plan be developed to manage aspects such as invasive species holistically.	SHEQ Department
	The weed management programme must continue for three (3) years after closure.	Noted, the mine is still operational.	Site observations	T/N	T/N	No recommendations.	-
Disturbance to animal habitats.	Clearly marked signs will be erected along the transportation roads to create awareness of animals crossing the roads.	Signage is present on site.	Site observations	3	3	No recommendations	SHEQ Department
	A clearly marked and enforced vehicle speed will be implemented on the internal mine and transportation roads.	Compliant, speed zones and requirements are erected on site, and were clearly visible and clearly marked on internal and transportation roads.	Site observations	3	3	No recommendations.	-

BEESHOEK IRON ORE MINE 2019 EMP PERFORMANCE ASSESSMENT

Departmental Ref: NC 30/5/1/2/3/2/1/223EM

Project Ref: 21912

Version: Final

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
Contamination of Surface Water	Vehicles / machinery will be regularly monitored and maintained. Maintenance programmes will be established and implemented.	Maintenance programmes are in place on site and managed by the Engineers. Maintenance are undertaken at the TMM Workshops at both North and South Mines.	Site observations	Dup	Dup	No recommendations.	-
	If spills do occur and soils become contaminated, the appropriate remedial measures will be identified in consultation with an appropriately qualified specialist.	Overall the mine is effectively managing hydrocarbon spills. No significant areas of spills were observed on roads, with the exception of two areas, where vehicles were maintained outside of demarcated areas: • At the Booyesen Bore Laydown Area, a large presence of hydrocarbon spills were observed – after this was pointed out by the auditor, the personnel immediately started with clean up processes. • At the Lenfield Laydown Area, diesel spills were present.	Site observations	Dup	Dup	Maintenance of vehicles should only be undertaken in areas demarcated for such purpose.	Engineering Department
	If necessary, the polluted soils will be remediated with a spill-kit. After remediation of the contaminated soils, the affected areas will be rehabilitated.	In various areas, spill absorbents were used, however these were used in large quantities, presenting waste thereof . At the Booyesen Bore Laydown Area, a large presence of hydrocarbon spills was observed – after this was pointed out, the personnel immediately started with clean up processes. At the Lenfield Laydown Area, diesel spills were present. The contractor did not have spill kits available.	Site observations	Dup	Dup	Spill kits should be available in all areas and be labelled in a manner to inform the user whether this is for hard surfaces, water spills or sand.	SHEQ and Engineering Departments
Impact on Groundwater Resources	Due to the depth of the groundwater in the area and the fact that the mine surfaces have been compacted no impacts are envisaged.	No condition to assess.	-	-	-	No recommendations.	-
Dispersion of Dust	Haulage roads will be wet on a regular basis to prevent dust emissions.	Compliant. During the site inspection wet suppression was observed. Dustwatch is undertaking the dust monitoring and no emission concerns have been raised in the latest monitoring reports.	Site observations Dustwatch Monitoring Report, May to June 2019.	3	3	No recommendations.	-
	Tarpaulins will be placed over all vehicles transporting product.	Iron ore is not being transported via trucks at this stage, but rather via trains.	Site Observations	T/N	T/N	No recommendations.	-
	All denuded areas will be re-vegetated	All roads are currently operational. Rehabilitation practices have proven successful at the mine with self-succession well established. In terms of the closure commitments in this EMP Alignment, 2009, self-succession should be promoted, where	Site Observations	T/N	T/N	Where self-succession does not take place, the mine must investigate a seed mix which could be utilised for the purposes of revegetation.	SHEQ Department



		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
		after if not successful, specific revegetation practices must be implemented.				The weed eradication programme should be implemented as part of a scheduled maintenance programme on site	
Visual impacts of the access roads on the surrounding environment	No further impacts are envisaged as the roads are existing and within the overall mining area.	No condition to assess.	-	-	-	No recommendations.	-
Archaeology	No impact envisaged	No condition to assess.	-	-	-	No recommendations.	-
Increase in Noise Levels	Machinery and vehicles will be well maintained to prevent excessive noise and to comply with national and provincial regulations.	Maintenance programmes are in place on site and managed by the Engineers. Maintenance are undertaken at the TMM Workshops at both North and South Mines.	Site observations	Dup	Dup	No recommendations.	-
	All vehicles will have mufflers to minimise noise emissions.	Maintenance programmes are in place on site and managed by the Engineers. Maintenance is undertaken at the TMM Workshops at both North and South Mines. Noise is assessed as part of the operational aspects and specifically as part of hygiene management on site (in terms of the Mine Health and Safety Act, 1996). No areas of concern were observed during the site visit.	Site observations	Dup	Dup	It is recommended that this condition be revised as part of the new EIA Process. It is recommended that mufflers only be prescribed should noise become a concern on site. The mine is located in an area characterised by mining activities.	SHEQ Department
	A noise monitoring network which conducts monthly noise measurements will be established.	Ad hoc and area-specific noise monitoring is being undertaken as part of the function of the hygiene department. Due to the location of the mine and the fact that there are no nearby sensitive receptors, a detailed noise monitoring programme is not required and for that reason ambient (environmental) noise monitoring is not being undertaken but rather considered in terms of hygiene management on the mine.	Site observations	Dup	Dup	Should the noise readings indicate that the mine is resulting in excess noise levels a detailed noise monitoring programme should be implemented.	SHEQ and hygiene Department
	Where noise becomes a nuisance noise management measures will be investigated and implemented to address these	The Licence Holder is aware of this condition. Ad hoc and area-specific noise monitoring is being undertaken. Noise is assessed as part of the operational aspects and specifically as part of hygiene management on site (in terms of the Mine Health and Safety Act, 1996). No areas of concern were observed during the site visit. Due to the location of the mine and the fact that there are no nearby sensitive receptors, a detailed noise monitoring programme is not required and for that reason ambient (environmental) noise monitoring is not being	Site observations	Dup	Dup	Should the noise readings indicate that the mine is resulting in excess noise levels a detailed noise monitoring programme should be implemented.	SHEQ Department

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
		undertaken but rather considered in terms of hygiene management on the mine.					
Operational Phase - Mine Waste: This entails the following infrastructure on the Beeshoek Mine (North and South):							
<ul style="list-style-type: none"> • WRDs; • Mine Residue (Fines) Dumps; and • Slimes dam which includes the extension to the slimes dam on the North mine. 							
Geology	No impact envisaged	No condition to assess.	-	-	-	No recommendations.	-
Climate	No impact envisaged	No condition to assess.	-	-	-	No recommendations.	-
Alteration of surface features	Slope the slimes dams where possible to blend into the surrounding topography and to make rehabilitation measure earlier.	The Slimes Dam is located within an old quarry. The outer slopes of the Slimes Dam are gradual, making it suitable for successful rehabilitation. The north-eastern slope of the Slimes Dam is linked to upgradient mining activities and is steep, however, also suitable in terms of overall rehabilitation strategy.	Site observations	3	3	No recommendations.	-
	Limit the mine residue disposal on site	The mine has designated mine residue and mine deposit facilities. The mine is undertaking backfilling by means of waste rock, which is an approved activity in terms of the NWA and as part of the IWWMP. Backfilling can however only be undertaken once opencast pits are completely mined. The mine is currently investigating the establishment of a new treatment plant, which will rework the slimes and discard in particular. The intention of this project is to optimise the beneficiation of iron ore and the reduction of waste rock on site. Where possible, waste rock is also used to backfill opencast pits as part of the WUL and EMP commitments. It should be noted that the East Pit WRD has encroached beyond the approved boundary towards the south of the facility. The area where it has expanded into is considered a "High Biodiversity Value" area in terms of the 2018 Biodiversity Action Plan by EXM. According to the Biodiversity Action Plan, this area is demarcated as "Panveld" (Figure 2.5 of the report). As part of the new Environmental Authorisation Process, specialists have been appointed to assess the area for the presence of pans or water resources in order to apply for the necessary WUL. It is the intention of the Licence Holder to increase the heights of the WRD to reduce the need for disturbance of more areas - this will result in an increase in footprints to accomplish the final footprint slopes. An Environmental Authorisation Process is currently underway to authorise this.	WUL 2018, Reference 10/D73A/ABGJ/2592 (21 August 2018) Site observations EXM Biodiversity Action Plan, 2018	1	3	The Licence Holder should as far as practically possible backfill waste rock to reduce disposal on surface. Where mine residue deposits have exceeded approved footprints, the necessary approvals must be obtained, alternatively the facilities must be reworked/ removed into the approved footprints.	Engineering and SHEQ Departments.
	Excess WRDs not used for in-filling of pits will be consolidated,	The current rehabilitation plan allows for the reshaping of waste rock on site. Successful shaping (specifically referring to the rehabilitated areas on both North and South Mines) has been undertaken.	Site observations	2	3	The necessary clean and dirty water measures must be implemented around the HH WRD. Where this is not	Engineering and Mining Departments.

BEESHOEK IRON ORE MINE 2019 EMP PERFORMANCE ASSESSMENT

Departmental Ref: NC 30/5/1/2/3/2/1/223EM

Project Ref: 21912

Version: Final

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
	reprofiled and revegetated.	The mine has also rehabilitated HH WRD. During the site inspection areas of erosion were present. The mine is also in the process of shaping the southern portion of the East Pit WRD.				practical, a rehabilitation protocol for the facility should be drafted to explain to inspectors how the clean and dirty water management upgradient of the facility will be handled. The necessary water dissipation measures must be implemented on the slopes of the rehabilitated WRDs to mitigate the formation of erosion gulleys and promote the establishment of vegetation.	
Change of land use	As all WRDs, slimes dams and mine residue dumps already exist, no impact is envisaged.	No condition to assess.	-	-	-	No recommendations.	-
Soils	No impact envisaged	No condition to assess.	-	-	-	No recommendations.	-
Ecology Flora	No impact envisaged	No condition to assess.	-	-	-	No recommendations.	-
Ecology Fauna	No impact envisaged	No condition to assess.	-	-	-	No recommendations.	-
Contamination of Surface Water - overflowing of slimes dam	The slimes dams must be able to handle the 1:100-year flood events.	During the site visit no concerns were observed. The mine is successfully dewatering the slimes to maximise water return to the Plant. With the new beaching strategy (ring disposal) it is foreseen that less water will report to the Return Water Dam due to evaporation. With the change in the beaching area every month, the beach closest to the Return Water Dam may only reach this area during month 5 of deposition, where after the mine will again start from the beginning and following the circle again.	Site observations	3	3	No recommendations.	-
	No water will be released directly into the environment from the dam.	Compliant. No areas of concern have been observed.	Site observations	3	3	No recommendations.	-
	The slimes dam will be inspected on a weekly basis.	Compliant. The Engineering Department conducts weekly inspections on the facility.	Site observations	3	3	No recommendations.	-
	The seasonally wet portions of the dam and the sump will be lined with concrete.	This has not been implemented. The Storm Water Dam North will be a fully lined facility.	Site observations	3	3	No recommendations.	-



		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
	All containment dams will be maintained to ensure that no leakages occur. A freeboard of 0.8m must be maintained. Overflow pipes will be kept clean. Sumps will be kept clean and all pumps will be maintained.	<p>The Storm Water Dam North is still being constructed.</p> <p>A repeat finding from the previous two years (2017 and 2018) is the water management around the Clarifier. Water around the pumps at the Thickener is channelled with a pipe into the open area around the Clarifier, creating erosion on the slopes, already visible from the road between the Thickener and the Clarifier. This has also resulted in the area around the Clarifier becoming a wet marshy area. A berm has been placed around the Clarifier to contain water, but water is still running off beyond this berm. The pump at the Clarifier seems to not be capable of managing the volumes of water present. Four new water tanks area planned in this area. Water runoff forms gulleys and reports to a sump downgradient which connects to the downgradient settlers.</p> <p>The Wash and Screen Sump receives water from the downgradient settlers. This sump is not formally bunded and highly silted. It is not clear whether the pump can operate with the volume of silt present. Leaks from the upgradient valves are present and reporting water to this sump area.</p> <p>In terms of the GN704 Audit, 2019, similar findings and observations were made as per the External Environmental Audit.</p>	<p>Site observations</p> <p>GN704 Audit, 2019</p>	0	3	<p>Implement the recommendations of the GN704 Audit, 2019.</p> <p>The capacity and likely the operational procedures (i.e. potential decant of the Thickener during shutdown and/or maintenance periods) of the containment facilities at the Plant area should be investigated to avoid overflows during maintenance schedules and should be undertaken in line with the current Storm Water Management Plan.</p> <p>A detailed study is recommended to manage water in the specific areas in and around the Plant area.</p>	Engineering and SHEQ Departments
Erosion and siltation of drainage lines	Berms will be constructed upstream and of the dumps to ensure that clean water is kept separate from dirty water.	<p>The historical dumps have not been designed in terms of these requirements. However, the Village WRD, which is the only additional WRD included into this EMP has been designed and constructed with these berms.</p> <p>The mine is currently rehabilitating the HH WRD. No berms have been constructed upgradient of the facility as the dirty water will not flow into the clean water environment (due to the gradient upslope), however clean water can enter this dirty water system.</p>	<p>Site observations</p>	1	3	<p>It is recommended that the necessary clean and dirty water separation measures in terms of GN704 be implemented around the HH WRD being rehabilitated up until vegetation establishment has been successful.</p>	Engineering and SHEQ Departments
	All berms will be sized so as to prevent spilling for up to a 1:50 year storm event.	<p>The historical dumps have not been designed in terms of these requirements. However, the Village WRD, which is the only additional WRD included into this EMP has been designed and constructed with these berms.</p>	<p>Site observations</p>	3	3	<p>It is recommended that the necessary clean and dirty water separation measures in terms of GN704 be implemented around the HH WRD being rehabilitated up until vegetation establishment has been successful.</p>	Engineering and SHEQ Departments

	Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility	
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
	<p>Any storm water runoff from the outer slopes will contain some eroded residue solids. In order to prevent this from discharging into the surrounding environment, the side slopes of the WRDs will be dosed down to 1v:3h then covered with approximately 150mm topsoil and then grasses.</p>	<p>Noted, due to the successful rehabilitation practices on the mine to date, the facilities will first be provided with the opportunity the self-vegetate. The slopes of all operational facilities will only be shaped to its final slope once the full footprints have been reached. The Planning/ Survey Department is currently designing the final heights, slopes and footprints of the WRDs on site.</p> <p>The mine is currently rehabilitating the HH WRD and the southern portion of the East Pit WRD, which complies to the slope requirements. Facilities that have been rehabilitated such as the West WRD and those at North Mine comply with the slope requirements based on visual observations. In addition to this, the past rehabilitation practices have indicated that vegetation is best established using a mixed cover mixture and not pure topsoil. Areas where topsoils have been placed are prone to erosion.</p>	Site observations	TBA	TBA	<p>Should self-succession not prove successful, the mine will investigate a seed mix to enhance vegetation on slopes.</p> <p>The Survey Department should ensure to keep into consideration the need to achieve the required slopes within the approved footprint of the facilities.</p> <p>This measure is not sufficient to manage the impacts of the Licence Holder in terms of the development of erosion arising from the use of a topsoil mixture. Therefore, an amendment in terms of Regulation 34 could be requested. However, due to the current Environmental Authorisation Process being undertaken, it is recommended that this condition be amended to provide for a cover mixture and not pure topsoil, as well as to allow for self-succession, as part of the Regulation 29 Part 1 amendment which will be undertaken as part of the current Environmental Authorisation Process commencing in 2019.</p>	Survey, SHEQ and Production Departments
	<p>The dumps will be constructed in such a way that dust and water erosion is limited.</p>	<p>Due to the slope of the WRDs, erosion was present on the Village WRD. Erosion was also present on the rehabilitated slopes of the HH WRD. The disposal strategy on site does not allow for the development of an environmentally stable slope (management of water erosion).</p> <p>WRDs already rehabilitated such as the West Pit WRD are in good condition.</p>	<p>Site observations</p> <p>Dustwatch Monitoring Report, May to June 2019.</p>	0	3	<p>Erosion dissipation must be implemented on the side slopes of rehabilitated WRDs.</p> <p>Once the designs of the WRDs have been finalised by the Survey Department, the disposal strategy for waste rock deposition should be revisited to dispose of the</p>	Mining and Environmental Departments

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
		Based on the dust monitoring reports, no dust emission concerns have been raised.				material with the closure footprint and slope in mind. It is recommended that a Code of Practice for the WRDs be developed to assist in this process.	
	The dumps will be constructed in such a way to ensure stability and thereby preventing the possibility of wash down.	<p>Due to the slope of the WRDs, erosion was present on the Village WRD. However, at this facility berms were present, ensuring stability and managing possible wash down. Erosion was also present on the rehabilitated slopes of the HH WRD. The disposal strategy on site does not allow for the development of an environmentally stable slope (management of water erosion). No berms have been developed downgradient of the HH WRD.</p> <p>Berms are also not present downgradient of the East Pit WRD. WRDs already rehabilitated such as the West Pit WRD is in good condition.</p>	Site observations	0	3	<p>Ongoing visual inspections must be undertaken to observe early signs of erosion. Where erosion is noted, measures must be put in place to mitigate erosion in these areas.</p> <p>Erosion dissipation must be implemented on the side slopes of rehabilitated WRDs.</p> <p>It is recommended that the necessary clean and dirty water separation measures in terms of GN704 be implemented around the East Pit WRD and the HH WRD being rehabilitated, up until vegetation establishment has been successful.</p> <p>Once the designs of the WRDs have been finalised by the Survey Department, the disposal strategy for waste rock deposition should be revisited to dispose of the material with the closure footprint and slope in mind. It is recommended that a Code of Practice for the WRDs be developed to assist in this process.</p>	SHEQ Department
Water Quality	Berms will be constructed upstream and of the dumps to ensure that clean water	The historical dumps have not been designed in terms of these requirements. However, the Village WRD have been designed and constructed with these berms. Berms are not present downgradient of the HH WRD and East Pit WRD.	Site observations.	Dup	Dup	It is recommended that the necessary clean and dirty water separation measures in terms of GN704 be implemented around the East	-

	Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]						
	is kept separate from dirty water.				Pit WRD and the HH WRD being rehabilitated up until vegetation establishment has been successful.	
	All berms will be sized so as to prevent spilling for up to a 1:50 year storm event.	<p>The historical dumps have not been designed in terms of these requirements. However, the Village WRD, which is the only additional WRD included into this EMP, have been designed and constructed with these berms. During the site visit some damage to the berms were observed.</p> <p>The mine is currently rehabilitating the HH WRD. No berms have been constructed upgradient of the facility as the dirty water will not flow into the clean water environment (due to the gradient upslope), however clean water can enter this dirty water system.</p>	Site observations.	Dup	Dup	<p>It is recommended that the necessary clean and dirty water separation measures in terms of GN704 be implemented around the East Pit WRD and the HH WRD being rehabilitated up until vegetation establishment has been successful.</p> <p>Engineering and SHEQ Departments</p>
	Any storm water runoff from the outer slopes will contain some eroded residue solids. In order to prevent this from discharging into the surrounding environment, the side slopes of the WRDs will be dosed down to 1v:3h then covered with approximately 150mm topsoil and then grasses.	<p>Noted, due to the successful practices of rehabilitation on the mine, the facilities will first be provided with the opportunity the self-vegetate. The slopes of all operational facilities will only be shaped to its final slope once the full footprints have been reached. The Planning/Survey Department is currently designing the final heights, slopes and footprints of the WRDs on site.</p> <p>The mine is currently rehabilitating the HH WRD and the southern portion of the East Pit WRD, which complies to the slope requirements. Facilities that have been rehabilitated such as the West WRD and on the Northern Mine comply with the slope requirements based on visual observations. In addition to this, the past rehabilitation practices have indicated that vegetation is best established using a mixed cover mixture and not pure topsoil. Areas where topsoils have been placed are prone to erosion.</p>	Site observations	Dup	Dup	<p>Should self-succession not prove successful, the mine will investigate a seed mix, to enhance vegetation on slopes.</p> <p>The Survey Department should ensure to keep into consideration the need to achieve the required slope within the approved footprint of the facilities.</p> <p>This measure is not sufficient to manage the impacts of the Licence Holder in terms of the development of erosion arising from the use of a topsoil mixture. Therefore, an amendment in terms of Regulation 34 could be requested. However, due to the current Environmental Authorisation Process being undertaken, it is recommended that this condition be amended to provide for a cover mixture and not pure topsoil, as well as to allow for self-succession, as part of the Regulation 29 Part 1 amendment which will be</p> <p>Survey, SHEQ and Production Departments</p>

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
						undertaken as part of the current Environmental Authorisation Process commencing in 2019.	
	The dumps will be constructed in such a way that dust and water erosion is limited	<p>Due to the slope of the WRDs, erosion was present on the Village WRD. Erosion was also present on the rehabilitated slopes of the HH WRD. The disposal strategy on site does not allow for the development of an environmentally stable slope (management of water erosion).</p> <p>WRDs already rehabilitated such as the West Pit WRD are in good condition.</p> <p>Based on the dust monitoring reports, no dust emission concerns have been raised.</p>	<p>Site observations</p> <p>Dustwatch Monitoring Report, May to June 2019.</p>	Dup	Dup	<p>Erosion dissipation must be implemented on the side slopes of rehabilitated WRDs.</p> <p>Once the designs of the WRDs have been finalised by the Survey Department, the disposal strategy for waste rock deposition should be revisited to dispose of the material with the closure footprint and slope in mind. It is recommended that a Code of Practice for the WRDs be developed to assist in this process.</p>	Mining and Environmental Departments.
	The dumps will be constructed in such a way to ensure stability and thereby preventing the possibility of wash down.	<p>Due to the slope of the WRDs, erosion was present on the Village WRD. However, at this facility berms were present, ensuring stability and managing possible wash down.</p> <p>Erosion was also present on the rehabilitated slopes of the HH WRD. The disposal strategy on site does not allow for the development of an environmentally stable slope (management of water erosion). No berms have been developed downgradient of this facility.</p> <p>Berms are also not present downgradient of the East Pit WRD.</p> <p>WRDs already rehabilitated, such as the West Pit WRD, are in good condition.</p>	<p>Site observations</p>	Dup	Dup	<p>Ongoing visual inspections must be undertaken to identify early signs of erosion. Where erosion is found, measures must be put in place to repair erosion in these areas.</p> <p>Erosion dissipation must be implemented on the side slopes of rehabilitated WRDs.</p> <p>It is recommended that the necessary clean and dirty water separation measures in terms of GN704 be implemented around the East Pit WRD and the HH WRD being rehabilitated up until vegetation establishment has been successful.</p> <p>Once the designs of the WRDs have been finalised by the Survey Department, the</p>	SHEQ Department

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
						disposal strategy for waste rock deposition should be revisited to dispose of the material with the closure footprint and slope in mind. It is recommended that a Code of Practice for the WRDs be developed to assist in this process.	
Contamination of Groundwater Resource	All slimes dams will be maintained to ensure that no leakages occur. Overflow pipes will be kept clean. Feed water piping and return water piping will be maintained.	<p>No spills were observed along the slimes dam pipelines.</p> <p>The Waste Characterisation and Groundwater Monitoring Network studies were undertaken by GPT during 2017. The report found that based on the groundwater quality analyses, solid waste analyses and liquid waste analyses, as well as the statistical analysis of the data, it can be deduced that the chemical signatures of the three mediums (baseline groundwater, solid waste and liquid wastes) are quite similar. Additionally, the report indicated that the constituents found to exceed the relevant screening levels for each of the three mediums are also similar. Also, most of the sources are located within the dewatered area, directing any contaminants towards the active mining areas. The report concluded that effects of sources on the groundwater environment are likely to be negligible and are unlikely to be observed in samples as the chemical signatures of the different mediums are so similar. WRDs and Pollution Control Dams are therefore not considered a significant risk on site.</p> <p>The latest groundwater monitoring report of April 2019 also stated that none of the variables listed in the IWUL Groundwater Resource (Table 5 – Appendix IV of the IWUL) exceeded the specified limits at any of the sampled localities.</p>	Site observations GPT Waste Characterisation 2017	3	3	No further recommendations.	-
	Dirty water will be contained in fit-for-purpose designed facilities, which will limit infiltration of contaminated water to the groundwater.	All water on site, except for the Slimes Return Water Dam are stored in tanks. The new Storm Water Dam North which is currently being constructed is a lined facility.	Site observations Aquatico Water Monitoring Report, April 2019 GPT, Waste Characterisation and Groundwater Monitoring Network Audit, 2017	3	3	The mine should continue with the water monitoring programme. Should contamination be detected, measures to mitigate this must be implemented.	SHEQ Department
	Boreholes will be monitored for groundwater level and quality to assess the	Compliant, a hydrocensus was undertaken in 2013 to determine the groundwater levels in the area. A detailed groundwater monitoring programme has been developed and has also been audited by GPT during 2016. This report has recommended the	Site observations GPT Evaluation of Monitoring Network, 2016	3	3	No further recommendations.	-

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
	impacts on the groundwater due to the taking of water from the groundwater resources.	<p>drilling of several additional monitoring boreholes. A real time impact monitoring system is implemented indicating the groundwater levels hourly.</p> <p>The numerical model was also updated during 2017 to identify the current groundwater conditions. A risk report was also undertaken by GPT to determine the impact of the mine residue facilities on groundwater resources.</p> <p>In addition to this, the WUL, 2018 commits the Licence Holder to optimise the drilling programme and adhere to various conditions, such as specific monitoring locations around Workshops, Residue Deposits, etc. The mine has contracted GPT to assess the WUL, 2018 conditions and provide input on amendments required to the water monitoring programme.</p> <p>According to the latest water quality report by Aquatico for April 2019 the current Beeshoek Mine Water Monitoring Programme consists of two major components of monitoring:</p> <ol style="list-style-type: none"> 1. Surface water monitoring – Monthly frequency 2. Groundwater monitoring – Quarterly frequency <p>The monitoring network comprises of the following: Potable water (6 localities) and Process water (2 localities) while the groundwater monitoring network consists of 11 monitoring boreholes. All samples are analysed by Aquatico, at their SANAS Accredited Testing Laboratory, No T0685.</p>	<p>GPT Critical Evaluation of the Groundwater Quality Monitoring Network at Beeshoek Mine and the development of Groundwater Related Groundwater Risk Assessment, April 2017</p> <p>Updated numerical model of the predicted groundwater drawdown resulting from mining of the Village Pit at Beeshoek Mine, July 2017</p> <p>WUL, 2018</p> <p>Aquatico Water Monitoring Report, April 2019</p>				
	The results of the water quality monitoring will be used to verify the rate of movement of the groundwater pollution plume. Should it be indicated by a suitably qualified person that the yield and quality of groundwater available to surrounding users are affected due to the proposed activities, an alternative water resource will be provided to replace the loss.	Compliant.	<p>GPT Critical Evaluation of the Groundwater Quality Monitoring Network at Beeshoek Mine and the development of Groundwater Related EMPs, April 2016</p> <p>GPT Groundwater Risk Assessment, April 2017</p> <p>GPT Updated numerical model of the predicted groundwater drawdown resulting from mining of the Village Pit at Beeshoek Mine, July 2017</p>	3	3	The mine should continue with the water monitoring programme. Should contamination be detected, measures to mitigate this must be implemented.	SHEQ Department



		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
	Due to the shortage of water in the area, the mining operations will operate with a closed water circuit (reuse and recycling), to conserve water effectively, hence no water will be discharged into the surrounding environment.	<p>Water is managed in terms of the approved WUL. These practices are implemented to reuse water as far as practically possible. Water from the pits are stored into tanks, which are linked to the plant process. This is important as the Slimes Dam should not be utilised as a water storage facility. Slimes from the Plant Thickener in return is pumped to the Slimes Dam and beached water is returned to the Thickener. Water from the Thickener is also pumped to the Clarifier for reuse in the Plant process water circuit.</p> <p>The Slimes Dam is currently being formalised to optimise operational aspects in terms of beaching. For this purpose, a ring feed system has been implemented and the Return Water Dam has formalised to optimise water circulation in the system.</p> <p>Some concerns observed during the site visit include:</p> <ul style="list-style-type: none"> • Overflow at the Jig Plant where pumps are located. The pump was operating, however there is no specific, effective bund present and the area cannot accommodate the volumes of water. Water is discharging on open ground, forming gulleys and then entering into a sump from where water is channelled to the settling dams, however water is also discharging into uncontained area. A pipe was also observed, where water is pumped from the Jig Plant into the uncontained area and no longer overflows. This area must be investigated in terms of containment capacity. • A repeat finding from the previous two years (2017 and 2018) is the water management around the Clarifier. Water around the pumps at the Thickener is channelled with a pipe into the open area around the Clarifier, creating erosion on the slopes, already visible from the road between the Thickener and the Clarifier. This has also resulted in the area around the Clarifier becoming a wet marshy area. A berm has been placed around the Clarifier to contain water, but water is still running off beyond this berm. The pump at the Clarifier seems to not be capable of managing the volumes of water present. Four new water tanks area planned in this area. Water runoff forms gulleys and reports to a sump downgradient which connects to the downgradient settlers. • The Wash and Screen Sump receives water from the downgradient settlers. This sump is not formally bunded and highly silted. It is not clear whether the pump can operate with the volume of silt present. Leaks from the upgradient valves are present and reporting water to this sump area. 	<p>Site observations. Basic Assessment Report, 2016 WUL 2018, Reference 10/D73A/ABGJ/2592 (21 August 2018)</p>	0	3	<p>The capacity and likely the operational procedures (i.e. potential decant of the Thickener during shutdown and/or maintenance periods) of the containment facilities at the plant area should be investigated to avoid overflows during maintenance schedules and should be undertaken in line with the current storm water management plan.</p> <p>A detailed study is recommended to manage water in the specific areas in and around the Plant area.</p> <p>It is recommended that measures be implemented to prohibit any uncontained discharges into the environment. If possible, this water must be reverted back to the mine's internal water management circuit.</p>	Engineering and SHEQ Departments



		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
		<ul style="list-style-type: none"> At the North TMM Workshop, a large portion of the Workshop area is surfaced; all vehicles being maintained during the site visit was maintained on the surfaced area. The surfaced area is however not bunded and any runoff will still be uncontained or run into the channel from where it is discharged into the open environment on the other side of the access road near the railway line. Also at the North TMM Workshop, a circular area is present in the eastern portion of the Workshop (east of the skips) which is not surfaced. Broken down vehicles and a diesel tank are stored here, and spills are present. At the tank, the use of absorbents was present. It should be noted that the incorrect absorbents for water systems are used in this area - not the ones issued by the SHEQ Department of surface contamination. The absorbents used on open soils were not for the purpose of soils remediation, but rather for hard surfaces and fluids, resulting in the absorbents being windblown and not effective. <p>All of the above are contributing to the degrading of the integrity of the downgradient storm water management system.</p> <p>Another area of concern is at the North Mine Vehicle Workshop Area. The dirty water in this area drains from the north into an easterly channel, which discharges through a culvert into the Transnet Servitude. The mine has implemented action measures to improve the surfacing around the workshop with orders in place. Although a large surfaced area is present, the dirty water from the workshop is washed off with a pressure hose. There is no cut-off channel in place to capture the dirty water, which then runs into the uncontained area.</p> <p>A new Storm Water Dam North is currently being constructed. This facility should assist in improving water management and containment around the Plant. The mine is currently also constructing a silt trap upgradient of the Storm Water Dam North.</p>					
Deterioration in Air Quality	Dust control measures in the form of slope stability and vegetation (self-succession will be encouraged) will be implemented.	<p>Due to the slope of the WRDs, erosion was present on the Village WRD. Erosion was also present on the rehabilitated slopes of the HH WRD. The disposal strategy on site does not allow for the development of an environmentally stable slope (management of water erosion).</p> <p>WRDs already rehabilitated, such as the West Pit WRD, are in good condition.</p>	<p>Site observations</p> <p>Dustwatch Monitoring Report, May to June 2019.</p>	Dup	Dup	<p>Erosion dissipation must be implemented on the side slopes of rehabilitated WRDs.</p> <p>Once the designs of the WRDs have been finalised by the Survey Department, the disposal strategy for waste</p>	Mining and Environmental Departments

BEESHOEK IRON ORE MINE 2019 EMP PERFORMANCE ASSESSMENT

Departmental Ref: NC 30/5/1/2/3/2/1/223EM

Project Ref: 21912

Version: Final

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
		Based on the dust monitoring reports, no dust emission concerns have been raised.				rock deposition should be revisited to dispose of the material with the closure footprint and slope in mind. It is recommended that a Code of Practice for the WRDs be developed to assist in this process.	
	Should self-succesion not take place the mine will commit to a vegetation strategy.	Self-succesion on shaped areas at North Mine (HL WRD and historic opencast pit backfilled area) and South Mine (old pit backfilled areas and the West WRD) has been successful.	Site observations	3	3	The success of the rehabilitation on the HH WRD and the East Pit WRD must be monitored to ensure that self-succesion is established. Where self-succesion does not take place, the mine has to investigate a seed mix which could be utilised for the purposes of revegetation.	SHEQ Department
Impairment of Visual Character	Dust control measures in the form of slope stability and vegetation (self-succesion will be encouraged) will be implemented.	Self-succesion on shaped areas on North Mine (HL WRD and historic opencast pit backfilled area) and South Mine (old pit backfilled areas and the West WRD) has been successful.	Site observations Dustwatch Monitoring Report, May to June 2019	Dup	Dup	No further recommendations.	SHEQ Department
	Should self-succesion not take place the mine will commit to a vegetation strategy.	Self-succesion on shaped areas at North Mine (HL WRD and historic opencast pit backfilled area) and South Mine (old pit backfilled areas and the West WRD) has been successful.	Site observations	Dup	Dup	Where self-succesion does not take place, the mine must investigate a seed mix which could be utilised for the purposes of revegetation.	SHEQ Department
	Waste rock and mine residue dump heights will be restricted and will only be placed within the mine area boundaries. Conduct outer slope modification and/or provide outer shells to the existing mine residue dumps.	The heights of stockpiles are not stipulated in the EMP. The only stipulation is found for the Village WRD in its EMP, approved March 2014. This height is at 45m. The Licence Holder is in the process of designing the WRDs for a height of approximately 120m. This will be applied for in terms of a new Environmental Authorisation Process which has commenced in 2019.	Site observations Environmental Authorisation and associated EMP, 2014 (BF WRD)	2	3	The changes required on site should be applied for in terms of the relevant Environmental and Water Use Authorisation requirements.	SHEQ Department
	Natural vegetation re-establishment on the dam walls and in the area adjacent to the	No areas of concern were observed around the Slimes Dam. The slope of the facility is gradual and suitable for self-succesion.	Site observations	3	3	No recommendations.	-



	Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]						
	dams will be encouraged.					
	Re-vegetated areas will be maintained by means of regular watering, weed controls and cattle-grazing exclusion until the vegetation has settled to ensure that it is stable, and that erosion does not occur	The watering of WRDs in this area is unpractical due to the scarcity thereof. Past rehabilitation practices have proven that with the correct slope self-succession can be achieved.	Site Observations	TBA	TBA	Watering of WRD is not appropriate due the mine being located in a water scarce region. Therefore, it could be requested for amendment in terms of Regulation 34. It is recommended that this condition be revised as part of the new EIA Process and a Regulation 29 Part 1 amendment. SHEQ Department
Noise	No impact envisaged	No condition to assess.	-	-	No recommendations.	-
Socio - Economic	No impact envisaged	No condition to assess.	-	-	No recommendations.	-
Operational Phase - Transport System and Surrounding Area: The transport systems associated with the mine includes the following:						
<ul style="list-style-type: none"> • Road (Mine access roads and the R385 from Postmasburg to Olifantshoek); • Railway Line (Sishen to Postmasburg); and • Conveyor. 						
Geology	No impact envisaged	No condition to assess.	-	-	No recommendations.	-
Climate	No impact envisaged	No condition to assess.	-	-	No recommendations.	-
Topography	No impact envisaged	No condition to assess.	-	-	No recommendations.	-
Impact of transport on the land use in the area.	The conveyors and rail are all within the mine site, so no impact is envisaged.	No condition to assess.	-	-	No recommendations.	-
Soil Contamination	Vehicles / machinery will be regularly monitored and maintained. Maintenance programmes will be established and implemented.	Maintenance programmes are in place on site and managed by the Engineers. Maintenance is undertaken at the TMM Workshops at both North and South Mines. Noise is assessed as part of the operational aspects and specifically as part of hygiene management on site (in terms of the Mine Health and Safety Act, 1996). No areas of concern were observed during the site visit.	Site observations	Dup	Dup	No recommendations.
	If spills do occur and soils become contaminated, the appropriate remedial measures will be identified in consultation with an appropriately qualified specialist.	Noted, no areas of concern have been observed on the main roads, railway line or along the conveyor.	Site observations	3	3	The manner in which hydrocarbon management and awareness have been created must be enforced throughout the life of mine. SHEQ, Engineering and Production Departments

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
	If necessary, the polluted soils will be remediated with a spill-kit. After remediation of the contaminated soils, the affected areas will be rehabilitated.	The Licence Holder is aware of this condition.	Site observations	T/N	T/N	No recommendations.	-
Loss of Vegetation	Beeshoek will establish and implement a regular weed-control programme to eradicate existing invader plants and to prevent new invasions during ongoing mining operation and decommissioning.	Weeds were limited around the conveyor areas. During prior Environmental Audits (2017) it was indicated that concerns have been raised by Kolomela regarding the spread of weeds, specifically fountain grass, into the Kolomela mining area south of Beeshoek. A document was developed: Biodiversity Control, 2017 which details various areas (nine in total) which have been earmarked for weed eradication. Although alien and invasive plant species were visible on site, the mine has commenced with the implementation of eradication processes.	Site observations Biodiversity Control, 21 November 2017 Environmental Audit, 2017 & 2018	2	3	The weed eradication programme should be implemented and maintained as part of a scheduled maintenance programme on site.	SHEQ Department
	The weed management programme must continue for three (3) years after closure.	Noted, the mine is still operational.	Site observations	Dup	Dup		
Disturbance to animal habitats	Clearly marked signs will be erected along the transportation roads to create awareness of animals crossing the roads.	Compliant	Site observations	Dup	Dup	No further recommendation.	-
	A clearly marked and enforced vehicle speed will be implemented on the internal mine and transportation roads.	Compliant, road signs are present on site.	Site observations	Dup	Dup	No recommendations.	-
Contamination of Surface Water	Vehicles and conveyor belts will be maintained effectively.	Maintenance programmes are in place on site and managed by the Engineers. Maintenance is undertaken at the TMM Workshops at both North and South Mines.	Site observations	Dup	Dup	Hydrocarbon management and awareness has been created must be enforced throughout the life of mine.	SHEQ, Engineering and Production Departments
	Railways and conveyors will be maintained and constructed with appropriate drains, levelling and surfacing to ensure adequate drainage.	Ongoing maintenance is taking place on site. The conveyors where it exit the crushers (transfer points) are located within contained areas with sumps capturing runoff. No areas of concern were observed.	Site observations	3	3	No recommendations.	-

	Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility	
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
	Topsoil and natural vegetation self-succession will be used in the vegetating of the berm, rail, conveyor and rail track embankments.	Self-succession is taking place successfully on site.	Site observations	3	3	Where self-succession does not take place, the mine must investigate a seed mix which could be utilised for the purposes of revegetation.	SHEQ Department
	Culverts will be maintained and be kept clean to ensure that no obstructions occur should a 1:100-year flood occur.	Culverts present at the conveyor/ road crossing to the Plant area were in good order.	Site observations	3	3	No recommendations.	-
Siltation of Watercourses	Storm water controls at all sites of mine infrastructure should be established.	The conveyor crossing and roads managed by the mine are not near any watercourses. No siltation of watercourses can occur from the operation of these activities.	Site observations	T/N	T/N	No recommendations.	-
	A berm will be constructed down gradient of the mining infrastructure to prevent wash down soil from entering the sensitive surface water areas.	Berms are present downgradient of the Plant area, as well as a constructed dirty water channel. This system was recently cleaned.	Site observations	3	3	No recommendations.	-
	Clean water will be diverted away from the dirty water by the use of berms and cut off trenches	The entire Plant area, as well as the areas where the conveyors are located, are considered dirty water areas. The conveyors (at transfer points) are mostly located in contained dirty areas. One area of concern is at the North Mine Vehicle Workshop Area. The dirty water in this area drains from the north into an easterly channel, which discharges through a culvert into the Transnet Servitude. This finding was initially raised during the 2017 external audit. The clean water separation concern is mostly around the WRDs which have been assessed in previous sections.	Site observations	T/N	T/N	No recommendations.	-
	The dirty water systems will be constructed to allow for a 1:50 year storm event.	At the Plant area, where most of the conveyors are located, various areas of concern were observed in terms of dirty water management, which include: • Overflow at the Jig Plant where pumps are located. The pump was operating, however there is no specific, effective bund present and the area cannot accommodate the volumes of water. Water is discharging on open ground, forming gulleys and then entering into a sump from where water is channelled to the settling dams, however water is also discharging into	Site observations GN704 Audit Report, 2019	0	3	The operational procedures (i.e. potential decant of the Thickener during shutdown and/or maintenance periods) of the containment facilities at the Plant area should be investigated to avoid overflows during maintenance schedules and should be undertaken in	Engineering and SHEQ Departments

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
		<p>uncontained area. A pipe was also observed, where water is pumped from the Jig Plant into the uncontained area and no longer overflows. This area must be investigated in terms of containment capacity.</p> <ul style="list-style-type: none"> • A repeat finding from the previous two years (2017 and 2018) is the water management around the Clarifier. Water around the pumps at the Thickener is channelled with a pipe into the open area around the Clarifier, creating erosion on the slopes, already visible from the road between the Thickener and the Clarifier. This has also resulted in the area around the Clarifier becoming a wet marshy area. A berm has been placed around the Clarifier to contain water, but water is still running off beyond this berm. The pump at the Clarifier seems to not be capable of managing the volumes of water present. Four new water tanks area planned in this area. Water runoff forms gulleys and reports to a sump downgradient which connects to the downgradient settlers. • The Wash and Screen Sump receives water from the downgradient settlers. This sump is not formally bunded and highly silted. It is not clear whether the pump can operate with the volume of silt present. Leaks from the upgradient valves are present and reporting water to this sump area. • At the North TMM Workshop, a large portion of the Workshop area is surfaced; all vehicles being maintained during the site visit was maintained on the surfaced area. The surfaced area is however not bunded and any runoff will still be uncontained or run into the channel from where it is discharged into the open environment on the other side of the access road near the railway line. <p>Similar observations were made in the GN704 Audit Report, 2019.</p>				<p>line with the current storm water management plan.</p> <p>The implementation of the storm water management measures must be undertaken in terms of the approved Storm Water Management Plan.</p>	
	<p>The clean water systems (including the diversion channel), as well as the mine dirty water dams will have a minimum freeboard of 0.8m above full supply, to ensure that no spillages occur.</p>	<p>At the Plant area, where most of the conveyors are located, various areas of concern were observed in terms of dirty water management, especially the capacity of the storage areas, which include:</p> <ul style="list-style-type: none"> • Overflow at the Jig Plant where pumps are located. The pump was operating, however there is no specific, effective bund present and the area cannot accommodate the volumes of water. Water is discharging on open ground, forming gulleys and then entering into a sump from where water is channelled to the settling dams, however water is also discharging into uncontained area. A pipe was also observed, where water is pumped from the Jig Plant into the uncontained area and no 	<p>GN704 Audit, 2019 Site Observations</p>	<p>Dup</p>	<p>Dup</p>	<p>Implement the recommendations of the GN704 Audit, 2019. The capacity and likely the operational procedures (i.e. potential decant of the Thickener during shutdown and/or maintenance periods) of the containment facilities at the Plant area should be investigated to avoid overflows during maintenance schedules</p>	<p>Engineering and SHEQ Departments</p>

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
		<p>longer overflows. This area must be investigated in terms of containment capacity.</p> <ul style="list-style-type: none"> • A repeat finding from the previous two years (2017 and 2018) is the water management around the Clarifier. Water around the pumps at the Thickener is channelled with a pipe into the open area around the Clarifier, creating erosion on the slopes, already visible from the road between the Thickener and the Clarifier. This has also resulted in the area around the Clarifier becoming a wet marshy area. A berm has been placed around the Clarifier to contain water, but water is still running off beyond this berm. The pump at the Clarifier seems to not be capable of managing the volumes of water present. Four new water tanks area planned in this area. Water runoff forms gulleys and reports to a sump downgradient which connects to the downgradient settlers. • The Wash and Screen Sump receives water from the downgradient settlers. This sump is not formally bunded and highly silted. It is not clear whether the pump can operate with the volume of silt present. Leaks from the upgradient valves are present and reporting water to this sump area. • At the North TMM Workshop, a large portion of the Workshop area is surfaced; all vehicles being maintained during the site visit was maintained on the surfaced area. The surfaced area is however not bunded and any runoff will still be uncontained or run into the channel from where it is discharged into the open environment on the other side of the access road near the railway line. <p>Similar observations were made in the GN704 Audit Report, 2019.</p>				<p>and should be undertaken in line with the current storm water management plan.</p> <p>A detailed study is recommended to manage water in the specific areas in and around the Plant area, for instance, at the secondary and tertiary crusher, the stockpile area and the North Vehicle Workshop. It is understood that the facilities are old, but measures are required to contain water in specific area and reuse these where possible to decrease the storm water runoff downgradient.</p>	
	Disturbed and contaminated surfaces will be landscaped and vegetated to promote even runoff and reduced erosion potential.	No areas of concern were observed around the conveyor or railway areas.	Site observations	3	3	No recommendations.	-
Groundwater	Due to the depth of the groundwater in the area and the fact that the mine surfaces have been compacted no impacts are envisaged.	No condition to assess.	-	N/A	N/A	No recommendations.	-

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
Dispersion of Dust	Haulage roads will be wet on a regular basis to prevent dust emissions.	Compliant. During the site inspection wet suppression was observed. Dustwatch is undertaking the dust monitoring and no emission concerns have been raised in the latest monitoring reports.	Site observations Dustwatch Monitoring Report, May to June 2019.	Dup	Dup	No recommendations.	-
	Tarpaulins will be placed over all vehicles (trucks and rail) transporting product.	Iron ore is not being transported via trucks at this stage, but rather via trains.	Site observations	Dup	Dup	No recommendations.	-
	All denuded areas will be re-vegetated	All roads are currently operational. Rehabilitation practices have proven successful at the mine with self-succession well established. In terms of the closure commitments in this EMP Alignment, 2009, self-succession should be promoted, where after if not successful, specific revegetation practices must be implemented.	Site observations	Dup	Dup	Where self-succession does not take place, the mine must investigate a seed mix which could be utilised for the purposes of revegetation. The weed eradication programme should be implemented as part of a scheduled maintenance programme on site.	SHEQ Department
	Roads will be treated or surfaced in order to reduce the impact of dust on the aesthetics of the surrounding area.	Wet suppression is being undertaken on site. No areas of concern were observed during the site visit. In addition to this the mine is investigating the implementation of a dust suppressant (currently supplied by E-CAT; I-CAT in Postmasburg), which is being successfully used on the South Mine.	Site observations	3	3	No recommendations.	-
	During operational phase of the mine, haulage roads will be treated with dust suppression techniques such as wet to reduce dust creation.	Wet suppression is being undertaken on site. No areas of concern were observed during the site visit. In addition to this the mine is investigating the implementation of a dust suppressant (currently supplied by E-CAT; I-CAT in Postmasburg), which is being successfully used on the South Mine.	Site observations	3	3	No recommendations.	-
Visual impacts of the transport routes on the surrounding environment.	Due to the presence of the existing transportation in the area, no further impacts are envisaged.	No condition to assess.	-	-	-	No recommendations.	-
Archaeology	No impact envisaged	No condition to assess.	-	-	-	No recommendations.	-
Increase in Noise Levels	Machinery and vehicles will be well maintained to prevent excessive noise and to comply with national and provincial regulations.	Maintenance programmes are in place on site and managed by the Engineers. Maintenance is undertaken at the TMM Workshops at both North and South Mines. Noise is assessed as part of the operational aspects and specifically as part of hygiene management on site (in terms of	Site observations	3	3	No recommendations.	-

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
		the Mine Health and Safety Act, 1996). No areas of concern were observed during the site visit.					
	All employees working within the area will be issued with protective gear.	Signs indicating the required PPE are present on site. During the site inspection no areas of concern were observed in terms of the use of PPE.	Site observations	3	3	No recommendations.	-
	All vehicles will have mufflers to minimise noise emissions.	Maintenance programmes are in place on site and managed by the Engineers. Maintenance is undertaken at the TMM Workshops at both North and South Mines. Noise is assessed as part of the operational aspects and specifically as part of hygiene management on site (in terms of the Mine Health and Safety Act, 1996). No areas of concern were observed during the site visit.	Site observations	TBA	TBA	It is recommended that this condition be revised as part of the current EIA Process. It is recommended that mufflers only be prescribed should noise become a concern on site. The mine is in an area characterised by mining activities.	SHEQ Department
	Where noise becomes a nuisance noise management measures will be investigated and implemented to address these	Ad hoc and area-specific noise monitoring is being undertaken as part of the function of the hygiene department. Due to the location of the mine and the fact that there are no nearby sensitive receptors, a detailed noise monitoring programme is not required and for that reason ambient (environmental) noise monitoring is not being undertaken but rather considered in terms of hygiene management on the mine.	Site observations	3	3	Should the noise readings indicate that the mine is resulting in excess noise levels a detailed noise monitoring programme should be implemented.	SHEQ and hygiene Department
Socio-Economic	No impact envisaged.	No condition to assess.	-	-	-	No recommendations.	-
Ancillary Surface Infrastructure							
Geology	No impact envisaged	No condition to assess.	-	-	-	No recommendations.	-
Climate	No impact envisaged	No condition to assess.	-	-	-	No recommendations.	-
Topography	The impact of infrastructure on site is established and will not change during the remaining operational life of mine.	No condition to assess.	-	-	-	No recommendations.	-
Change of land use	No management measures required.	No condition to assess.	-	-	-	No recommendations.	-
Loss of soils	The re-establishment of natural vegetation will be encouraged. Should re-establishment not take place, re-seeding options will be investigated.	Rehabilitation is currently undertaken at the Old Village Farmhouse Area and the Quad Bike Area. Self-succession will be encouraged in this area.	Site observations	3	3	Where self-succession does not take place, the mine must investigate a seed mix which could be utilised for the purposes of revegetation.	SHEQ Department
	Re-vegetated areas will be maintained by means	The watering of WRDs in this area is unpractical due to the scarcity of water in the region. Past rehabilitation practices have	Site Observations	TBA	TBA	Watering of WRD is not appropriate due the mine being	SHEQ Department



		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
	of regular watering, weed controls and cattle-grazing exclusion until the vegetation has settled to ensure that it is stable, and that erosion does not occur.	proven that with the correct slope self-succession can be achieved.				located in a water scarce region. Therefore, it could be requested for amendment in terms of Regulation 34. It is recommended that this condition be revised as part of the new EIA Process and a Regulation 29 Part 1 amendment.	
	Where disturbed areas cannot be re-vegetated during the life of operations, appropriate measure will be taken to control erosion. These will include grading of surfaces to prevent rapid run-off of storm water and / or the use of energy dissipaters.	Rehabilitation is currently undertaken at the Old Village Farmhouse Area and the Quad Bike Area. Self-succession will be encouraged in this area.	Site observations	3	3	Where self-succession does not take place, the mine must investigate a seed mix which could be utilised for the purposes of revegetation. The effectiveness of rehabilitation should be measured regularly. Where erosion is visible measures should be implemented to rectify this.	SHEQ Department
Creation of domestic waste and the incorrect disposal thereof	An appropriate waste management plan will be implemented. Beeshoek utilises an existing quarry on the mine site as a general waste disposal site. Only domestic and general waste will be disposed of in this site, no industrial or hazardous waste will be dumped on this site.	Overall general waste and environmental management at the Storm Water Dam North can be commended, with no areas of concern observed. All areas are clearly demarcated, and waste management practices are in place. When considering the overall integrated Waste Management Procedure implemented at the mine, it was found that a waste management strategy is in place on site, with three (3) Waste Management Procedures available on site: * Waste Management Procedure; * Waste Management Service Provider Procedure; and * Landfill Site Management Procedure. General Waste Removal and Disposal: * Interwaste (Pty) Ltd (Interwaste) removes all material from the mine to the domestic Landfill site. The Landfill Site Permit states that it can receive garden waste, which is believed to be an administrative error, and should be rectified to fulfil the purposes of the mine. The mine has consulted with the Northern Cape Department of Environment and Nature Conservation (NCDENC) whereby it was agreed that the	Waste Management Service Provider Procedure Version 1.9) Landfill Site Management Procedure Waste Management Procedure dated 5 June 2018 Version 1.9 Site observations Waste Management Procedure: Ref SP_TEC_21022017_11908 Version 2, 21 February 2017 Email communication between the mine and the NCDENC dated 27 August 2019. Beeshoek Internal WML Audit, May 2019	3	3	No recommendations.	-

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
		<p>reference to "rubble" encompasses all domestic waste as well. This was confirmed by the NCDENC via email.</p> <ul style="list-style-type: none"> * All hazardous material is removed to Holfontein Hazardous Waste Disposal Facility (Holfontein) by Interwaste. * All used oils are removed by Olegra Oil (Pty) Ltd (Olegra) to PPC Lime Acres. According to an assessment at a neighbouring mine this facility is permitted (Limeacres AEL Licence: 23/4/2/58). The complete permit is not available at Beeshoek Mine, only a cover letter. <p>The following key observations were made:</p> <ul style="list-style-type: none"> * An internal audit has been undertaken on the Environmental Authorisation of the Beeshoek Landfill Site WML. * Interwaste GLB+ Landfill Site WML (FG Landfill Site) (original and amendment): Reference Gaut 006/12-13/W0003 (December 2012). The original WML was issued on 20 November 2011. Condition 3.1(h) of the WML states that the WML must be renewed within a period for four years from the date of issue (no proof thereof is available). * Interwaste Germiston Depot H:H Waste Storage and Treatment Facility. This permit is still valid. * Interwaste Waste Transporter of General and Hazardous Waste. This permit is still valid. * Integrated Environmental Authorisation for Interwaste facility - Klinkerstene Ref: 17/04/A18/MP311/10/01 for the GLB+ class waste facility. Condition 5.12.10 of this Environmental Authorisation states that the Environmental Authorisation is valid for a period of 30 years and the holder must initiate a review process 5 years from the date of issue (27 May 2013). No proof that the review process has been initiated by the supplier is available on record to ensure the mine's duty of care. * Olegra is registered as an accredited Oil Collector by the Recycling Oil Saves the Environment (ROSE) Foundation with the Registration Number: RF025171. Note that this registration will lapse at the end of August 2019. * PPC Lie Acres is registered as an accredited Oil Processor by the ROSE Foundation with the Registration RF025185. Note that this registration will lapse at the end of August 2019. 	<p>GLB+ Landfill Site WML (FG Landfill Site) (original and amendment): Reference Gaut 006/12-13/W0003 (November 2011 and December 2012)</p> <p>InterWaste Germiston Depot H:H Waste Storage and Treatment Facility, Ref: 12/9/11/P/P99, dated 16 March 2009</p> <p>Interwaste Waste Transporter Registration Ref: GPT-00-030 (valid until 3 May 2020)</p> <p>Integrated Environmental Authorisation for Interwaste facility - Klinkerstene Ref: 17/04/A18/MP311/10/01 for the GLB+ class waste facility, dated 27 May 2013</p> <p>Olegra oil collector registration, Ref RF025171, valid until 31 August 2019</p> <p>PPC Lime Acres oil processor registration, Ref RF025185, valid until 31 August 2019</p>				
Loss of Vegetation	The weed eradication programme will be established and implemented.	<p>Weeds were limited around the conveyor areas.</p> <p>During prior Environmental Audits (2017) it was indicated that concerns have been raised by Kolomela regarding the spread of weeds, specifically fountain grass, into the Kolomela mining area</p>	<p>Site observations Biodiversity Control, 21 November 2017 Environmental Audit, 2017 & 2018</p>	Dup	Dup	The weed eradication programme should be implemented and maintained as part of a scheduled	SHEQ Department

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
		south of Beeshoek. A document was developed, namely Biodiversity Control, 2017, which details various areas (nine in total) which have been earmarked for weed eradication. Although alien and invasive species were visible on site, the mine has commenced with the implementation of eradication processes.				maintenance programme on site.	
Ecology Fauna	No impact envisaged	No condition to assess.	-	-	-	No recommendations.	-
Contamination of Surface Water	Ensure fuels, lubricants and chemicals for use in the workshop/ operational areas are stored in properly banded and protected areas.	<p>Overall the mine is effectively managing hazardous wastes. Bund walls for hazardous waste containment have been surveyed and each bund in labelled in terms of its capacity.</p> <p>During the site visit the following observations were made in terms of areas where hazardous waste are handled and or temporary stored:</p> <p>Lenfield Temporary Vehicle Parking: This area is not a demarcated area for vehicle servicing and no infrastructure is present to contain spills. Hydrocarbon spills were present.</p> <ul style="list-style-type: none"> • Booyesen Bore Laydown Area: This area is not a demarcated area for vehicle servicing and no infrastructure is present to contain spills. The area is also used for minor vehicle maintenance as the formal workshop is located off site. A large presence of hydrocarbon spills was observed – after this was pointed out by the auditor, the personnel immediately started with clean up processes. • South Mine Engineering/ Crusher Workshop: 1) Hazardous waste skips have covers but are not closed; these are also not located in banded areas. If covers are not utilised, overflows can occur outside of contained areas. 2) Crusher slings that are contaminated with hydrocarbons are stored uncontained in various areas within this workshop area. Some are stored on wooden pallets, but not contained, which could lead to pollution. • South Mine Contaminated Soil Sump: Overfull with spills outside of the contained area. • South Mine Primary Crusher: At the hydraulic oil bund spills were present on the outside of the banded area and also over the sides of the bund wall. This area is not contained, but any spills will fall to the lower levels where the conveyor exits the crusher. This area is contained with a sump present. • South Bulk Diesel Storage Area: 1) On the outlet side of the banded areas full drip trays were stored in uncontained areas. 2) Various spills were present in this area on unsurfaced areas. According to the site interviews this could be due to the water truck spraying hydrocarbons from the surfaced areas. This is 	Site observations.	1	3	Areas where hazardous waste or materials are handled should be contained.	SHEQ Department.



		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
		<p>however unlikely when considering the spill and is more likely to be the result of a drip tray which toppled over. It is recommended that the surfaced area in this vicinity be extended towards the bunded area and sloped towards the existing grid/ sump area.</p> <ul style="list-style-type: none"> • South Old Oil Storage: As per the previous audit, the outlet pipe where old oils are pumped from the tanks are not located in a bunded area, and the presence of spills were observed. A bunded area should be constructed around this area. • North Primary Crusher Workshop: 1) Hazardous waste skips are not covered although lids are present. The skips are not optimally used as waste is not pushed to the centre of the skip, creating the sense of overfilling on the sides. Some hydrocarbon spills are present around the skips. 2) Various oil (Total) drums are present in this area, but not in bunded areas. 3) Bunded areas are available in this area but not used. • Sculpting, buffing and screening area: The bund wall is broken (with a hole therein) to allow water to discharge through an informal channel (unlined) towards a downgradient sump. • The Wash and Screen sump receives water from the downgradient settlers. This sump is not formally bunded and is highly silted. It is not clear whether the pump can operate with the volume of silt present. Leaks from the upgradient valves are present and reporting water to this sump area. • Jig Maintenance Workshop: 1) Bunds in this area are overused, with spills around this area present. 2) The bund wall indicates seepage which raises an integrity concern. The area may need to be waterproofed from the inside. • Salvage Yard: 1) A surfaced area for skips has been constructed. 2) A plan is in place to undertake formal sorting in this area – space for such separation will have to be created. 3) At the roofed bunded area to the west of the bund, some diesel drums are stored on drip trays (drum carriers) but not in the contained area; if these topple over spills will occur. Small spills are present around this area. 4) The furthest right bunded area surface area is broken with paint containers stored in this area. 5) The overall area in the centre indicates some haphazard storage, but is overall in good condition. • North TMM Workshop: A circular area is present on the eastern portion of the workshop (east of the skips) which is not surfaced. Breakdown vehicles and a diesel tank are stored here, and spills are present. At the tank the use of absorbents was noted. The absorbents used here were however not for the purpose of soils remediation, but rather for hard surfaces and 					

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
		fluids, resulting in the absorbents being windblown. In general spill kits are present on site, but not utilised effectively in all areas. Containment areas or infrastructure are present on site, but not used as these should. Measures are therefore available, but implementation should receive attention.					
	Surface water quality will be monitored to ensure that stipulated limits are not contravened	<p>According to the latest water quality report by Aquatico for April 2019 the current Beeshoek Mine Water Monitoring Programme consists of two major components of monitoring:</p> <ol style="list-style-type: none"> 1. Surface water monitoring – Monthly frequency 2. Groundwater monitoring – Quarterly frequency <p>The WUL, 2018 makes no specific requirements for surface water monitoring. However, the WUL makes specific reference to the monitoring which must be undertaken in line with the "reports" and specifically the critical evaluation of the monitoring network. The WUL amendment application in support of the issued 2018 WUL, submitted to the DWS committed to the following monitoring programme: East Pit (when water is available); Village Pit (when water is available), BN Pit; EV1 (these four in line with the 2013 WUL) and Storm Water Dam North. However, the WUL issued did not state any surface water monitoring requirements.</p> <p>The current surface water monitoring network comprises of the following: Potable water (6 localities) and Process water (2 localities) while the groundwater monitoring consists of 11 monitoring boreholes. All samples are analysed by Aquatico, in their SANAS Accredited Testing Laboratory, No T0685.</p>	WUL, 2018 Aquatico Water Monitoring Report, April 2019	TBA	TBA	<p>It is recommended that this condition be amended in line with Regulation 29 Part 1 which will form part of the Environmental Authorisation Process scheduled for 2019.</p> <p>A monitoring network should be developed based on the studies to be undertaken for the new WULA.</p>	SHEQ Department
	Vehicles will be maintained effectively.	<p>Overall the mine is effectively managing hazardous wastes. Bund walls for hazardous waste containment have been surveyed and each bund in labelled in terms of its capacity.</p> <p>During the site visit the following observations were made in terms of spills from vehicles:</p> <ul style="list-style-type: none"> • Lenfield Temporary Vehicle Parking: This area is not a demarcated area for vehicle servicing and no infrastructure is present to contain spills. Hydrocarbon spills were present. • Booyesen Bore Laydown Area: This area is not a demarcated area for vehicle servicing and no infrastructure is present to contain spills. The area is also used for minor vehicle maintenance as the formal workshop is off site. A large presence of hydrocarbon spills was observed – after this was pointed out by the auditor, the personnel immediately started with clean up processes. 	Site observations	0	3	Were vehicles show presence of leaks or potential spills, these must be parked on contained areas.	SHEQ Department

	Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]						
	<ul style="list-style-type: none"> North TMM Workshop: A circular area is present on the eastern portion of the workshop (east of the skips) which is not surfaced. Breakdown vehicles and a diesel tank are stored here, and spills are present. 					
An appropriate waste management plan will be implemented.	<p>Overall general waste and environmental management at the Storm Water Dam North can be commended, with no areas of concern observed. All areas are clearly demarcated, and waste management practices are in place.</p> <p>When considering the overall integrated Waste Management Procedure implemented at the mine, it was found that a waste management strategy is in place on site, with three (3) Waste Management Procedures available on site:</p> <ul style="list-style-type: none"> * Waste Management Procedure; * Waste Management Service Provider Procedure; and * Landfill Site Management Procedure. <p>General Waste Removal and Disposal:</p> <ul style="list-style-type: none"> * Interwaste (Pty) Ltd (Interwaste) removes all material from the mine to the domestic Landfill site. The Landfill Site Permit states that it can receive garden waste, which is believed to be an administrative error, and should be rectified to fulfil the purposes of the mine. The mine has consulted with the Northern Cape Department of Environment and Nature Conservation (NCDENC) whereby it was agreed that the reference to "rubble" encompasses all domestic waste as well. This was confirmed by the NCDENC via email. * All hazardous material is removed to Holfontein Hazardous Waste Disposal Facility (Holfontein) by Interwaste. * All used oils are removed by Olegra Oil (Pty) Ltd (Olegra) to PPC Lime Acres. According to an assessment at a neighbouring mine this facility is permitted (Limeacres AEL Licence: 23/4/2/58). This permit is not available at Beeshoek Mine. <p>The following key observations were made:</p> <ul style="list-style-type: none"> * An internal audit has been undertaken on the Environmental Authorisation of the Beeshoek Landfill Site WML. * Interwaste GLB+ Landfill Site WML (FG Landfill Site) (original and amendment): Reference Gaut 006/12-13/W0003 (December 2012). The original WML was issued on 20 November 2011. Condition 3.1(h) of the WML states that the WML must be renewed within a period for four years from the date of issue (no proof thereof is available). 	<p>Waste Management Service Provider Procedure Version 1.9)</p> <p>Landfill Site Management Procedure</p> <p>Waste Management Procedure dated 5 June 2018 Version 1.9</p> <p>Site observations</p> <p>Waste Management Procedure: Ref SP_TEC_21022017_11908 Version 2, 21 February 2017</p> <p>Email communication between the mine and the NCDENC dated 27 August 2019.</p> <p>Beeshoek Internal WML Audit, May 2019</p> <p>GLB+ Landfill Site WML (FG Landfill Site) (original and amendment): Reference Gaut 006/12-13/W0003 (November 2011 and December 2012)</p> <p>InterWaste Germiston Depot H:H Waste Storage and Treatment Facility, Ref: 12/9/11/P/P99, dated 16 March 2009</p> <p>Interwaste Waste Transporter Registration Ref: GPT-00-030 (valid until 3 May 2020)</p> <p>Integrated Environmental Authorisation for Interwaste facility - Klinkerstene Ref: 17/04/A18/MP311/10/01 for the GLB+ class waste facility, dated 27 May 2013</p>	Dup	Dup	No recommendations.	-

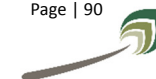
BEESHOEK IRON ORE MINE 2019 EMP PERFORMANCE ASSESSMENT

Departmental Ref: NC 30/5/1/2/3/2/1/223EM

Project Ref: 21912

Version: Final

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
		<ul style="list-style-type: none"> * Interwaste Germiston Depot H:H Waste Storage and Treatment Facility. This permit is still valid. * Interwaste Waste Transporter of General and Hazardous Waste. This permit is still valid. * Integrated Environmental Authorisation for Interwaste facility - Klinkerstene Ref: 17/04/A18/MP311/10/01 for the GLB+ class waste facility. Condition 5.12.10 of this Environmental Authorisation states that the Environmental Authorisation is valid for a period of 30 years and the holder must initiate a review process 5 years from the date of issue (27 May 2013). No proof that the review process has been initiated by the supplier is available on record to ensure the mine's duty of care. * Olegra is registered as an accredited Oil Collector by the Recycling Oil Saves the Environment (ROSE) Foundation with the Registration Number: RF025171. Note that this registration will lapse at the end of August 2019. * PPC Lie Acres is registered as an accredited Oil Processor by the ROSE Foundation with the Registration RF025185. Note that this registration will lapse at the end of August 2019. 	<p>Olegra oil collector registration, Ref RF025171, valid until 31 August 2019</p> <p>PPC Lime Acres oil processor registration, Ref RF025185, valid until 31 August 2019</p>				
Groundwater	Due to the depth of the groundwater in the area, no impacts are envisaged.	No condition to assess.	-	-	-	No recommendations.	-
Deterioration in Air Quality	Dust control measures will be implemented.	<p>According to the Air Quality Dispersion Modelling Study, 2018 for the mine, the largest source of particulate is vehicle entrainment from the mine roads. The report states that more than 90% of all Total Suspended Particulates (TSP) and PM10 emissions are attributed to the entrainment of dust by vehicles and 84% of the PM2.5 emissions. The report states that the entrainment of dust from the haul road from the Village Pit to the Village WRD accounts for 37% of the particulate emissions from roads and the haul road from East Pit to the East WRD accounts for 30% of the particulate emitted from haul roads. Crushing and screening is the second largest source of particulate emissions according to this report, but it is relatively small and accounts for only 5.2% of the total TSP and 5.2% of the total PM10 emissions.</p> <p>Dustwatch is undertaking the dust monitoring on site monthly and Aquatico is responsible for the water monitoring programme.</p> <p>According to the latest dust monitoring results undertaken by Dustwatch (3 May to 3 June 2019) all nine (9) monitoring points</p>	<p>Site observations</p> <p>Dustwatch Monitoring Report, May to June 2019.</p> <p>Air Quality Dispersion Modelling Study for the Beeshoek Iron Ore Mine, February 2018</p>	3	3	No recommendations.	-



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New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
		were compliant (below 1 200mg/m ² /day) for 2019 to date, and no exceedances during the year 2019 have yet been recorded.					
Impairment of Visual Character	The ancillary surface infrastructures are already in place on site, and the additional infrastructure required will be situated within the existing footprint areas.	No condition to assess.	-	-	-	No recommendations.	-
Archaeology	There is no mitigation for this impact as the chance for such sites having occurred within the developed footprint of the mines are low to none.	No condition to assess.	-	-	-	No recommendations.	-
Increase in Noise Levels	Implement operational controls on equipment used in the workshops, buildings etc. to reduce noise levels. The offices and workshops will generate normal amounts of noise which will be absorbed into the ambient noise in the area which is all within the mine residential area.	Maintenance programmes are in place on site and managed by the Engineers. Maintenance is undertaken at the TMM Workshops at both North and South Mines. No complaints have been received from surrounding stakeholders; an open channel of communication is maintained.	Site observations	3	3	No recommendations.	-
Impact of mine on neighbouring towns.	The Beeshoek Mine is located in an isolated area. Potential impacts to neighbouring towns are limited. Existing lines of communication exist between Beeshoek personnel and neighbouring community.	An open channel of communication is maintained. No concerns have been raised during the past year.	Site observations	3	3	No recommendations.	-
Environmental Monitoring and Environmental Audit Protocol							

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
Groundwater Monitoring	Bi-annual groundwater monitoring reports to be submitted to DWAF	The current Beeshoek Mine Water Monitoring Programme consists of two major components of monitoring: 1. Surface water monitoring – Monthly frequency 2. Groundwater monitoring – Quarterly frequency The Mine’s water monitoring results are submitted to the Tshiping WUA as well as the DWS.	Aquatico April 2019 Quarterly Report. DWS Letter of Acknowledgement, 28 June 2019	3	3	No recommendations.	-
Surface Water Monitoring	Quarterly surface water monitoring reports to be submitted to DWAF	The current Beeshoek Mine Water Monitoring Programme consists of two major components of monitoring: 1. Surface water monitoring – Monthly frequency 2. Groundwater monitoring – Quarterly frequency The Mine’s water monitoring results are submitted to the Tshiping WUA as well as the DWS.	Aquatico April 2019 Quarterly Report. DWS Letter of Acknowledgement, 28 June 2019	3	3	No recommendations.	-
Dust Monitoring	Yearly audit reports to be submitted to the DME	Dust monitoring is being undertaken by the operation. Dust monitoring results are submitted to the NCDENC, but not to the DMR as requested in this condition. The mine has an air quality monitoring programme in place. The monitoring is being undertaken by Dustwatch. PM10 monitoring has also been implemented on site. Proof of submission onto the South African National Atmospheric Emissions Inventory System (NAEIS) has been provided to the auditors.	Dustwatch Monitoring Report, May to June 2019.	1	3	A letter should be sent to the DMR stipulating that the results of dust monitoring is submitted to the NAEIS and not to the DMR, DEA or DWS unless specifically requested.	SHEQ Department
Noise	Annually	Ongoing noise monitoring is being undertaken on the site for Health and Safety purposes.	Site observations	3	3	No recommendations.	-
Environmental Audit Monitoring	Every two years	The EMP ROD requires the mine to undertake bi-annual assessments. The term bi-annual needs to be clarified to determine whether the DMR requires assessments every second year, or twice a year. For the purposes of this audit it is assumed that this refers to once every two years, as documented in the EMP. Annual external audits have however been undertaken by the mine.	EMP, 2009 Environmental Audit, November 2018 Proof of receipt from DMR dated 11 December 2018.	3	3	The coordination of Environmental Audits between the various Environmental Authorisations and EMPs on site should be streamlined as part of the new EIA process (Regulation 29, Part 1 amendment).	SHEQ Department
Surface Water Monitoring	Surface water and ground water will be monitored quarterly at various points around the existing mining area. Borehole water levels, depth and casing	The current Beeshoek Mine Water Monitoring Programme consists of two major components of monitoring: 1. Surface water monitoring – Monthly frequency 2. Groundwater monitoring – Quarterly frequency The water results of the mine are submitted to the Tshiping WUA as well as the DWS.	Aquatico April 2019 Quarterly Report. DWS Letter of Acknowledgement, 28 June 2019	3	3	No recommendations.	-

	Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility	
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
	<p>statistics are also noted during sampling. A bailer is used to purge the boreholes and take a fresh sample. The amount of water purged is dependent on the borehole depths and rest water levels. After purging, a sample is taken and submitted, together with the surface water samples, to the laboratories for analysis. One litre bottles are used to collect water samples from various streams, dams, water channels and monitoring boreholes. These determinants are then compared against the following documentation: DWAF, 1996: "South African Water Quality Guidelines: Volume 1 Domestic Use"- DWAF, 1996: "South Africa Water Quality Guidelines: Volume 5 Agricultural Use: livestock watering". A quarterly monitoring report is compiled and submitted to mine management and once a year a trend report is compiled and submitted to mine management and DWAF.</p>						
Groundwater Monitoring	The main objective of conducting groundwater	Monthly water levels are taken at groundwater boreholes by the mine.	Aquatico Water Monitoring Report, April 2019	3	3	As monitoring levels are already captures, it is	SHEQ Department



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New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
	monitoring is to establish, operate and maintain a groundwater level monitoring system to check on the possible lowering of local groundwater levels due to mining activity at Beeshoek iron Ore Mine.	An updated numerical model has been compiled by GPT for specifically the Village Pit and BN Pit operations. This model will again be updated in the numerical model which is planned for the new Environmental Authorisation Process.	Updated numerical model of the predicted groundwater drawdown resulting from mining of the Village Pit at Beeshoek Mine, July 2017			recommended that the groundwater levels be captured in the monitoring reports and that this is presented graphically in tables to illustrate fluctuations.	
Dust Monitoring	Dust will continue to be measured throughout the life of mine. The dust monitoring points will be finalised once access to the relevant farm portions is obtained. Dust is measured quarterly using a 5-l bucket which is half filled with deionised water treated with a 5% copper sulphate solution (biocide) to prevent algal growth in the buckets. This is raised 2.1 m above the ground and left for two weeks. After this period the exposed buckets are removed and replaced with fresh buckets. Buckets are then taken to laboratories for analysis and gravimetrically analysed. A quarterly report on the dust measurements collected is submitted to mine management. These results will be submitted to the Department of Environmental Affairs and Tourism (DEAT) as	<p>Dust monitoring is being undertaken by the operation.</p> <p>Monthly monitoring is being undertaken. Proof of submission onto the NAIES system has been provided to the auditors.</p> <p>The dust monitoring results are not submitted to the DWS.</p> <p>The dust monitoring is being undertaken in terms of the ASTM D1739 standards.</p>	Dustwatch Monitoring Report, May to June 2019.	1	3	Dust monitoring results should be submitted to the DWS, if this is not practical, the Licence Holder should obtain agreement from the DWS that such data is not required for submission.	Environmental Department

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New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
	well as DWAF on an annual basis.						
Soil and Vegetation Monitoring	<p>The only area where rehabilitation will be taking place during the operational phase is the open cast pits that have been mined through the roll-over mine method. The plant and final box cut areas will be rehabilitated during the decommissioning phase. A monitoring program will be implemented during the operational phase to monitor the rehabilitation of the previously mentioned areas. During decommissioning this same programme will be implemented at the other sites to ensure rehabilitation is taking place according to the EMP commitments. The establishment of good vegetation cover is essential for rehabilitation, and it is essential that both the soil properties and the vegetation are monitored annually. Should there be deficiencies in the soil, the establishment of vegetation will be difficult, and succession will not take place. The purpose of monitoring the soil is to establish its suitability for vegetation</p>	<p>Currently no opencast pit rehabilitation is being undertaken due to the current economic conditions; the opencast pits may be mined for low grade iron ore. No soil and vegetation monitoring are therefore undertaken.</p> <p>The HH WRD and portions of the East Pit WRD is currently being rehabilitation.</p> <p>A Biodiversity Action Plan, 2018 has been compiled by EXM. This is an annual report being undertaken which presents an integrated management plan to reach set objectives and align the operations with legislative requirements, internal policies and global best practice.</p> <p>Monitoring of rehabilitation has however not been conducted in terms of the conditions of the EMP, i.e. to record the effectiveness of rehabilitation.</p>	<p>Site observations EXM Biodiversity Action Plan, 2018</p>	1	3	<p>The soil and vegetation monitoring as per the EMP should be implemented on areas being rehabilitated.</p> <p>It is recommended that the HH WRD be utilised to test rehabilitation measures such as the placement of pure topsoil, vs the placement of a cover mixture, as well as different slope angles.</p> <p>The weed eradication plan should be expanded into the rehabilitation areas.</p>	<p>SHEQ and Planning Departments</p>

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New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
		and to make recommendations for its improvement. Aspects like soil depth, structure, fertility and areas of erosion will be investigated. The vegetation will be monitored to ascertain species richness and biodiversity					
Noise Survey	Noise monitoring from the plant area will be conducted annually, using a sound level meter, to ascertain the area of impact of the noise generation and to ascertain if noise abating measures need to be implemented.	Ongoing noise monitoring is being undertaken on the site for Health and Safety purposes.	Site observations	3	3	No recommendations.	-
Vibration Survey	Monitoring of the vibrations will be done as and when required. Vibration sensing equipment will be used, which should be placed ten inches from residential dwellings (the nearest farmer's homestead and offices) to record blast over pressure and vibration. A report will be compiled using the data collected by the vibration sensors and submitted to management to ascertain compliance with any relevant standards. Together with the vibration surveys, visual census will also take place. Photos of	No vibration studies are required. There are no sensitive receptors located in close proximity to the mining area. The Beeshoek Village has been demolished.	Site observations	T/N	T/N	No recommendations.	-

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New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
		structures in and around the mining area, will be taken and retaken after blasting have occurred and a few weeks thereafter. Such a survey will illustrate the possible damages caused by mining activities and blasting.					
Environmental Audit	All procedures (emergency, environmental awareness, rehabilitation strategies, etc.) will continuously be updated;	Compliant.	Updated numerical model of the predicted groundwater drawdown resulting from mining of the Village Pit at Beeshoek Mine, July 2017 GlobeSight (Pty) Ltd Final Rehabilitation Plan, 2018 Emergency Preparedness and Response Programme, January 2018 Waste Management Procedure: Ref SP_TEC_21022017_11908 Version 2, 21 February 2017 Waste Management Service Provider Procedure Version 1.9 (draft) Landfill Site Management Procedure (draft) Waste Management Procedure dated 5 June 2018 Version 1.9.	3	3	No recommendations.	-
	All information as required by the various government departments should be captured and be readily available for submission when required;	Compliant, access to information was readily available to the auditors as well.	Site observations	3	3	No recommendations.	-
	An annual report will be submitted to the DME;	The EMP ROD requires the mine to undertake bi-annual assessments. The term biannual needs to be clarified to determine whether the DMR requires assessments every second year, or twice a year. For the purposes of this audit it is assumed that this refers to once every two years, as documented in the EMP. Annual external audits have however been undertaken by the mine.	EMP, 2009 Environmental Audit, November 2018 Proof of receipt from DMR dated 11 December 2018.	Dup	Dup	The coordination of Environmental Audits between the various Environmental Authorisations and EMPs on site should be streamlined as part of the current EIA process (Regulation 29, Part 1 amendment).	SHEQ Department



	Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility	
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
	<p>Surface water monitoring occurs on a quarterly basis and is undertaken by outsourced specialists;</p>	<p>According to the latest water quality report by Aquatico for April 2019 the current Beeshoek Mine Water Monitoring Programme consists of two major components of monitoring: 1. Surface water monitoring – Monthly frequency 2. Groundwater monitoring – Quarterly frequency</p> <p>The WUL makes no specific requirements for surface water monitoring. However, the WUL, 2018 makes specific reference to the monitoring which must be undertaken in line with the "reports" and specifically the critical evaluation of the monitoring network. The WUL Amendment application submitted to the DWS in support of the issued 2018 WUL, committed to the following monitoring programme: East Pit (when water is available); Village Pit (when water is available), BN Pit; EV1 (these four in line with the 2013 WUL) and Storm Water Dam North.</p> <p>The current surface water monitoring network comprises of the following: Potable water (6 localities) and Process water (2 localities) while the Groundwater monitoring consists of 11 monitoring boreholes. All samples are analysed by Aquatico in their SANAS Accredited Testing Laboratory, No T0685.</p>	<p>WUL, 2018 Aquatico Water Monitoring Report, April 2019</p>	3	3	<p>A monitoring network should be developed based on the WUL required studies and be submitted to the DWS for approval.</p>	-
	<p>Groundwater monitoring occurs on a quarterly basis and is undertaken by outsourced specialists;</p>	<p>According to the latest water quality report by Aquatico for April 2019 the current Beeshoek Mine Water Monitoring Programme consists of two major components of monitoring: 1. Surface water monitoring – Monthly frequency 2. Groundwater monitoring – Quarterly frequency</p> <p>The WUL makes no specific requirements for surface water monitoring. However, the WUL, 2018 makes specific reference to the monitoring which must be undertaken in line with the "reports" and specifically the critical evaluation of the monitoring network. The WUL Amendment application submitted to the DWS in support of the issued 2018 WUL, committed to the following monitoring programme: East Pit (when water is available); Village Pit (when water is available), BN Pit; EV1 (these four in line with the 2013 WUL) and Storm Water Dam North.</p> <p>The current surface water monitoring network comprises of the following: Potable water (6 localities) and Process water (2 localities) while the groundwater monitoring consists of 11 monitoring boreholes. All samples are analysed by Aquatico.</p>	<p>WUL, 2018 Aquatico Water Monitoring Report, April 2019</p>	3	3	<p>A monitoring network should be developed based on the WUL required studies and be submitted to the DWS for approval.</p>	-

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
		Further, Aquatico is a SANAS Accredited Testing Laboratory, No T0685.					
	The Groundwater levels will be monitored on quarterly bases and will be presented in the form of piezometric maps, from which changes can be determined through time;	<p>Monthly water levels are taken at groundwater boreholes by the mine, but not on piezometric maps.</p> <p>An updated numerical model has been compiled by GPT for specifically the Village Pit and BN Pit operations. This model will again be updated in the Numerical Model which are planned for the current Environmental Authorisation Process.</p>	<p>Aquatico Water Monitoring Report, April 2019</p> <p>Updated numerical model of the predicted groundwater drawdown resulting from mining of the Village Pit at Beeshoek Mine, July 2017</p>	1	3	<p>As groundwater levels are already recorded by the mine, it is recommended that the groundwater levels be captured in the monitoring reports and that this is presented graphically. Piezometric maps could then be captured in the biennial numerical models, lastly a requirement of the WUL.</p> <p>Trends should be presented over time indicating whether there are any changes to the groundwater levels.</p>	SHEQ Department
	An Environmental Management Programme Environmental Audit will be undertaken every two years as required by the MPRDA and will be submitted to the DME; and	The EMP ROD requires the mine to undertake bi-annual assessments. The term biannual needs to be clarified to determine whether the DMR requires assessments every second year, or twice a year. For the purposes of this audit it is assumed that this refers to once every two years, as documented in the EMP. Annual external audits have however been undertaken by the mine.	EMP, 2009 Environmental Audit, November 2018 Proof of receipt from DMR dated 11 December 2018.	Dup	Dup	The coordination of Environmental Audits between the various Environmental Authorisations and EMPs on site should be streamlined as part of the current EIA process (Regulation 29, Part 1 amendment).	SHEQ Department
	The financial provision (method and quantum) will be updated every two (2) years as part of the Environmental Programme Environmental Audit.	Compliant. The mine has a fully updated financial provision in place for all infrastructure (including historical facilities on site), which is updated on an annual basis.	<p>Site observations</p> <p>Annual Financial Provision Report Proof of submission, June 2019</p> <p>Quarterly Rehab Progress Report Proof of Submission, March 2019</p>	3	3	No recommendations.	-
Decommissioning							
<p>General Infrastructure:</p> <p>The dismantling and removal of the access roads, transportation systems, product and topsoil stockpiles, plant area with associated infrastructure, ancillary infrastructure, and mine waste requires the following:</p> <ul style="list-style-type: none"> • Demolishment of all infrastructure (plants, ancillary, etc.); • Removal of linear infrastructure (conveyors, railway, roads and pipelines); • Landscaping stockpiles; and • Ripping and applying topsoil. 							

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New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
Buildings	<ul style="list-style-type: none"> All infrastructures will be removed and rehabilitated, should no alternative use be found for the structures. Foundations will be removed to a depth of 1m below surface. An alternative use for the brick structures will first be sought i.e. they can either be sold/donated to the post-mining landowner on sale of the land. If an alternative use cannot be found, the buildings will be demolished. All material recovered from the demolition of buildings and/or structures will either be transported to a permitted disposal site, sold as scrap or made available to the local community as building materials (provided they are in a satisfactory condition following demolition). 	The Licence Holder is aware of this condition and it is included as such in the current financial provision reports.	Financial Provision Reports, May 2019	T/N	T/N	No recommendations.	-
Linear Infrastructure	<ul style="list-style-type: none"> Linear infrastructure constructed by the mine (i.e. roads, conveyors, railways and power lines) will be removed if it proves to inhibit land use at decommissioning. Where possible infrastructure will remain for social investment opportunities, this will 	The Licence Holder is aware of this condition and it is included as such in the current financial provision reports.	Financial Provision Reports, May 2019	T/N	T/N	No recommendations.	-



	Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility	
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
	<p>be decided in conjunction with Integrated Development Plan (IDP) of the area and the local authorities (i.e. municipality). The soils and land capability will be rehabilitated to near premining conditions.</p> <ul style="list-style-type: none"> • All haul roads and access roads will be rehabilitated by ripping these structures to a depth of 500mm. • All fences erected around the mine will be dismantled and either disposed of at a permitted disposal site or sold as scrap (provided these structures will no longer be required by the post-mining land owner). Fences erected to cordon-off dangerous excavations will remain in place and will be maintained as and when required. • The overland conveyors and rapid load out facility, if not used as a community initiative, will be disassembled and the components removed from the site. The material can either be sold (as a unit) or the components sold as scrap. 						
Dams	<ul style="list-style-type: none"> • All containment dams will be maintained to 	The Licence Holder is aware of this condition and it is included as such in the current financial provision reports.	Financial Provision Reports, May 2019	T/N	T/N	No recommendations.	-



	Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility	
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
	<p>ensure that no leakages occur.</p> <ul style="list-style-type: none"> • Overflow pipes will be kept clean. • Sumps will be kept clean and all pumps will be maintained. • The containment dams will only be demolished should the area prove to be free draining with no pollution potential after rehabilitation. However, it should be noted that all clean and dirty water systems in and around the co-disposal facility should be maintained, as long as these mining infrastructures remain. 						
Decommissioning impacts of general infrastructure on the surrounding environment.							
Soil Contamination	A detailed waste management strategy will be established and implemented, which will clearly demarcate the containments for different waste streams.	The Licence Holder is aware of this condition. A Waste Management Strategy is already in place on site.	<p>Waste Management Procedure dated 5 June 2018 Version 1.9</p> <p>Landfill Site Management Procedure (draft)</p> <p>Waste Management Procedure dated 5 June 2018 Version 1.9</p> <p>Site observations</p>	T/N	T/N	No recommendations.	-
	Disused surface infrastructure and rubble will be disposed of at a suitable site which will be rehabilitated once its purpose is served.	The Licence Holder is aware of this condition. A Waste Management Strategy is already in place on site.	Waste Management Procedure dated 5 June 2018 Version 1.9	T/N	T/N	No recommendations.	-
	The mine will adopt a cradle-to grave approach to ensure that the waste is removed and disposed of in a prescribed and correct manner.	The Licence Holder is aware of this condition. A Waste Management Strategy is already in place on site.	Waste Management Procedure dated 5 June 2018 Version 1.9	T/N	T/N	No recommendations.	-



		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
	Soil that has been contaminated by spillages, seepages and leachates will be sampled and analysed. If necessary, it will be treated, ameliorated or removed for safe disposal.	The Licence Holder is aware of this condition and it is included as such in the current financial provision reports.	Financial Provision Reports, May 2019	T/N	T/N	No recommendations.	-
	In the event of a major spill that could result in major soil and water contamination the DWAF should be informed immediately and a remediation strategy should be enforced.	The Licence Holder is aware of this condition. A Waste Management Strategy is already in place on site.	Waste Management Procedure dated 5 June 2018 Version 1.9	T/N	T/N	No recommendations.	-
Erosion of soil	Limit decommissioning activities to the 10m conveyor servitude as far possible.	The Licence Holder is aware of this condition and areas are included as such in the current financial provision reports.	Financial Provision Reports, May 2019	T/N	T/N	No recommendations.	-
	Clean and dirty water systems should be maintained until closure.	The Licence Holder is aware of this condition and it is included as such in the current financial provision reports.	Financial Provision Reports, May 2019	T/N	T/N	No recommendations.	-
Re-establishment of vegetation.	The removal of the plant and rehabilitation of the site will allow the reestablishment of natural vegetation. The mine will establish and implement a regular weed-control programme to eradicate existing invader plants and to prevent new invasions during ongoing mining operation and decommissioning.	The Licence Holder is aware of this condition and it is included as such in the current financial provision reports.	Financial Provision Reports, May 2019	T/N	T/N	No recommendations.	-
Contamination of surface water.	Vehicles / machinery will be regularly monitored and maintained. Maintenance programmes will be	The Licence Holder is aware of this condition.	Current site observations	T/N	T/N	No recommendations.	-



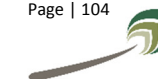
BEESHOEK IRON ORE MINE 2019 EMP PERFORMANCE ASSESSMENT

Departmental Ref: NC 30/5/1/2/3/2/1/223EM

Project Ref: 21912

Version: Final

	Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]						
	established and implemented.					
	If necessary, the polluted soils will be remediated with the use of a spill kit. After remediation of the contaminated soils, the affected areas will be rehabilitated.	The Licence Holder is aware of this condition.	Current site observations	T/N	T/N	No recommendations. -
	A detailed waste management strategy will be established and implemented, which will clearly demarcate the containments for different waste streams.	The Licence Holder is aware of this condition. A Waste Management Strategy is already in place on site.	Waste Management Procedure dated 5 June 2018 Version 1.9	T/N	T/N	No recommendations. -
	Waste management will form a detailed component as part of the induction process provided by the mine.	The Licence Holder is aware of this condition.	Current site observations	T/N	T/N	No recommendations. -
	The mine will adopt a cradle-to grave approach to ensure that the waste is removed and disposed of in a prescribed and correct manner.	The Licence Holder is aware of this condition.	Current site observations	T/N	T/N	No recommendations. -
	Modify the outer slope of the slimes dam to an overall gradient of 16o and associated gradient between benches of 18o.	The Licence Holder is aware of this condition and it is included as such in the current financial provision reports.	Financial Provision Reports, May 2019	T/N	T/N	No recommendations. -
	Provide benches on the modified outer slope of the slimes dam at vertical spacing of 12m. Benches will be at least 5m wide.	The Licence Holder is aware of this condition.	Current site observations	T/N	T/N	No recommendations. -
	Provide a suitable cover on the modified outer slope varying from armouring to topsoil.	The Licence Holder is aware of this condition and it is included as such in the current financial provision reports.	Financial Provision Reports, May 2019	T/N	T/N	No recommendations. -



	Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility	
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
Contamination of groundwater	In the event of a major spill that could result in major soil and water contamination the DWAF should be informed immediately and a remediation strategy should be enforced.	The Licence Holder is aware of this condition.	Current site observations	T/N	T/N	No recommendations.	-
	No activities associated with hydrocarbons and or chemicals (i.e. wash bays etc.) may be undertaken outside of an effectively designed contained area.	The Licence Holder is aware of this condition.	Current site observations	T/N	T/N	No recommendations.	-
Visual impacts on the surrounding area.	Natural vegetation establishment (self-succession) will be encouraged.	The Licence Holder is aware of this condition and it is included as such in the current financial provision reports.	Financial Provision Reports, May 2019	T/N	T/N	No recommendations.	-
	The mine will investigate an appropriate seed mix for the rehabilitation purposes should self-succession not establish on rehabilitated sites.	The Licence Holder is aware of this condition.	Current site observations	2	3	The soil and vegetation monitoring as per the EMP should be implemented on areas currently being rehabilitated. It is recommended that the HH WRD be utilised to test rehabilitation measures such as the placement of pure topsoil, vs the placement of a cover mixture, as well as different slope angles. The weed eradication plan should be expanded into the rehabilitation areas.	SHEQ and Planning Departments
	Attempts will be made to restore the natural character of the landscape.	The Licence Holder is aware of this condition and it is included as such in the current financial provision reports.	Financial Provision Reports, May 2019	T/N	T/N	No recommendations.	-
Historical significance.	Demarcate portions of the mining area which has heritage value and	The Licence Holder is aware of this condition.	Current site observations	T/N	T/N	No recommendations.	-



	Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]						
	preserve these in terms of a heritage plan which includes the historical mining workings located to the north of Beeshoek Iron Ore Mine.					
Increase in noise levels.	Machinery and vehicles will be well maintained to prevent excessive noise and to comply with national and provincial regulations.	The Licence Holder is aware of this condition.	Current site observations	T/N	T/N	No recommendations. -
	All employees working within the area will be issued with protective gear.	The Licence Holder is aware of this condition.	Current site observations	T/N	T/N	No recommendations. -
	All vehicles will have mufflers to minimise noise emissions.	No areas of concern have been raised throughout the Operational Phase. It is unlikely that this will be required during the Decommissioning Phase.	Site observations	TBA	TBA	It is recommended that this condition be revised as part of the EIA Process. It is recommended that mufflers only be prescribed should noise become a concern on site. The mine is in an area characterised by mining activities. SHEQ Department
Impact of decommissioning on local community.	Instead of demolition of these areas, they could be sold-off as commercial property for use in the local community.	The Licence Holder is aware of this condition. The financial provision studies however consider no salvage value to allow for clean closure.	Financial Provision Reports, May 2019	T/N	T/N	No recommendations. -
Loss of jobs.	Continue with the skills development programme to empower the workforce to undertake other activities.	The Licence Holder is aware of this condition.	Current Site Observations	T/N	T/N	No recommendations. -
<p>Active Rehabilitation:</p> <p>Active rehabilitation of the area will involve the following:</p> <ul style="list-style-type: none"> • Recovery of all saleable infrastructure, including the conveyor system; • Ripping of all compacted areas, which will be followed with amelioration and vegetation; • Ensure that all remaining piles and slopes are sufficiently shaped to blend in with the surrounding environment; • Amelioration and vegetation of all disturbed areas; 						



		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
<ul style="list-style-type: none"> • Maintenance of all re-vegetated areas up until such areas initiate succession and create a sustainable cover; • Monitoring of key environmental variables (i.e. soils, vegetation, groundwater and surface water) in order to demonstrate stability of rehabilitated areas; and • Weed management after closure, limited to areas disturbed by mining or included as infrastructure related to the mine. 							
Land Use	Mining areas could be rehabilitated to a wilderness final state with a final land capability of about 60% of the original land capability.	The Licence Holder is aware of this condition and it is included as such in the current financial provision reports.	Financial Provision Reports, May 2019	T/N	T/N	No recommendations.	-
Erosion of soils	Compacted soils will be ripped, and topsoil will be replaced.	The Licence Holder is aware of this condition and it is included as such in the current financial provision reports.	Financial Provision Reports, May 2019	T/N	T/N	No recommendations.	-
	After the topsoil has been replaced the area should be ameliorated and seeded, should self-succession of vegetation not take place.	The Licence Holder has undertaken various successful rehabilitation activities on site. The best procedure for rehabilitation in terms of site observations and historical practices is to include a topsoil/gravel mixture. The soils in this area are prone to erosion and does not provide for effective rehabilitation.	Financial Provision Reports, May 2019 Site observations	TBA	TBA	Should self-succession not prove successful, the mine will investigate a seed mix, to enhance vegetation on slopes. This measure is not sufficient to manage the impacts of the Licence Holder in terms of the development of erosion arising from the use of a topsoil mixture. Therefore, an amendment in terms of Regulation 34 could be requested. However, due to the current Environmental Authorisation Process being undertaken, it is recommended that this condition be amended to provide for a cover mixture and not pure topsoil, as well as to allow for self-succession, as part of the Regulation 29 Part 1 amendment which will be undertaken as part of the current Environmental Authorisation Process commencing in 2019.	Survey Department & SHEQ Department & Production Department
	Only species indigenous to the area will be included.	The Licence Holder is aware of this condition.	Current Site Observations.	T/N	T/N	No recommendations.	-



		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
Stability of the outer slopes on mine residue deposits against surface erosion and slumping.	Change the outer slopes of the mine residue and WRDs to an overall gradient of 16o and the associated gradient between benches of 18o.	The Licence Holder is aware of this condition and it is included as such in the current financial provision reports.	Financial Provision Reports, May 2019	T/N	T/N	No recommendations.	-
	Slope modification will be achieved by means of either shaping existing WRDs to predetermined side slopes and associated bench configurations or adding waste rock shells with the required outer slopes and associated benches onto existing WRDs with waste material as it is produced.	The Licence Holder is aware of this condition and it is included as such in the current financial provision reports.	Financial Provision Reports, May 2019	T/N	T/N	No recommendations.	-
Re-vegetation of the site.	After the topsoil has been replaced the area should be ameliorated and seeded, should self-succession of vegetation not take place.	The Licence Holder has undertaken various successful rehabilitation activities on site. The best procedure for rehabilitation in terms of site observations and historical practices is to include a topsoil/gravel mixture. The soils in this area are prone to erosion and does not provide for effective rehabilitation.	Financial Provision Reports, May 2019 Site observations	TBA	TBA	Should self-succession not prove successful, the mine will investigate a seed mix, to enhance vegetation on slopes. This measure is not sufficient to manage the impacts of the development of erosion arising from the use of a topsoil mixture. Therefore, an amendment in terms of Regulation 34 could be requested. However, due to the current Environmental Authorisation Process being undertaken, it is recommended that this condition be amended to provide for a cover mixture and not pure topsoil, as well as to allow for self-succession, as part of the Regulation 29 Part 1 amendment which will be	Survey, SHEQ and Production Departments



		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
						undertaken as part of the current Environmental Authorisation Process commencing in 2019.	
	Only species indigenous to the area will be included.	The Licence Holder is aware of this condition.	Current site observations	T/N	T/N	No recommendations.	-
	Remove alien vegetation post decommissioning, with long term follow-up afterwards.	The Licence Holder is aware of this condition.	Current site observations	T/N	T/N	No recommendations.	-
Contamination of surface water.	Drainage systems should subsequently be restored to reduce erosion and return flow patterns.	The Licence Holder is aware of this condition and it is included as such in the current financial provision reports.	Financial Provision Reports, May 2019	T/N	T/N	No recommendations.	-
	Water diversion canals that have no further purpose will be backfilled and re-vegetated.	The Licence Holder is aware of this condition and it is included as such in the current financial provision reports.	Financial Provision Reports, May 2019	T/N	T/N	No recommendations.	-
Recovery of groundwater yield.	Once mining has ceased and the opencast dewatering discontinued, it is predicted that the recovery of groundwater in the pit will be fast, it could be at 50% of pre-mining levels in one year and 80% in 10 years.	No condition to assess.	-	N/A	N/A	No recommendations.	-
	Twenty-five years after mining, the groundwater levels are predicted to have recovered to pre-mining levels.	No condition to assess.	-	N/A	N/A	No recommendations.	-
Deterioration in air quality	Dust control measures will be implemented.	The Licence Holder is aware of this condition.	Current site observations	T/N	T/N	No recommendations.	-
	Wet suppression techniques will be implemented to limit	The Licence Holder is aware of this condition.	Current site observations	T/N	T/N	No recommendations.	-



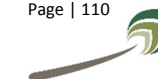
BEESHOEK IRON ORE MINE 2019 EMP PERFORMANCE ASSESSMENT

Departmental Ref: NC 30/5/1/2/3/2/1/223EM

Project Ref: 21912

Version: Final

	Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility	
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
	dust dispersion where and when necessary.						
Impairment of visual character.	An overall visual improvement will be noticed once all mining related infrastructure has been demolished and the area has been landscaped and revegetated. In general, the removal of infrastructure is seen as a positive impact to the environment.	No condition to assess.	-	N/A	N/A	No recommendations.	-
Increase in noise levels.	Vehicles will be equipped with mufflers where practical to reduce the emission of noise.	No areas of concern have been raised throughout the Operational Phase. It is unlikely that this will be required during the Decommissioning Phase.	Site observations	TBA	TBA	It is recommended that this condition be revised as part of the current EIA Process. It is recommended that mufflers only be prescribed should noise become a concern on site. The mine is located in an area characterised by mining activities.	SHEQ Department
Secure and habitable environment.	Conduct in-filled opencast pits with excess mine waste material.	The Licence Holder is aware of this condition.	Current site observations	T/N	T/N	No recommendations.	-
	Shape the outer slopes of the opencast pits to 16o.	The Licence Holder is aware of this condition and it is included as such in the current financial provision reports.	Financial Provision Reports, May 2019	T/N	T/N	No recommendations.	-
	Provide an enviro berm and associated vegetation barrier (preferably with indigenous species) around the opencast pits which can only be partially in-filled with excess waste material.	The Licence Holder is aware of this condition and it is included as such in the current financial provision reports.	Financial Provision Reports, May 2019	T/N	T/N	No recommendations.	-
Opencast Pits: Due to the philosophy of the mine, the mine aims to backfill the opencast areas as part of the Operational phase and thus no decommissioning impacts are envisaged. However, to conform to the mine closure objectives, the following management measures should still be implemented.							
	In the circumstance that the opencast areas are	The Licence Holder is aware of this condition and it is included as such in the current financial provision reports.	Financial Provision Reports, May 2019	T/N	T/N	No recommendations.	-



	Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]						
	completely backfilled during the operational phase, the mine will: o Self-succession of vegetation will be promoted; o Should self-succession not establish, the mine will implement a vegetation programme; o The area in question will be fenced off until vegetation has established; and o A weed management programme will continue up until closure.					
	In the circumstance that an opencast void is still remaining, the mine will: o Source material for backfilling. If this is not a viable option, the mine will commit to incorporating the necessary safety mechanisms which will include: <input checked="" type="checkbox"/> Construction of enviro - berms and/or berms covered with thorny indigenous vegetation around the perimeter of the opencast pits; and <input checked="" type="checkbox"/> Clear signs will be erected to inform parties of the presence of the void.	The Licence Holder is aware of this condition and it is included as such in the current financial provision reports.	Financial Provision Reports, May 2019	T/N	T/N	No recommendations. -
Closure Phase						
Infrastructure areas (buildings, building footprint areas)	Removal of infrastructure o Photographs of the infrastructure, before, during and after	The Licence Holder is aware of this condition and it is included as such in the current financial provision reports.	Financial Provision Reports, May 2019	T/N	T/N	No recommendations. -



	Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility	
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
and internal roads).	<p>rehabilitation will be taken at selected fixed points and kept on record for the Manager (Group Environmental Department) and the DME purpose;</p> <ul style="list-style-type: none"> o All fixed assets that can be profitably removed will be removed for salvage or resale (the salvage and resale value have however not been incorporated into the closure cost estimate as per the legislative requirements); o Any item that has no salvage value to the mine but could be of value to individuals will be treated as waste; o All structures will be demolished, terracing removed and foundations demolished to 1m below the original ground level; o Dismantle and remove redundant fencing for salvage; and o Demolish all concrete foundations to 1m below the original ground level. 						
	<p>Rehabilitation of surfaces previously occupied by infrastructureo The areas will be landscaped to be free draining;o Where sites have been alienated of vegetation or where soils have been</p>	<p>The Licence Holder is aware of this condition and it is included as such in the current financial provision reports.</p>	Financial Provision Reports, May 2019	T/N	T/N	No recommendations.	-



		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
		<p>compacted or covered with concretes, these sites will be ripped and ploughed. The topsoil and subsoils with the appropriate seedbed as stripped during the construction and operational phases will be placed over these areas to a depth as specified by a qualified specialist. The topsoil shall be appropriately ameliorated to allow vegetation to grow rapidly if required – it should be noted that the mine will encourage self-succession of vegetation, if this does not take place effectively a revegetation project will be implemented;o If a reasonable assessment indicates that the re-establishment of vegetation is unacceptable slow, the soil need to be analysed and any deleterious effects must be corrected and the area be seeded with a seed mix to specification;o Appropriate erosion control measures (i.e. contour banks) must be taken where required;o All rehabilitated areas will be fenced off up until the area is regarded as stable; ando All illegal invader plants and</p>					

	Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility	
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
	weeds shall be dealt with as required in terms of the relevant legislation.						
	<p>Disposal of material</p> <ul style="list-style-type: none"> o No building rubble or any other types of waste shall be dumped in the surrounding environment or in the opencast voids without approval by the relevant authorities; o All types of waste shall be removed entirely from the area and appropriately dealt with in respect of the general waste handling procedure; o All foreign matter shall be removed from the site; o Inert ceramics such as bricks, concrete, gravel etc. will be used as backfill or disposed of in a permitted waste disposal site; o Inert waste, which is more than 1m underground, such as pipes will be left in place; and o Inert ceramic and buried waste with a salvage value to individuals such as scrap metal, building materials, etc. will be removed and disposed of at a proper facility. 	The Licence Holder is aware of this condition and it is included as such in the current financial provision reports.	Financial Provision Reports, May 2019	T/N	T/N	No recommendations.	-
Product Stockpile Areas	All material will be removed from the	The Licence Holder is aware of this condition and it is included as such in the current financial provision reports.	Financial Provision Reports, May 2019	T/N	T/N	No recommendations.	-



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New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
	<p>footprint area:</p> <ul style="list-style-type: none"> o Where possible the product will be sold; o If the product cannot be sold, the material will be backfilled into the past opencast voids. 						
	<p>The footprint areas will be topsoiled and ripped;</p>	<p>The Licence Holder has undertaken various successful rehabilitation activities on site. The best procedure for rehabilitation in terms of site observations and historical practices is to include a topsoil/gravel mixture. The soils in this area are prone to erosion and does not provide for effective rehabilitation.</p>	<p>Financial Provision Reports, May 2019 Site Observation</p>	TBA	TBA	<p>Should self-succession not prove successful, the mine will investigate a seed mix, to enhance vegetation on slopes.</p> <p>This measure is not sufficient to ensure proper rehabilitation practices. Therefore, an amendment in terms of Regulation 34 could be requested. However, due to the current Environmental Authorisation Process being undertaken, it is recommended that this condition be amended to provide for a cover mixture and not pure topsoil, as well as to allow for self-succession, as part of the Regulation 29 Part 1 amendment which will be undertaken as part of the current Environmental Authorisation Process.</p>	<p>Survey, SHEQ and Production Departments</p>
	<ul style="list-style-type: none"> • One rainy season will be allowed for self-succession to take place o If a reasonable assessment indicates that the re-establishment of vegetation is unacceptable slow, the soil need to be analysed and any deleterious effects must be corrected and the area be seeded with a seed 	<p>The Licence Holder is aware of this condition.</p>	<p>Current site observations</p>	T/N	T/N	<p>No recommendations.</p>	-



	Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]						
	<ul style="list-style-type: none"> o mix to specification; o Should self-succesion of vegetation not take place, the mine will implement a vegetation strategy to establish vegetation on these disturbed areas o Appropriate erosion control measures (i.e. contour banks) must be taken where required; 					
	<ul style="list-style-type: none"> • All rehabilitated areas will be fenced off up until the area is regarded as stable; and 	The Licence Holder is aware of this condition.	Current site observations	T/N	T/N	No recommendations. -
	<ul style="list-style-type: none"> • All illegal invader plants and weeds shall be dealt with as required in terms of the relevant legislation. 	The Licence Holder is aware of this condition.	Current site observations	T/N	T/N	No recommendations. -
WRDs	<p>The WRDs present at will be rehabilitated:</p> <ul style="list-style-type: none"> • The slopes of the WRDs will be shaped to be stable and that the structure blends into the surrounding environment; • Clean and dirty water systems will be implemented to remain as long terms structures to ensure that the area is free draining as far as practically possible; • Terraces and berms will be implemented to encourage the self-succesion of vegetation and the reduced potential for erosion; • Should self-succesion not establish the mine 	The Licence Holder is aware of this condition and it is included as such in the current financial provision reports.	Financial Provision Reports, May 2019	T/N	T/N	No recommendations. -



		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
	will cover the remaining WRDs with the necessary topsoil and subsoil mixture, with the associated seedbed; • The re-vegetation process will be monitored and encouraged until the area is regarded as stable; • The WRD will be fenced off until the vegetation is stable and the rehabilitation is regarded to be finalised.						
Fine Residue Dumps	• All material will be removed from the footprint area o Where possible the product will be sold; o If the product cannot be sold, the material will be backfilled into the past opencast voids.	The Licence Holder is aware of this condition and it is included as such in the current financial provision reports.	Financial Provision Reports, May 2019	T/N	T/N	No recommendations.	-
	• The footprint areas will be topsoiled and ripped;	The Licence Holder has undertaken various successful rehabilitation activities on site. The best procedure for rehabilitation in terms of site observations and historical practices is to include a topsoil/gravel mixture. The soils in this area are prone to erosion and does not provide for effective rehabilitation.	Financial Provision Reports, May 2019 Site observations	TBA	TBA	Should self-succession not prove successful, the mine will investigate a seed mix, to enhance vegetation on slopes. This measure is not sufficient to ensure proper rehabilitation practices. Therefore, an amendment in terms of Regulation 34 could be requested. However, due to the current Environmental Authorisation Process being undertaken, it is recommended that this condition be amended to provide for a cover mixture and not pure topsoil, as well as to allow for self-succession, as	Survey, SHEQ and Production Departments



		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
						part of the Regulation 29 Part 1 amendment which will be undertaken as part of the current Environmental Authorisation Process.	
	<ul style="list-style-type: none"> One rainy season will be allowed for self-succession to take place If a reasonable assessment indicates that the re-establishment of vegetation is unacceptable slow, the soil need to be analysed and any deleterious effects must be corrected and the area be seeded with a seed mix to specification; Should self-succession of vegetation not take place, the mine will implement a vegetation strategy to establish vegetation on these disturbed areas Appropriate erosion control measures (i.e. contour banks) must be taken where required; 	The Licence Holder is aware of this condition.	Current site observations	T/N	T/N	No recommendations.	-
	<ul style="list-style-type: none"> All rehabilitated areas will be fenced off up until the area is regarded as stable; and 	The Licence Holder is aware of this condition.	Current site observations	T/N	T/N	No recommendations.	-
	<ul style="list-style-type: none"> All illegal invader plants and weeds shall be dealt with as required in terms of therelevant legislation. 	The Licence Holder is aware of this condition.	Current site observations	T/N	T/N	No recommendations.	-
Slimes Dams	The slimes dams have no residual environmental impacts associated with it due to the	The Licence Holder is aware of this condition.	Current site observations	T/N	T/N	No recommendations.	-



		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
		<p>composition of the material deposited on them. There is however management measures that will be included as part of the closure condition:</p> <ul style="list-style-type: none"> • The slopes of the slimes dams will be shaped to be stable and that the structure blends into the surrounding environment; • Clean and dirty water systems will be implemented to remain as long terms structures to ensure that the area is free draining as far as practically possible; • Terraces and berms will be implemented to encourage the self-succession of vegetation and the reduced potential for erosion; • Should self-succession not establish the mine will cover the remaining WRDs with the necessary topsoil and subsoil mixture, with the associated seedbed; • The re-vegetation process will be monitored and encouraged until the area is regarded as stable; • The dams will be fenced off until the vegetation is stable and the rehabilitation is regarded to be finalised. 					

		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
Opencast Pit	<p>It is the aim of the mine to backfill the opencast voids with existing material on site. Should it be found that opencast pit voids remain at the end of the mining operations the following will be enforced:</p> <ul style="list-style-type: none"> • The area will be made safe by the establishment of enviro-berms around the perimeter of the remaining voids in order to make the area safe and limit access; • The enviro-berms will be covered with indigenous thorny vegetation. 	<p>The Licence Holder is aware of this condition and it is included as such in the current financial provision reports.</p>	<p>Financial Provision Reports, May 2019</p>	T/N	T/N	<p>No recommendations.</p>	-
	<p>The following measures will be implemented:</p> <ul style="list-style-type: none"> • The areas will be landscaped to be free draining; • The topsoil and subsoils with the appropriate seedbed as stripped during the construction and operational phases will be placed over these areas to a depth as specified by a qualified specialist. The topsoil shall be appropriately ameliorated to allow vegetation to grow rapidly if required – it should be noted that the mine will encourage self- 	<p>The Licence Holder has undertaken various successful rehabilitation activities on site. The best procedure for rehabilitation in terms of site observations and historical practices is to include a topsoil/gravel mixture. The soils in this area are prone to erosion and does not provide for effective rehabilitation.</p>	<p>Financial Provision Reports, May 2019 Site Observation</p>	TBA	TBA	<p>Should self-succession not prove successful, the mine will investigate a seed mix, to enhance vegetation on slopes.</p> <p>This measure is not sufficient to ensure proper rehabilitation practices. Therefore, an amendment in terms of Regulation 34 could be requested. However, due to the current Environmental Authorisation Process being undertaken, it is recommended that this condition be amended to provide for a cover mixture and not pure topsoil, as well as to allow for self-succession, as part of the Regulation 29 Part 1 amendment which will be undertaken as part of the</p>	<p>Survey, SHEQ and Production Departments</p>



		Observation	Reference Documents	Actual score	Max score	Recommendations	Responsibility
New Order Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 [NC 30/5/1/2/3/2/1/070EM (2009)]							
	<p>succession of vegetation, if this does not take place effectively a revegetation project will be implemented;</p> <ul style="list-style-type: none"> • If a reasonable assessment indicates that the re-establishment of vegetation is unacceptable slow, the soil need to be analysed and any deleterious effects must be corrected and the area be seeded with a seed mix to specification; • Appropriate erosion control measures (i.e. contour banks) must be taken where required; • All rehabilitated areas will be fenced off up until the area is regarded as stable; and • All illegal invader plants and weeds shall be dealt with as required in terms of the relevant legislation. 					current Environmental Authorisation Process.	
Water pollution control structures	<p>Water pollution control structures will remain until the completion of all demolition and associated rehabilitation activities where after these will be rehabilitated.</p>	<p>The Licence Holder is aware of this condition and it is included as such in the current financial provision reports.</p>	<p>Financial Provision Reports, May 2019</p>	T/N	T/N	No recommendations.	-
Compliance Score				264	333	79%	

5 ENVIRONMENTAL AUDIT OUTCOMES

According to Appendix 7 of the 2014 NEMA EIA Regulations, the objectives of the environmental audit report are to-

(a) report on-

- (i) the level of compliance with the conditions of the environmental authorisation and the EMPr, and where applicable, the closure plan; and
- (ii) the extent to which the avoidance, management and mitigation measures provided for in the EMPr, and where applicable, the closure plan achieves the objectives and outcomes of the EMPr, and closure plan.

(b) identify and assess any new impacts and risks as a result of undertaking the activity;

(c) evaluate the effectiveness of the EMPr, and where applicable, the closure plan;

(d) identify shortcomings in the EMPr, and where applicable, the closure plan; and

(e) identify the need for any changes to the avoidance, management and mitigation measures provided for in the EMPr, and where applicable, the closure plan.

The following sections are provided as a very concise summary of the key observations on site and should be assessed in combination of the Environmental Audit Table presented in Section 4.

5.1 General Observations

5.1.1 Legal Status of Infrastructure on Site

In terms of the Minerals Act, Act No. 50 of 1991, an Old Order Mining Right was obtained for all mining activities on the farms Olynfontein (Portion RE), and Beesthoek (Portion RE and Portion 1), under reference number NC 5/2/2/150, dated 1 December 1993.

Because of increased production, the applicant applied for an addendum, for the "Mid-South" Section on the farm Olynfontein, which was approved by the DMR on 7 November 1997, with reference number NC 6/2/2/15. South Mine, was commissioned during 1999 on the farms of Beesthoek and Olynfontein. This mining right made provision for six opencast pits at estimated iron ore reserves of 160 million tonnes for export.

A revision to the EMP was submitted to the DMR in August 2004. The purpose of the EMP Update was:

- ☞ To enhance the format and content of the EMP in order to be better aligned it to the current standard of EMPs;
- ☞ To reflect the latest environmental related monitoring and work conducted by the mine;
- ☞ To provide better focus on closure of the mine. This specifically addresses the rehabilitation of opencast pits and mine residue dumps; and
- ☞ To outline the process to be followed to contribute to the maintenance of quality of life during the post-closure period.

The key infrastructure associated with this EMP Update was

- ☞ Six million tonnes per year opencast mining activity, producing iron ore for the local and export markets;
- ☞ The mine comprises a number of opencast pits located within the North and South Mine;
- ☞ The North Mine primarily comprised the historical mining activity, with, at that time, the new opencast pit BN; and
- ☞ The South Mine included the new and larger opencast pits and the dominant mining was conducted within this area.

The Old Order Mining Right was converted to a New Order Mining Right on 16 March 2012 (Ref: NC30/5/1//3/2/1/223EM) and an EMP Alignment Report was approved by the then Department of Minerals and Energy (DME) on 7 June 2010. The EMP Alignment Report made provision for the current Village Pit Opencast Mining Operation and demolition of the Beeshoek Village.

Subsequent to the EMP Alignment, various individual Environmental Authorisations were undertaken:

2010 EMP, for the R385 Regional Road Diversion (approved 3 May 2011). The Road Diversion was required as part of the Village Pit. The road realignment (associated with the proposed mine expansion) also required that:

- Inhabitants of Beeshoek Mine Village be moved to Postmasburg;
- Several Assmang power lines not exceeding a capacity of 22 kilovolts be relocated, one of which was located along the existing R385 road alignment;
- The telephone lines along the R385 road which impacted on a sociable weaver nesting site on a telephone pole be relocated (this was subsequently safely undertaken);
- The mine offices be moved to the North Mine;
- Telephone lines and optic fiber cables be relocated; and
- A communication tower alongside the current road in Beeshoek be relocated.

2013 Basic Assessment Application (approved 14 March 2014): This application was for the expansion of the BF WRD (now the Village WRD).

2014 Basic Assessment Application (approved 19 June 2015): The project entailed the development of a 35m wide and 1.45km long haul road from the Beeshoek Village Pit to the ROM stockpile. The haul road also formed part of the associated infrastructure for the Village WRD and was depicted on plans submitted with the 2013 Application.

2015 Basic Assessment Application (approved 10 March 2017): It was the intention of the mine to redesign the existing Storm Water Dam North (28°17'17.1"S; 23°00'07.8"E), located on Portion 1 of the farm Beesthoek, into a formally designed, lined facility currently being constructed. This existing facility comprised of a berm channelling water from the northern portions (Plant area) towards the existing dam (excavated earth). With the development of the Village Pit, the operation had to reduce the length of the berm to allow for the mining of the Village Pit.

5.1.2 Current Environmental Authorisation Processes

Regulation 54(2) of the NEMA provides that ***"An application submitted after the commencement of these Regulations for an amendment of an Environmental Management Programme, issued in terms of the MPRDA, must be dealt with in terms of Part 1 or Part 2 of Chapter 5 of these Regulations"***.

Chapter 5 presents two avenues for amendment:

Part 1, Regulation 29: *"An environmental authorisation may be amended by following the process prescribed in this Part if the amendment;*

- a) *Will not change the scope of a valid environmental authorisation nor increase the level or nature of the impact, which impact was initially assessed and considered when the application was made for an environmental authorisation; or*
- b) *Relates to the change of ownership or transfer of rights and obligations"*.

Part 2, Regulation 31 is applicable for the amendments where a change in scope occurs.

The mine has several Environmental Authorisations in place and is currently planning to consolidate the associated EMP's to allow for one document which would result in an effective management programme on site.

5.1.3 Approved Mining Activities

The following table presents the approved mining activities present on site:

Table 8: Approved Activities

Infrastructure	Description	Approved in terms of:
Roads		
Access Roads	<p>Existing Regional Road: The R385 roadway transects the Beeshoek Mine at both North and South Mines. This road has been diverted in terms of an approved Environmental Authorisation to allow for the development of the Village Opencast Pit.</p> <p>Existing Regional Road: Three roads, all originating from the R385 provide access to the mining operation, namely:</p> <ul style="list-style-type: none"> ☛ Access road to the South Mine; ☛ Access road to the Main Offices; and ☛ Access road to the Plant and North Mine. 	Permit 17/2011, 21 April 2011
Haul Roads	<p>Existing Haul Roads Due to the long lifespan of the mine, various historic roads are present on site. These have been captured on the surface layout maps of the approved MPRDA EMPs. In addition to this, the mine has constructed a new Haul Road (Village Haul Road) which has an approved NEMA Authorisation.</p>	EMP Report, August 2004 & EMP Alignment Report, July 2009 Permit 20/2015, 19 June 2015
Conveyors		
South Mine Conveyor	<p>Approved Conveyor at South Mine: From the South Mine, crushing ore is conveyed via an overland conveyor system to stockpiles at the plant area on North Mine. A single length conveyor of approximately 2.8km long is present. The conveyor crosses under the R385 and the Transnet Hotazel/ Port Elizabeth (PE) railway line before arriving at the load-off point at the Plant.</p>	EMP Report, August 2004 & EMP Alignment Report, July 2009
North Mine Conveyors	<p>Approved Conveyors at North Mine: A number of conveyors are present at the North Mine. The approximate combined length of these conveyors is 3.2km. These conveyors convey the ROM from the stockpiles to the crushing facilities and the Plant area. The discard from the Jig Plant is spread via conveyor onto the Discard Dump.</p>	EMP Report, August 2004 & EMP Alignment Report, July 2009
Railway Lines and Associated Infrastructure		
Local Siding	<p>Existing Siding: From the Plant, the product is stockpiled at the railway siding within the mining area, where one (1) railway bridge is present. The railway line is non-electrified and has an extent of approximately 11.3km.</p>	EMP Report, August 2004 & EMP Alignment Report, July 2009
Transportation Rail System	<p>Existing OREX Railway Line & Existing Hotazel/ PE Railway Line: The final product is transported via rail for local and export purposes. The local rail runs from Beeshoek through Postmasburg towards the harbour of Port Elizabeth, whereas the export rail runs from Beeshoek towards the harbour of Saldanha.</p>	EMP Report, August 2004 & EMP Alignment Report, July 2009
Power Lines		

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Infrastructure	Description	Approved in terms of:
Eskom Power Lines	<p>Existing Eskom Power Lines: All power within the mining area is supplied by existing Eskom power lines. The mine owns 71,750m of overhead power lines and 9,887m of buried power lines. One (1) substation is present on the mine.</p>	EMP Report, August 2004 & EMP Alignment Report, July 2009
Communication Lines	Communication lines are provided by Telkom, although the mine owns 7,125m of the infrastructure.	EMP Report, August 2004 & EMP Alignment Report, July 2009
Fuel and Lubricant Storage		
Diesel and Lubricant Storage	<p>Diesel and Lubricant Storage The operation of the diesel generators and the additional activities on site require the storage of fuel and oil. The mine has a storage capacity of 21 days. All fuel is stored above-ground within designated and appropriately constructed hazardous material storage areas. The following storage areas are present on site:</p> <ul style="list-style-type: none"> ☛ South Fuel Storage Area (28°18'43.91"S; 23° 0'16.30"E). This area comprises of four (4) 80m³ diesel storage tanks with a combined capacity of 332m³; ☛ North Fuel Storage Area (28°17'2.45"S; 23° 0'0.09"E). This area comprises of five (5) storage tanks: <ul style="list-style-type: none"> ○ 1x 83 m³ – Diesel Tank ○ 1x 23 m³ – AC10W Hydraulic oil Tank ○ 1x 23 m³ – AC50 Transmission oil Tank ○ 1x 23 m³ – 15W40 CAT engine oil Tank ○ 1x 23 m³ – Waste oil Tank; ☛ Airfield has a Jet 1A fuel storage tanks (28°16'1.19"S; 22°59'27.69"E) with a capacity of 56m³; and ☛ A Portable Long-Distance Diesel tank (which does not require licensing as it is temporary and portable) has been established during 2015 with a capacity of 32m³. 	<p>North Mine Tank installation: Mine aerial photos indicate earth works already commencing on 13 December 2005. South Mine Tank installation: Aerial photos illustrate the presence of these tanks already constructed on 8 April 2006. Airfield Tank installation: Aerial photos indicate presence of the facility on 20 July 2003. Portable Long-Distance Tank installation: 2015. The diesel storage facilities are operated by Total and the Environmental Authorisation for these are held by Total under Permit Number 36/2005 in terms of the ECA.</p>
Solid Waste Management Facilities		
Industrial and Domestic Waste Disposal Sites	<p>Approved Industrial and Waste Deposal Sites: Industrial waste is limited to oil, diesel and grease. This waste is sold in bulk back to the manufacturers and suppliers. Unwanted waste is disposed of by a contractor at an approved industrial waste site. The old oils and hazardous material are stored at the locations as provided under the section above. The mine has a Salvage Yard at North Mine (28°17'11.95"S; 23°59'55.99"E). The mine has an approved landfill site on site to receive the general waste. The location is at 28°16'39.725"S; 22°59'40.088" E.</p>	Permit 12/9/11/P49, 30 October 2010
Contaminated Waste	<p>Approved Contaminated Waste Storage: Contaminated waste such as oily rags, oil filters etc. are stored in sealed drums at designated areas in the vicinity of the workshops at the Beneficiation Plant and the two opencast operations. These drums are removed by licensed waste removal services providing for disposal at a licensed site. The EMP does not make provision for on-site remediation of contaminated soils, only for <i>in situ</i> cleaning using spill kits.</p>	-
Tyres	<p>Tyre Waste Storage: Old tyres are removed from site by a contracted tyre company for recycling or disposal in an approved manner (28°16'42.17"S; 23°0'9.04"E).</p>	The tyre storage area has not yet been registered as per the Tyre Regulations.

Infrastructure	Description	Approved in terms of:
Lubrication Oils	<p>Approved Lubrication Oil Waste Storage:</p> <p>Used lubrication oils are removed from site by the fuel and lubrication contractor, for recycling and re-use. This occurs in bulk from tanks designed for this purpose. The areas surrounding the tanks containing the waste oil and the collection point are bunded.</p>	-
Topsoil Stockpiles		
Topsoil Stockpiles	<p>Due to the shallow soil cover at Beeshoek, all topsoil and subsoil has been/ will be stripped (to a minimum of 0.25m or until hard rock is reached) from the:</p> <ul style="list-style-type: none"> ☛ Opencast pits and ☛ Haul roads. <p>Two topsoil stockpiles are present on site, one at South Mine (28°19'47.37"S; 23° 0'39.49"E) and one at North Mine (28°17'0.71"S; 23° 1'24.02"E).</p>	EMP Report, August 2004 & EMP Alignment Report, July 2009
Mine Residue Deposits		
Overburden and Low-grade ROM Stockpiles	<p>Approved Mine Residue Deposits:</p> <p>Various Mine Residue Stockpiles and Deposits exist on site. Due to the historic nature of Beeshoek many of these have been constructed prior to the enactment of the listed NEMA Activities. To assess which of these have been constructed in terms of lawful footprints, surface maps submitted with past environmental authorisation applications were considered. To streamline the layout and naming of these and the ensure effective management, the following Mine Residue Facilities have been grouped together:</p> <p>North Mine:</p> <ul style="list-style-type: none"> ☛ Quartzite Stockpile; ☛ Shale Stockpile; ☛ Plant Stockpiles and In-Plant Stockpiles; ☛ Plant ROM; ☛ HH WRD; ☛ HL WRD; ☛ BIS ROM; ☛ WRD North; ☛ GF WRD; ☛ Discard Dump; ☛ B Dump ROM; and ☛ N Off-grade ROM. <p>South Mine:</p> <ul style="list-style-type: none"> ☛ Village WRD; ☛ Village ROM Stockpile; ☛ Village Off-grade ROM; ☛ West Pit WRD; ☛ South ROM; ☛ South Off-grade ROM; ☛ Contaminated Dump ROM; ☛ Contaminated Dump ROM 2; ☛ BIS ROM; and 	<p>EMP Report, August 2004 & EMP Alignment Report, July 2009</p> <p>The most recent Mine Residue Deposit is that of the Village WRD under Permit 12/2014, 7 March 2014</p>



Infrastructure	Description	Approved in terms of:
	<p>☞ East Pit WRD.</p> <p>The heights and footprints of these facilities have not been stipulated in the EMPs and as a result the past submitted maps were used as a source to define the approved footprints. The Village Waste Rock Dump is however approved to not exceed 45m in height.</p>	
Reworking of Mine Residue Stockpiles	<p>The 2004 old order EMP stated: "Rework all contaminated iron ore stockpiles present on the mine site in order to optimise iron ore resource utilisation." Reworking relates to the following dumps: - Dumps labelled on Drawings 5540-001 and 5540-002 as CD-N1 (this is the current WRD North area) and CD-S1 (this is the current Contaminated Dump ROM on South Mine, does not include #2) respectively.</p> <p>In Section 1.7.3 of the new order (aligned) EMP, the Estimated Reserves are discussed. It states that: "Additional iron ore is available in the contaminated dumps (low grade iron ore, which could be blended with high grade or to meet future market needs) on the mine site and these will be reworked to meet the mine's remaining planned life of mine."</p>	EMP Report, August 2004 & EMP Alignment Report, July 2009
Slimes Dam		
Slimes Dam	<p>Rehabilitated Slimes Dam:</p> <p>The initial Slimes Dam, situated near the Plant at the North Mine, was rehabilitated and more capacity was required, which resulted in the current Slimes Dam.</p> <p>Current Slimes Dam:</p> <p>The slimes generated from the plant processing activities represent approximately 14-16% of ore put through the Plant. Water from the dewatering screen is pumped to a Slimes Dam, which is located on the footprints of an old opencast pit. The mud is allowed to settle, and the clear water is pumped back to the Plant.</p> <p>Ongoing upgrades to ensure efficiency will be undertaken. However, should the footprints or capacity be amendment, the mine will have to apply for a WUL, as well as the associated Environmental Authorisations.</p>	EMP Report, August 2004 & EMP Alignment Report, July 2009
Borrow Pits		
Borrow Pits	No borrow pits are present on site.	
Detrital Mining		
Detrital Area	<p>Approved Detrital Mining Activities:</p> <p>One of the mining methods utilised on the mine is the mining of detrital ore, where the deposits of ore are shallow enough to be scooped out of the ground for processing as opposed to employing more extensive opencast mining methods. There are a few of these detrital zones on the mine area which still need to be exploited.</p> <p>As part of the 2009 EMP it was stated that the mine is planning to extend its mining operations within the existing mining area to continue with its mining operation and to ensure that the available mineral reserves are mined optimally. One of the activities approved as part of the EMP was the mining of detrital ore that are available in small pockets that are easy to mine.</p> <p>The area and dimensions of the detrital areas are not indicated in the EMP, but was submitted with the approved Mining Works Programme. The only area demarcated to an extent is to the east of the South Mine Contaminated ROM Stockpiles – this area was present in all mine layouts approved by the Department of Mineral Resources (DMR) since 2009. Any expansions to the detrital mining areas will require amendment to the Environmental Authorisations, due to the size of site clearance which will be in excess of 5ha.</p>	EMP Alignment Report, July 2009
Opencast Mining		

Infrastructure	Description	Approved in terms of:
<p>Opencast Pits</p>	<p>Approved Opencast Pits:</p> <p>The iron ore deposits at Beeshoek Mine are relatively shallow, making economic opencast mining viable.</p> <p>The iron ore is exploited by means of conventional opencast mining techniques (drilling, blasting and load-haul). The drill-blast activities are contracted out, whereas load-haul is undertaken by a combination of owner and contractors' fleets.</p> <p>The vegetated soil overlying the mining area is stripped prior to mining and stockpiled on a dedicated dump to be used for rehabilitation purposes at a later stage. Then bench blocks of 10m height are drilled using drill rigs, which drill 165mm diameter blast holes. Drill patterns can be a staggered or square pattern, with burden and spacing varying from 4m x 5m in waste, to 3m x 3m in difficult ore. Blast holes are charged with emulsion explosives and different down-hole charge configurations are used depending on the different rock types to be blasted. This, together with the necessary blasting accessories, achieves optimal fragmentation. Again, as per the constraints with the Mine Residue Stockpiles, the historic natures of the Beeshoek Mine has led to the naming and renaming of opencast pits over time. For the purpose of this document and to identify the footprint areas, the surface plans submitted with the EMPs and subsequent Environmental Authorisation were used in the demarcation of the footprints.</p> <p>The blasted rock is loaded with front-end loaders and excavators into rigid haul trucks and Articulated Dump Trucks (ADTs). Ore is hauled to the Primary Crusher and ore stockpiles. Based on the grade and destined metallurgical processes, numerous iron ore stockpiles exist on Beeshoek.</p> <p>As an integral part of the mining processes, backfilling of numerous existing opencast pits will be employed in order to minimise both the final voids left at the end of mining as well as the size of waste dumps. Waste with a potential future use will be stockpiled separately in order to be accessible and ready to be processed by the future user. The following pits are authorised in terms of the WUL for backfilling purposes:</p> <ul style="list-style-type: none"> ○ HH Opencast Pit; ○ HL Opencast Pit; ○ BN Opencast Pit; ○ East Opencast Pit; ○ GK Opencast Pit; and ○ West Opencast Pit. <p>Another mining method utilised on Beeshoek Mine is the mining of detrital ore as presented before, where the deposits of ore are shallow enough to be scooped out of the ground for processing as opposed to employing more extensive opencast mining methods. There are a few of these detrital zones on the mine area which still need to be exploited. Any expansions to the detrital mining areas, will require amendment to the Environmental Authorisations, due to the size of site clearance which will be in excess of 5ha.</p>	<p>EMP Report, August 2004 & EMP Alignment Report, July 2009</p>
Mineral Processing		
<p>Mineral Processing</p>	<p>The Iron Ore Processing Facility has been designed to process ROM ores from the North and South Mine Opencast Pits.</p> <p>At Beeshoek, there are two lines consisting of a Primary and Secondary Crusher namely South Mine Crushing and North Mine Crushing. These primary plants consist of two stages of crushing, namely one primary crusher and one secondary crusher. At the primary crusher ore is crushed down to -200mm and at the secondary crusher it is further reduced to -80mm. In case of on-grade (ROM) ore feed, the secondary product is fed to the Washing and Screening Plant and contaminated ore or off-grade ore feeds, where beneficiation is needed, is fed to the Jig Plant. From the South Mine Crushing, ore is conveyed via an overland conveyor system to stockpiles at the plant area on North Mine.</p> <p>Following the primary and secondary crushing operations, the crushed ore is conveyed to the processing plant area, which is situated at North Mine.</p>	<p>EMP Report, August 2004 & EMP Alignment Report, July 2009</p>

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Infrastructure	Description	Approved in terms of:
	<p>On-grade and off-grade crushed ore is stockpiled separately with dedicated stackers and reclaimed to be fed separately to the dedicated on-grade and off-grade processing plants. On-grade ore requires only screening, while off-grade ore requires further beneficiation, to conform to the market requirements. The plans include the following:</p> <ul style="list-style-type: none"> ☛ Washing and Screening Plant: The ROM feed is washed and sized into a lumpy fraction (+6mm –32mm), MS product (+6mm - 18mm) and a fines fraction (+0.5mm – 6mm). The primary screens oversize (+32mm) is conveyed to three tertiary crushers in closed circuit with the primary screens. ☛ Preparation Plant: The contaminated/ off-grade ore feed is washed and sized into a lumpy fraction (+8mm –25/32mm) and a fines fraction (+0.5mm – 8mm) prior to conveying to the Jig Plant. The screen oversize is conveyed to a tertiary crusher in closed circuit with the screens. ☛ Beneficiation is achieved by utilising Jig technology. Jigs separate the ore according to the specific density of the particles. <p>Reagents are not utilised in any of the beneficiation processes. A flocculating agent is required to assist in clarifying process water in the water reticulation circuit. This is achieved by utilising a conventional thickener. The clarified water is reticulated in the processing plants. A significant amount of water is recycled in the processing plant, to reduce the magnitude of the clarifying requirement.</p> <p>Thickened pulp from the thickener unit is pumped to the Slimes Dam, designed specifically for this purpose.</p>	
Mine Offices	<p>Approved Mine Offices:</p> <p>North Mine: Includes offices, administration buildings and the historical portion of the mine village.</p> <p>South Mine: Includes the decommissioned village and recreational area, including a golf course and other recreational sports fields. The 2009 EMP was clear to state that the new Village Opencast Pit will be constructed on the already existing Beeshoek village area. The mine workers living in this village have been relocated by the mine to Postmasburg. The existing surface structures, except for the main offices, recreational facilities, security, training and clinic buildings have been removed and the Village Opencast Pit is in operation.</p>	EMP Report, August 2004 & EMP Alignment Report, July 2009
Laboratory	<p>Approved Laboratory:</p> <p>A laboratory has been established at the Plant, which is utilised for the testing and certification of the product being processed and exported from the mine.</p>	Part of Plant infrastructure (EMP 2004)
Change House	<p>Approved Change House:</p> <p>Staff facilities for washing, ablutions and the safe keeping of personal belongings have been established at the North and South Mine opencast areas, as well as at the Plant.</p> <p>No sewage treatment plant is located on the mine site. All sewage generated at the mine is collected in several strategically located concrete sumps that are emptied by tanker. The tanker disposes of the collected sewage at the Postmasburg municipal sewage treatment works.</p>	EMP Report, August 2004 & EMP Alignment Report, July 2009
Clinic/ Training Centre	<p>Approved Clinic/ Training Centre:</p> <p>A Medical Centre and a Training Centre have been established at the Main Offices.</p> <p>A Medical and Wellness Centre is located next to Security Offices at the Main Offices in old renovated buildings.</p> <p>A Training Centre is located next to the transport area within old mine workers hostels that were renovated.</p>	Old Renovated Buildings from the 1930s/ early 1940s (visible on the photos from late 1930s/ early 1940s)
Security Building	<p>Approved Security Building:</p> <p>Security buildings have been established at both North and South Mines, as well as at the Main Offices area.</p>	Main security – old renovated buildings North Mine – 2004 South Mine – 2015

Infrastructure	Description	Approved in terms of:
Plant Control Centre	<p>Approved Plant Control Centre:</p> <p>A plant control centre has been established on the Plant for each mine (North and South) to monitor and control the process plant. The centre is equipped with offices, electronics, workshop, a tearoom and ablutions for staff associated with the centre.</p>	<p>North and Wash & Screen – 1973</p> <p>South – 1998/99</p> <p>Jig – 2001</p>
Workshops / Stores / Substations	<p>Approved Workshop, Stores and Substations:</p> <p>As part of the approved EMP the following was stated: “The existing workshop, administration and related buildings are located within the Northern mining area.” The following infrastructure has been established:</p> <ul style="list-style-type: none"> ☛ South Mechanical and Electrical Workshop; ☛ South Separator and Was Bay Area; ☛ South Primary Crusher Workshop; ☛ North Electrical and Mechanical Workshop area; and ☛ North Separator and Wash Bay area. 	<p>South Mechanical and Electrical Workshop - 1998/99</p> <p>South Separator and Was Bay Area - 1998/99</p> <p>South Primary Crusher Workshop - 1998/99</p> <p>North Electrical and Mechanical Workshop area – old renovated buildings</p> <p>North Separator and Wash Bay area – old renovated buildings</p>
Weighbridge	<p>Approved Weighbridge:</p> <p>A weighbridge has been established at the Plant area for verifying the weight of loaded and unloaded vehicles etc.</p>	<p>North “old” weighbridge – 2012</p> <p>3x New Road Transport weighbridges – 2015</p>
Explosives Magazine	<p>Approved Explosives Magazine:</p> <p>The explosives magazine has been built to Sasol Nitro design with the finished structures having been approved by Sasol Nitro.</p> <p>An exclusion zone of 800m radius within which there will be no buildings, other structures or public access is maintained.</p> <p>This facility is located at the South Mine.</p>	<p>Aerial photos indicate the presence of this facility already on 20 July 2003.</p>
Housing and Recreation		
Housing and Recreation	<p>Approved Housing and Recreation:</p> <p>The South Mine includes the decommissioned village and recreational area, including a golf course and other recreational sports fields. The 2009 EMP was clear to state that the new Village Opencast Pit will be constructed on the already existing Beeshoek village area. The mine workers living in this village was relocated by the mine to Postmasburg. The existing surface structures have been removed.</p>	<p>EMP Alignment Report, July 2009</p>
Transport		
Transportation of Ore on site	<p>Approved Transportation of ore:</p> <p>The mined iron ore is transported by truck from the respective operational opencast pits to the respective receiving areas with the North and South Mines. The ore from South Mine is routed by overland conveyor to North Mine for processing.</p>	<p>EMP Alignment Report, July 2009</p>
Transport of Ore off-site	<p>Approved Transportation of ore:</p> <p>The final product is transported from the Rapid Load-Out Facilities, via the OREX rail line to Saldanha (for export) and the Hotazel/ PE line (for local markets).</p>	<p>EMP Alignment Report, July 2009</p>
Water Pollution and Storm Water Management Facilities		



5.2 Level of Compliance

The compliance scores achieved in terms of the EMPr compliance is summarised as follows:

Table 9: Compliance Scores

Licence Reference	2019 Compliance (%)	Observation
ROD	82	The finding which had the greatest influence on the scoring is the discharge of dirty water from the North TMM Workshop into the environment through a culvert.
MPRDA EMPr Alignment	79	Some key findings observed in the Environmental Audit, were the presence of erosion on topsoil stockpiles and certain WRDs, the expansion of the East Pit WRD beyond its demarcated footprint and into a sensitive biodiversity area in terms of the Biodiversity Action Plan (2018), management of topsoil stockpiles, water management within the Plant area, minimal findings regarding hazardous waste storage and general waste management, non-submission of monitoring reports to authorities as stipulated in the EMP (even if these authorities are not regarded as the Competent Authority), clean and dirty water management around the North TMM Workshop, temporary laydown area management, and the presence of alien and invasive species (specifically fountain grass) on site.

5.3 Effectiveness of the EMPr and New Impacts and Risks

Based on the approved EMPr's, no residual impacts of significance have been identified or stated. However, in order to ensure that the outcomes of the EMPr's confirmed, the auditor considered reason studies as well and therefore, this report also considers the following:

- ☞ Latest Waste Classification Outcomes;
- ☞ Latest IWWMP Outcomes; and
- ☞ Latest Groundwater Monitoring Outcomes.

Considering the EMPr's and essentially, based on the information obtained in the latest environmental reports, it is concluded that the following indicators are the most sensitive to potential risk:

- ☞ Future dewatering for the purposes of safe mining conditions; and
- ☞ Groundwater quality as a result of the presence of Mine Residue Deposits.

5.3.1 Rehabilitation Material Availability

Limited topsoil is present on site as the soil is the main source used in rehabilitating the approved Landfill Site.

The EMPr's allow for a revegetation project should self-succession of vegetation not be successful, however in certain instances statements are made which create uncertainty as to whether active vegetation is also required.

The past rehabilitation trials on the historic opencast pits and WRDs have proven that vegetation growth is possible without having to apply a layer of topsoil. For this reason, the current closure valuation (May 2019) allows for self-succession without the addition of topsoil.

Only if self-succession cannot be achieved, will the Licence Holder consider the addition of a topsoil/ subsoil mixture with associated seed bank, and if re-establishment of vegetation using this method is found to be unacceptably slow, soil analysis and amelioration will be undertaken and the area be seeded with a seed mix to specification.



5.3.2 Waste Classification Outcomes

As part of Assmang's commitment to comply with the national environmental legislation and to follow a proactive and responsible approach in the undertaking of the mining operations, the importance of the changes in the Regulatory System in terms of the governance, management and licensing of Mine Residue has been raised as an urgent matter to be investigated and the legal requirements and potential liabilities be understood and planned towards.

The Waste Classification and Type Analysis was undertaken during 2015 and 2016, with the finalisation of the report in June 2016.

Based on the test results, the material from all the different sites is classified as Type 3 Waste following the GN R635 classification system – with ongoing hydrogeological studies, no long terms risks have been identified.

This classification is mostly based on the results of the total concentration (TC) testing results where there are several elements that exceed the TCT0 guidelines for all the samples. There are several facilities which will not be impacted, or may not be impacted, when taking into consideration dilution with natural groundwater based on the leach concentration results. This was confirmed in the GPT study discussed in the following section (Section 5.4.3). Further confirming no risk originating from the site.

5.3.3 Risk to Groundwater

The mine appointed GPT to conduct a critical evaluation of the groundwater quality monitoring network at the mine and to develop groundwater-related management plans. In the report (Reference ASBEE-16-1240), dated April 2016 the following were concluded:

- ☞ Surface sources of contamination are currently not characterised in terms of contamination potential, which will be required if the monitoring network is to be expanded sufficiently.
- ☞ The groundwater quality limits should be re-evaluated based on exceedances from background water qualities. Pre-mining contamination status of the aquifer already exceeds WUL limits under natural conditions. Therefore, the WUL limits set unrealistic targets for water quality – this was subsequently updated in the WUL 2018 and is no longer a concern.
- ☞ Additional monitoring positions should be determined based on contamination potential of existing sources.

The following recommendations were made in the report:

- ☞ All the boreholes stipulated in the WUL should be monitored on a quarterly basis for the specified parameters. *This has subsequently been implemented at the mine.*
- ☞ Although not a requirement, the expansion of the monitoring network should be considered as recommended in the report.
- ☞ A repeat of the 2013 Hydrocensus (GPT, 2013) should be done every third year and results compared to the previous hydrocensus results. *The last hydrocensus was undertaken by the mine in 2017 and will again be scheduled for 2020.*
- ☞ Most of the background water qualities exceed the water resource quality objectives prior to any mining activity taking place. This includes nitrate (NO₃) concentrations. The water resource quality objectives contained within the 2008WUL were of concern especially if remediation and clean-up levels are to be determined on closure. *This was subsequently updated in the WUL 2018 and is no longer a concern.*
- ☞ Based on background monitoring data, nitrate concentrations are naturally elevated in the groundwater. The nitrate concentrations found exceeded the SANS 241:2015 limits. However, it is proposed that this constituent be added to the monitored parameters in the WUL. The source of the naturally elevated nitrate in the groundwater is currently unknown and is presumed to be a by-product of the vegetation in the area. *Subsequent to this recommendation an assessment was conducted by GPT, March 2019, which concluded the following:*



- *The use of N-based explosives for mine blasting is likely to contribute to elevated nitrate levels in groundwater as most explosives contain between 70 - 90% ammonium nitrate. Nitrates are highly soluble in water. The occurrence of nitrate in groundwater and the pit water indicates that nitrate is naturally occurring (outside of the mining area) with contribution from N-based explosives in the mining area.*
- *Nitrate occurrence may be attributed to nitrogen cycling in the environment and the use of N-based explosives (for mine blasting). This study indicates that the nitrate circulation in water is complicated, involving multiple sources and the occurrence of nitrate is natural with contribution from mining-related blasting using N-based explosives.*
- *In the mining environment, the leaching of blasting residue from waste rock, tailings and mine water impoundment are also potential sources of nitrate in groundwater. The contribution of N-based explosives to nitrate concentration in groundwater is negligible compared to background values.*
- *The report concluded with stating that: "Due to the limited contribution of explosives regarding elevated nitrate concentration (less than 1mg/l) as well as the fact that groundwater flow eventually ends up in the dewatered zone, no active remediation is required. As part of the groundwater management plan, focus should be on the management of the water balance of the mine to ensure minimal infiltration of surface water enriched in nitrates."*

A second study was conducted by GPT, dated April 2017 (Reference ASBEE-16-1987) to determine the groundwater risk and required monitoring network amendments.

According to the 2017 Groundwater Risk Assessment and Monitoring Network Audit conducted by GPT the following statements are made:

- Based on the groundwater quality analyses, solid waste analyses and liquid waste analyses, as well as the statistical analysis of the data, it can be deduced that the chemical signatures of the three (3) mediums (solid waste, liquid waste and groundwater) are quite similar.
- Additionally, it was found that the constituents found to exceed the relevant screening levels for each of the three mediums are also similar.
- Also, most of the sources are located within the dewatered area, directing any contaminants towards the active mining areas.
- Therefore, groundwater monitoring in terms of chemistry is not recommended for expansion as the effects of sources on the groundwater environment are likely to be negligible and are unlikely to be observed in samples as the chemical signatures of the different mediums are so similar.

The report also stated the following: "The available hydrogeochemical data (including solid waste, liquid waste and groundwater) were analysed using IBM SPSS v. 20. The corresponding chemical constituents between each of the samples were defined as chemical fingerprints, which could be correlated and cross-correlated with each other to identify the similarities between the waste samples and background water quality. All the chemical compositions of the solid waste and liquid waste samples show a significant correlation ($\alpha = 0.01$ or 0.05) with that of at least one background groundwater sample. This illustrates that contamination from these sources is likely to have the same geochemical signature as the local groundwater. This shows that contamination to the aquifer from the identified sources is unlikely."

A third study was conducted by GPT, March 2019, which are referred to earlier in this section. This report also concluded that in addition to the outcomes regarding the nitrates (NO_3) in the groundwater, Barium (Ba) and Manganese (Mn) were not regarded as contaminants of concern in groundwater based on the scope and findings of the investigation within the mining area and immediate surroundings.

These studies further confirmed that the manner in which the mine is operating, and the management measures implemented to protect the environment is sufficient and effective.

5.3.4 Outcomes

Based on the above, the current management measures included in the Permits/ Environmental Authorisations and EMPr's are regarded as sufficient to ensure that the activities undertaken on site can mitigate potential



impacts as identified in the EMPr's. Implementation of conditions such as the proper design of storm water management measures and maintenance of clean and dirty water separation will address many of the findings observed.

There are however certain areas identified which are recommended to be amended as these management measures may rather result in further environmental degradation in certain instances and in other areas are not practical or efficient for implementation. These are discussed in the following Section (Section 5.4) and is recommended to be included into the overall EIA process currently being undertaken by the mine.

5.4 Need to Amend in terms of Regulation 34

Regulation 35(1) of the NEMA 2014 EIA Regulations states that the competent authority must consider the environmental audit report and amended EMPr, and where applicable the amended closure plan, contemplated in Regulation 34 and approve such amended EMPr, and where applicable the amended closure plan, if it is satisfied that it sufficiently provides for avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity, or where applicable the closure of the facility, and that it has been subjected to an appropriate public participation process.

It should be noted that in terms of Regulation 35(2), prior to approving an amended EMPr or closure plan contemplated in subregulation (1), the competent authority may request such amendments to the EMPr or closure plan as it deems appropriate to ensure that the EMPr sufficiently provides for avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity or to ensure that the closure plan sufficiently provides for avoidance, management and mitigation of environmental impacts associated with the closure of the facility.

These amendments in terms of Regulation 34 are required when management measures are not sufficient to address impacts encountered on site. For the purposes of this audit, no Regulation 34 amendments have been identified, as all amendments are recommended to be dealt with in terms of Part 1 or Part 2 amendments in terms of the 2014 NEMA EIA Regulations (as amended).

The following table presents the conditions and/or EMP commitments, which are requested for amendment by the Competent Authority (DMR) in terms of Regulation 34 and or Regulation 29 of the NEMA.

The table specifically presents each Condition, the reason for amendment, whether the amendment would result in any risk, as well as the recommended amendment suggestion.



Table 10: Regulation 34 Amendment Requirements

Licence Reference	Date	2019 Compliance (%)	Adequacy of mitigation and management measures provided	Condition requiring Amendment	New Risks Identified	Recommendations (Regulation 34 or Regulation 29 Amendment)
NC30/5/1/2/3/2/1/223EM	7 June 2010	81.48	The ROD is adequate to manage the activities on site.	An Environmental Audit Report as contemplated in regulation 55(1)(c) must be submitted bi-annually (from the date on which the permit was granted) to the Regional Manager: Mineral Regulations.	<p>The EMP ROD requires the mine to undertake bi-annual assessments. The term biannual needs to be clarified to determine whether the DMR requires assessments every second year, or twice a year. For the purposes of this audit it is assumed that this refers to once every two years, as documented in the EMP.</p> <p>Each of the mine's Environmental Authorisations contain recommendations and therefore an amendment is required to ensure that the External Audit Requirements are similar for all.</p>	Regulation 29 (Part 1)
IVU.07.160	July 2009	79	The EMP is adequate to address residual risk on site, there are however certain conditions which requires amendment to allow for the practical implementation of measures or measure proven to best ensure rehabilitation.	All vehicles will have mufflers to minimise noise emissions.	<p>Maintenance programmes are in place on site and managed by the Engineers.</p> <p>Noise is assessed as part of the operational aspects and specifically as part of hygiene management on site (in terms of the Mine Health and Safety Act, 1996) on an ad hoc basis.</p> <p>No areas of concern have yet been identified.</p> <p>This condition is specific in that all vehicles must be equipped with mufflers. This is unpractical for the</p>	<p>Regulation 29 (Part 1)</p> <p>It is recommended that mufflers only be prescribed should noise become a concern on site.</p>



Licence Reference	Date	2019 Compliance (%)	Adequacy of mitigation and management measures provided	Condition requiring Amendment	New Risks Identified	Recommendations (Regulation 34 or Regulation 29 Amendment)
					geographic setting (isolated) of the mine, as well as for economic cost implications.	
				Vegetation of the soil stockpiles with suitable grass species in order to limit erosion of the outer slopes of the stockpiles.	The areas where rehabilitation activities have been completed are successful in terms of self-succession. However, the establishment of vegetation on topsoil stockpiles are not practically possible as the soil is being utilised to cover the Landfill Site. It is not possible for vegetation to establish on such stockpiles due to the active activities in these areas.	Regulation 29 (Part 1) The amendment should allow for the following: 1) Where self-succession does not take place, the mine must investigate a seed mix which could be utilised for the purposes of vegetation. 2) Topsoil stockpiles should be demarcated for long-term rehabilitation and others for ongoing rehabilitation. Long-term rehabilitation topsoil stockpiles should be shaped to allow for vegetation establishment through self-succession.
				Stockpile heights will be restricted to 1.5m.	It is assumed that this condition refers to the topsoil stockpiles as a 1.5m height is not practical for Product Stockpiles.	Regulation 29 (Part 1) To clearly stipulate that this height refers to the topsoil stockpiles and not the Product Stockpiles.
				Dust extraction systems comprising of wet scrubbers will be installed at the secondary and tertiary crushing and screening plants. For crushing and screening operations at metallic mineral processing plants, fugitive dust can be controlled with wet scrubbers or baghouses. Chemical dust suppression systems will be implemented at the primary crushing and screening plants.	The design of the Plant does not incorporate the measures as stipulated in the EMP Alignment. No wet scrubbers or bag houses are present on site. Dustwatch is undertaking the dust monitoring on site monthly and Aquatico is responsible for the water monitoring programme. According to the latest dust monitoring results undertaken by Dustwatch (3 May to 3 June 2019) all nine (9) monitoring points	Regulation 29 (Part 1) Dust management systems should be in place at primary crusher areas, and/or where such systems are required. However, it is recommended that the specific requirements for wet scrubbers and dust extraction systems at the secondary and tertiary crushers be removed from the conditions.



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Licence Reference	Date	2019 Compliance (%)	Adequacy of mitigation and management measures provided	Condition requiring Amendment	New Risks Identified	Recommendations (Regulation 34 or Regulation 29 Amendment)
					complied (below 1 200mg/m ² /day)	
				Any storm water runoff from the outer slopes will contain some eroded residue solids. In order to prevent this from discharging into the surrounding environment, the side slopes of the WRDs will be dosed down to 1v:3h then covered with approximately 150mm topsoil and then grasses.	<p>Due to the successful practices of rehabilitation on the mine, the facilities will first be provided with the opportunity the self-vegetate. The slopes of all operational facilities will only be shaped to their final slope once the full footprints have been reached. The Planning/ Survey Department is currently designing the final heights, slopes and footprints of the WRDs on site.</p> <p>The mine is currently rehabilitating the HH WRD and the southern portion of the East Pit WRD, which complies to the slope requirements. Facilities that have been rehabilitated such as the West WRD and those on North Mine comply with the slope requirements based on visual observations. In addition to this, the past rehabilitation practices have indicated that vegetation is best established using a mixed cover and not pure topsoil. Areas where topsoils have been placed are prone to erosion.</p>	<p>Regulation 29 (Part 1)</p> <p>This measure is not sufficient to manage the impacts of the Licence Holder in terms of the development of erosion arising from the use of topsoil. It is recommended that this condition be amended to provide for a cover mixture and not pure topsoil, as well as to allow for self-succession. This condition can be applied for in terms of Regulation 34; however, as the mine is currently in the process of amendment and updating its EMP, an overall consolidated amendment process is recommended.</p>
				Re-vegetated areas will be maintained by means of regular watering, weed controls and cattle-grazing exclusion until the	The watering of WRDs in this area is unpractical due to the scarcity of water in the	Regulation 29 (Part 1)

Licence Reference	Date	2019 Compliance (%)	Adequacy of mitigation and management measures provided	Condition requiring Amendment	New Risks Identified	Recommendations (Regulation 34 or Regulation 29 Amendment)
				vegetation has settled to ensure that it is stable, and that erosion does not occur	region. Past rehabilitation practices have proven that with the correct slope self-succession can be achieved.	Water should be conserved on site. As past rehabilitation practices have proven successful without watering it is recommended that this condition be removed.
				Surface water quality will be monitored to ensure that stipulated limits are not contravened	<p>The WUL makes no specific requirements for surface water monitoring.</p> <p>The current surface water monitoring network comprises of the following: Potable water (6 localities) and Process water (2 localities) while the groundwater monitoring network consists of 11 monitoring boreholes.</p> <p>No rivers are present in the mining area. Some pans are present; however, these are dry for most of the year.</p>	<p>Regulation 29 (Part 1)</p> <p>It is recommended that the condition states that a monitoring network should be implemented in line with the WUL requirements.</p>
				After the topsoil has been replaced the area should be ameliorated and seeded, should self-succession of vegetation not take place.	<p>Due to the successful practices of rehabilitation on the mine, the facilities will first be provided with the opportunity the self-vegetate. The slopes of all operational facilities will only be shaped to their final slope once the full footprints have been reached. The Planning/Survey Department is currently designing the final heights, slopes and footprints of the WRDs on site.</p> <p>The mine is currently rehabilitating the HH WRD and the southern portion of the East Pit WRD, which</p>	<p>Regulation 29 (Part 1)</p> <p>This measure is not sufficient to manage the impacts of the Licence Holder in terms of the development of erosion arising from the use of topsoil. It is recommended that this condition be amended to provide for a cover mixture and not pure topsoil, as well as to allow for self-succession. This condition can be applied for in terms of Regulation 34; however, as the mine is currently in the process of amendment and updating its EMP, an overall consolidated amendment process is recommended.</p>



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Licence Reference	Date	2019 Compliance (%)	Adequacy of mitigation and management measures provided	Condition requiring Amendment	New Risks Identified	Recommendations (Regulation 34 or Regulation 29 Amendment)
					complies to the slope requirements. Facilities that have been rehabilitated such as the West WRD and on the Northern Mine comply with the slope requirements based on visual observations. In addition to this, the past rehabilitation practices have indicated that vegetation is best established using a mixed cover and not pure topsoil. Areas where topsoils have been placed are prone to erosion.	
				The footprint (product and fines stockpiles) areas will be topsoiled and ripped.	The Licence Holder has undertaken various successful rehabilitation activities on site. The best procedure for rehabilitation in terms of site observations and historical practices is to include a topsoil/gravel mixture. The soils in this area are prone to erosion and does not provide for effective rehabilitation.	Regulation 29 (Part 1) This measure is not sufficient to manage the impacts of the Licence Holder in terms of the development of erosion arising from the use of topsoil. It is recommended that this condition be amended to provide for a cover mixture and not pure topsoil, as well as to allow for self-succession. This condition can be applied for in terms of Regulation 34; however, as the mine is currently in the process of amendment and updating its EMP, an overall consolidated amendment process is recommended.
				The following measures will be implemented: <ul style="list-style-type: none"> • The areas will be landscaped to be free draining; • The topsoil and subsoils with the appropriate seedbed as stripped during the construction and operational phases will be placed over these areas to a depth as specified by a qualified specialist. The topsoil shall be appropriately ameliorated to allow vegetation to grow rapidly if required – it should be noted that the mine will 	The Licence Holder has undertaken various successful rehabilitation activities on site. The best procedure for rehabilitation in terms of site observations and historical practices is to include a topsoil/gravel mixture. The soils in this area are prone to erosion and does not provide for effective rehabilitation.	Regulation 29 (Part 1) This measure is not sufficient to manage the impacts of the Licence Holder in terms of the development of erosion arising from the use of topsoil. It is recommended that this condition be amended to provide for a cover mixture and not pure topsoil, as well as to allow for self-succession. This condition can be applied for in terms of Regulation 34 however as the mine is currently in the process of amendment and updating its EMP, an overall consolidated amendment process is recommended.

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				<p>encourage self-succession of vegetation, if this does not take place effectively a revegetation project will be implemented;</p> <ul style="list-style-type: none"> • If a reasonable assessment indicates that the re-establishment of vegetation is unacceptable slow, the soil needs to be analysed and any deleterious effects must be corrected, and the area be seeded with a seed mix to specification; • Appropriate erosion control measures (i.e. contour banks) must be taken where required; • All rehabilitated areas will be fenced off up until the area is regarded as stable; and • All illegal invader plants and weeds shall be dealt with as required in terms of the relevant legislation. 		

5.5 Assumptions and Gaps

The findings, results, observations, conclusions and recommendations given in this Environmental Audit Report are based on the Author's best scientific and professional knowledge as well as available information. As many areas as possible were assessed during the audit and all available documents were considered. However, it should be noted that in order to assess the project in the time allowed, spot checks were conducted.

5.6 Stakeholder Consultation Process

As mentioned previously, in terms of Regulation 35(1) the competent authority must consider the environmental audit report and amended EMPr and, where applicable the amended closure plan, contemplated in Regulation 34 and approve such amended EMPr, and where applicable the amended closure plan, if it is satisfied that it sufficiently provides for avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity, or where applicable the closure of the facility, and that it has been subjected to an appropriate public participation process.

No amendments, which will impact on surrounding stakeholders or regulatory authorities, are required in terms of Regulation 34. For the purposes of this Environmental Audit undertaken, and due to the limited amendments required, it is recommended that the consultation process for the new Environmental Authorisation Process (Regulation 29 Part 2) which has been commissioned during 2019, and which will be undertaken in terms of the NEMA EIA Regulation, be a suitable vehicle to communicate the amendments (Part 1 amendments) required in the EMP. This will be a full consultation process including:

- ☞ Meeting with the DMR and other Regulatory Authorities;
- ☞ Advert in a local and regional newspaper;
- ☞ Site Notice; and
- ☞ Stakeholder consultation meeting.

This notification can be undertaken together with the Regulation 34 Amendments as identified for the NEMA and MPRDA Environmental Authorisation and EMPr during the 2019 Environmental Performance audits.

It is the responsibility of the Licence Holder to ensure that the Environmental Audit Report is made available to stakeholders should stakeholders wish to review such a report.

5.7 Need to update the Licence

Based on the outcomes of the site visit and observation, the EMPr Alignment is still effective for the management of the site. Certain practical amendments are required which are discussed in Section 5.4. The mine is also in the process of investigating new developments on site and expansions to certain opencast pits, which will necessitate and overall EMP Amendment. As there are several EMPr amendments present on site, it is recommended that one consolidated EMP document be developed which will assist the Licence Holder with ongoing environmental management.

5.8 Overall Opinion

During the project initiation meeting it was clear that the Licence Holder has familiarised themselves with the conditions of the Environmental Authorisation.

The Licence Holder, including members of the engineering and SHEQ teams, attended the site visit and was informed on the history of the environmental authorisation process as well as constraints encountered and the reason for various amendment during the application process.



The Licence Holder presented a view of overall commitment to achieve compliance in terms of the environmental legislation.

5.9 Declaration of EAP

I, **Tanja Bekker** (Name of person representing EAP) of **EnviroGistics (Pty) Ltd** (name of company) declare that;

1. I act as the independent environmental practitioner in this audit
2. I have performed the work relating to this audit in an objective manner, even if this results in views and findings that are not favourable to the Licence Holder;
3. I declare that there are no circumstances that may compromise my objectivity in performing such work;
4. I have expertise in conducting environmental performance assessment, including knowledge of the Act, regulations and any guidelines that have relevance to the activity;
5. I have no, and will not engage in, conflicting interests in the undertaking of the audit;
6. I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the Licence Holder or not
7. all the particulars furnished by me in this form are true and correct;
8. will perform all other obligations as expected from an environmental assessment practitioner in terms of the Regulations; and
9. I realise that a false declaration is an offence in terms of Regulation 48 and is punishable in terms of section 49B (2) of the Act



Signature of the Environmental Assessment Practitioner

Date: 10 October 2019

